AMERICAN

DISPENSATORY.

THE

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DISPENSATORY,

CONTAINING

THE OPERATIONS OF PHARMACY; TOGETHER WITH THE NATURAL, CHEMICAL, PHARMACEUTICAL AND MEDICAL HISTORY OF THE DIFFERENT SUBSTANCES EMPLOYED IN MEDICINE;

ILLUSTRATED AND EXPLAINED, ACCORDING TO THE PRINCIPLES OF

MODERN CHEMISTRY:

THE ARRANGEMENT SIMPLIFIED,

AND THE WHOLE ADAPTED TO THE

PRACTICE OF MEDICINE AND PHARMACY

IN THE

UNITED STATES.

With several Copperplates, exhibiting the New System of Chemical Characters, and representing the most useful Apparatus.

FOURTH EDITION, MUCH IMPROVED.

BY JOHN REDMAN COXE, M. D.

Professor of Chemistry in the University of Pennsylvania; Member of the Am. Phil. Society, and of the Batavian Society of Sciences at Haarlem; Ordinary Member of the Royal Medical Society of Copenhagen; and Foreign Member of the Royal Society of Sciences at Copenhagen.

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1818.

ANNEX'
Pharmacopoeias

District of Pennsylvania, to wit:

SEAL. BE IT REMEMBERED, That on the twenty-second day of May, in the thirtieth year of the independence of the United States of America, A. D. 1806, Thomas Dobson, of the said district, hath deposited in this office the title of a book, the right whereof he claims as proprietor, in the words following, to wit:

"The American Dispensatory, containing the operations of Pharmacy, "together with the Natural, Chemical, Pharmaceutical and Medical His- "tory of the different substances employed in Medicine; Illustrated and "Explained, according to the principles of Modern Chemistry: The ar- "rangement simplified, and the whole adapted to the practice of Medi- "cine and Pharmacy in the United States. With several Copperplates, "exhibiting the new system of Chemical Characters, and representing "the most useful Apparatus. By John Redman Coxe, M.D. Professor of "Chemistry in the University of Pennsylvania; Member of the American "Philosophical Society, and of the Batavian Society of Sciences at "Haarlem."

In conformity to the act of the congress of the United States, intituled, "An act for the encouragement of learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies, during the times therein mentioned."—And also to the act, entitled, "An act supplementary to an act, entitled "An act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies during the times therein mentioned," and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints."

D. CALDWELL,
Clerk of the district of Pennsylvania.

THE

AMERICAN DISPENSATORY.

MATERIA MEDICA.

THE MATERIA MEDICA comprehends every substance, whether natural or artificial, which is employed in medicine. But in most Pharmacopœias the materia medica is confined to simples, and to those preparations which are not supposed to be prepared by the apothecary himself, but to be purchased by him as articles of commerce from druggists and others.

Much pains have been bestowed by the writers on the materia medica in attempting to form useful arrangements of these articles. Some have arranged them according to their natural affinities; others according to their active constituent parts; and others according to their real or supposed virtues. Each of these arrangements have their particular advantages. The first will probably be preferred by the natural historian, the second by the chemist, and the last by the physiologist. But no arrangement has yet been proposed which is not liable to numerous objections. Accordingly, in the Pharmacopœias published by the Colleges of Physicians of London, Dublin, and Edinburgh, the articles of the materia medica are arranged in alphabetical order; and the same plan is now also adopted in almost every Pharmacopœia of much estimation lately published on the continent of Europe: it will therefore be followed in the present work.

There appears to be no good reason why the different preparations and compositions of the various articles of the materia medica, should not immediately follow the consideration of each article respectively, instead of dividing them under a great variety of distinct heads; it has therefore been deemed proper in the American Pharmacopœia, to pursue that plan, as far as it could be conveniently effected. Some preparations, as powders, pills, tinctures, &c. undoubtedly arrange better under one general head: these are therefore still retained distinct, though they are brought into the general alphabetical order, instead of being placed in separate chapters at the end of the materia medica. By the present plan a connected view is given of every preparation arising out of the article under consideration; instead of having to recur to so many different places.

The same reasons have induced me to give the chemical history of each article, in immediate connection with its natural, medical, and pharmaceutical history, from the "Epitome of Chemistry" of Dr. Duncan's Edinburgh Dispensatory; a portion of the work, in my opinion unnecessary for the complete chemist, and to the young beginner unintelligible, without a reference to other sources. To refresh the memory, it will be of more utility united with the consideration of each article; for with any other view, it will scarcely ever be consulted, either by the chemist or the tyro in that science.

The nomenclature of the Edinburgh college is here adopted. The synonymes of the London and Dublin colleges are added for the sake of perspicuity; and the names of many of the articles are given in the most current languages, from the "Dictionary of Merchandise."*

The Dutch designated by -	D.
Danish - - - -	DA.
French - - - -	F.
German - - - -	G.
Italian - - - -	I.
Portuguese - - - -	P.
Polish - - - -	POL.
Russian - - - - -	R.
Spanish - - - -	S.
Swedish - - - -	SW.

The operations of Pharmacy, are necessarily included in a distinct chapter, and precede the consideration of the other part of the work.

* First American Edition.

ELEMENTS OF PHARMACY.

THE object of PHARMACY is to provide those substances which may be employed for the prevention or cure of diseases.

To obtain this object completely, an acquaintance with the physical and chemical properties of bodies is necessary. This may be termed the Science of Pharmacy.

As few substances are found in nature in a state fit for their exhibition in medicine, they previously undergo various preparations. These constitute the Art of Pharmacy.

PHARMACEUTICAL OPERATIONS.

COLLECTION AND PRESERVATION OF SIMPLES.

1. EACH of the kingdoms of nature furnishes articles which are employed in medicine, either in their natural state, or after they have been prepared by the art of pharmacy.

2. In collecting these, attention must be paid to select such as are most sound and perfect, to separate from them whatever is injured or decayed, and to free them from all foreign matters adhering to them.

3. Those precautions must be taken which are best fitted for preserving them. They must in general be defended from the effects of moisture, too great heat, or cold, and confined air.

4. When their activity depends on volatile principles, they must be preserved from the contact of the air as much as possible.

5. As the vegetable kingdom presents us with the greatest number of simples, and the substances belonging to it are the least constant in their properties, and most subject to decay, it becomes necessary to give a few general rules for their collection and preservation.

6. Vegetable matters should be collected in the countries where they are indigenous; and those which grow wild, in dry soils, and high situations, fully exposed to the air and sun, are in general to be preferred to those which are cultivated, or which grow in moist, low, shady, or confined places.

7. Roots which are annual, should be collected before they shoot out their stalks or flowers; biennial roots in the harvest of the first,

or spring of the second year; perennial roots either in spring before the sap has begun to mount, or in harvest after it has returned.

8. Those which are worm eaten (except some resinous roots,) or which are decayed, are to be rejected. The others are immediately to be cleaned with a brush and cold water, letting them lie in it as short time as possible; and the fibres and little roots, when not essential, are to be cut away.

9. Roots which consist principally of fibres, and have but a small tap, may be immediately dried. If they be juicy, and not aromatic, this may be done by heat, not exceeding 100° of Fahrenheit; but if aromatic, by simply exposing them, and frequently turning them in a current of cold dry air; if very thick and strong, they are to be split or cut into slices, and strung upon threads; if covered with a tough bark, they may be peeled fresh, and then dried. Such as lose their virtues by drying, or are directed to be preserved in a fresh state, are to be kept buried in dry sand.

10. No very general rule can be given for the collection of herbs and leaves, some of them acquiring activity from their age, and others, as the mucilaginous leaves, from the same cause, losing the property for which they are officinal. Aromatics are to be collected after the flower-buds are formed; annuals, not aromatic, when they are about to flower, or when in flower; biennials, before they shoot; and perennials, before they flower, especially if their fibres become woody.

11. They are to be gathered in dry weather, after the dew is off them, or in the evening before it falls, and are to be freed from decayed, withered, or foreign leaves. They are usually tied in bundles, and hung up in a shady, warm, and airy place; or spread upon the floor, and frequently turned. If very juicy, they are laid upon a sieve, and dried by a gentle degree of artificial warmth.

12. Sprouts are collected before the buds open; and stalks are gathered in autumn.

13. Barks and woods are collected when the most active part of the vegetables are concentrated in them, which happens in spring and in autumn. Spring is preferred for resinous barks, and autumn for the others which are not resinous, but rather gummy. Barks should be taken from young trees, and freed from decayed parts, and all impurities.

14. The same rules direct the collection of woods; but they must not be taken from very young trees. Among the resinous woods, the heaviest, which sink in water, are selected. The alburnum is to be rejected.

15. Flowers are collected in clear dry weather, before noon, but after the dew is off: either when they are just about to open, or immediately after they have opened. Of some the petals only are preserved, and the colourless claws are even cut away; of others whose calyx is odorous, the whole flower is kept. Flowers which are too small to be pulled singly, are dried with part of the stalk: These are called heads or tops.

16. Flowers and herbs are to be dried by the gentle heat of a stove or common fire, in such quantities at a time, that the process may

be finished as quickly as possible; for by this means their powers are best preserved; the test of which is the perfect preservation of their natural colour. When they lose their colour and smell they are unfit for use.

17. Seeds and fruits, unless when otherwise directed, are to be gathered when ripe, but before they fall spontaneously. Some pulpy fruits are freed from their core and seeds, strung upon thread, and dried artificially. They are in general best preserved in their natural coverings, although some, as the colocynth, are peeled, and others, as the tamarind, preserved fresh. Many of these are apt to spoil, or become rancid; and as they are then no longer fit for medical use, no very large quantity of them should be collected at a time.

18. The proper drying of vegetable substances is of the greatest importance. It is often directed to be done in the shade, and slowly, that the volatile and active particles may not be dissipated by too great heat; but this is an error, for they always lose infinitely more by slow than by quick drying. When, on account of the colour, they cannot be exposed to the sun, and the warmth of the atmosphere is insufficient, they should be dried by an artificial warmth, less than 100° Fahrenheit, and well exposed to a current of air. When perfectly dry and friable, they have little smell; but after being kept some time, they attract moisture from the air, and regain their proper odour.

19. The boxes and drawers in which vegetable matters are kept, should not impart to them any smell or taste; and more certainly to avoid this, they should be lined with paper. Such as are volatile, of a delicate texture, or subject to suffer from insects, must be kept in well covered glasses. Fruits and oily seeds, which are apt to become rancid, must be kept in a cool, and dry, but by no means in a warm, or moist place.

20. Oily seeds, odorous plants, and those containing volatile principles, must be collected fresh every year. Others, whose properties are more permanent, and not subject to decay, will keep for several years.

21. Vegetables collected in a moist and rainy season, are in general more watery and apt to spoil. In a dry season, on the contrary, they contain more oily and resinous particles, and keep much better.

MECHANICAL OPERATIONS OF PHARMACY.

a. The determination of the weight and bulk of bodies.
b. The division of bodies into more minute particles.
c. The separation of their integrant parts by mechanical means.
d. Their mixture, when not attended by any chemical action.

22. The quantities of substances employed in pharmaceutical operations are most accurately determined by the process called weighing. For this purpose, there should be sets of beams and scales of different sizes; and it would be advisable to have a double set, one for ordinary use, and another for occasions when greater accuracy is necessary. A good beam should remain in equilibrium without the

scales, and when the scales are changed; and it should turn sensibly with a very small proportion of the weight with which it is loaded. Balances should be defended as much as possible from acid and other corrosive vapours, and should not be left suspended longer than is necessary, as it impairs their delicacy very much. For the same reason, balances should never be overloaded.

23. The want of uniformity of weights and measures is attended with many inconveniences. In this country, (Great Britain,) druggists and grocers sell by avoirdupois weight; and the apothecaries are directed to sell by troy weight, although, in fact, they seldom use the troy weight for more than two drachms. Hence arise numerous and culpable errors, the troy pound being less than the avoirdupois, and the ounce and drachm being greater. Comparative tables of the value of the troy, avoirdupois, and new French decimal weights, are given in the appendix.

24. The errors arising from the promiscuous use of weights and measures, have induced the Edinburgh and Dublin colleges to reject the use of measures entirely, and to direct that the quantities of every thing fluid, as well as solid, shall be determined by troy weight: But as the London college have given their sanction to the use of measures, and as, from the much greater facility of their employment, apothecaries will always use them, tables of measures are also inserted in the appendix.

25. For measuring fluids, the graduated glass measures are always to be preferred: they should be of different sizes, according to the quantities they are intended to measure. Elastic fluids are also measured in glass tubes, graduated by inches and their decimals.

26. Specific gravity is the weight of a determinate bulk of any body. As a standard of comparison, distilled water has been assumed as unity. The specific gravity of solids is ascertained, by comparing the weight of the body in the air with its weight when suspended in water. The quotient obtained by dividing its weight in air by the difference between its weight in air and its weight in water, is its specific gravity. The specific gravity of fluids may be ascertained by comparing the loss of weight of a solid body, such as a piece of crystal, when immersed in distilled water, with its loss when immersed in the fluid we wish to examine; by dividing its loss of weight in the fluid by its loss of weight in the water, the quotient is the specific gravity of the fluid: Or a small phial, containing a known weight of distilled water, may be filled with the fluid to be examined and weighed, and by dividing the weight of the fluid by the weight of the water, the specific gravity is ascertained.

Although these are the only general principles by which specific gravities are ascertained, yet as the result is always influenced by the state of the thermometer and barometer at the time of the experiments, and as the manipulation is a work of great nicety, various ingenious instruments have been contrived to render the process and calculation easy. Of all these, the gravimeter of Morveau seems to deserve the preference.

It would be of material consequence to science and the arts, if specific gravities were always indicated by the numerical term expressing their relation to the specific gravity of distilled water. This however is unfortunately not the case. The excise in this country collect the duties paid by spiritous liquors, by estimating the proportion which they contain of a standard spirit, about 0.933 in specific gravity, which they call hydrometer proof, and they express the relation which spirits of a different strength have to the standard spirit by saying that they are above or under hydrometer proof. Thus one to six, or one in seven below hydrometer proof means, that it is equal in strength to a mixture of six parts of proof spirit with one of water.

The only other mode of expressing specific gravities which it is necessary to notice, is that of Baumé's areometer; as it is often used in the writings of the French chemists, and is little understood in this country. For substances heavier than water he assumes the specific gravity of distilled water as zero, and graduates the stem of his instrument downwards, each degree being supposed by him to express the number of parts of muriat of soda contained in a given solution, which however is not at all the case. For substances lighter than water the tube is graduated upwards, and this zero is afforded by a solution of 10 of salt in 90 of water. In the appendix tables are given of the specific gravities, corresponding with all the degrees of both of these areometers, from Nicholson's Journal.

MECHANICAL DIVISION.

27. By mechanical division, substances are reduced to a form better adapted for medical purposes; and by the increase of their surface, their action is promoted, both as medical and chemical agents.

28. It is performed by cutting, bruising, grinding, grating, rasping, filing, pulverization, trituration, and granulation, by means of machinery or of proper instruments.

29. *Pulverization* is the first of these operations that is commonly employed in the apothecary's shop. It is performed by means of pestles and mortars. The bottom of the mortars should be concave; and their sides should neither be so inclined as not to allow the substances operated on to fall to the bottom between each stroke of the pestle, nor so perpendicular as to collect it too much together, and to retard the operation. The materials of which pestles and mortars are formed, should resist both the mechanical and chemical action of the substances for which they are used. Wood, iron, marble, siliceous stones, porcelain, and glass, are all employed; but copper, and metals containing copper, are to be avoided.

30. They should be provided with covers, to prevent the finest and lightest parts from escaping, and to defend the operator from the effects of disagreeable or noxious substances. But these ends are more completely attained by tying a piece of pliable leather round the pestle and round the mouth of the mortar. It must be closely applied, and at the same time so large, as to permit the free motion of the pestle.

31. In some instances, it will be even necessary for the operator to cover his mouth and nostrils with a wet cloth, and to stand with his

back to a current of air, that the very acrid particles which arise may be carried from him.

32. The addition of a little water or spirit of wine, or of a few almonds, to very light and dry substances, will prevent their flying off. But almonds are apt to induce rancidity, and powders are always injured, by the drying which is necessary when they have been moistened. Water must never be added to substances which absorb it, or are rendered cohesive by it.

33. Too great a quantity of any substance must never be put into the mortar at a time, as it very much retards the operation.

34. All vegetable substances must be previously dried. Resins and gummy resins, which become soft in summer, must be powdered in very cold weather, and must be beaten gently, or they will be converted into a paste instead of being powdered. Wood, roots, barks, horn, bone, ivory, &c. must be previously cut, split, chipped, or rasped. Fibrous woods and roots should be finely shaved after their bark is removed, for otherwise, their powders will be full of hair-like filaments, which can scarcely be separated. Some substances will even require to be moistened with mucilage of tragacanth, or of starch, and then dried before they can be powdered. Camphor may be conveniently powdered by the addition of a little spirit of wine, or almond oil. The emulsive seeds cannot be reduced to powder, unless some dry powder be added to them. To aromatic oily substances, sugar is the best addition.

35. All impurities and inert parts having been previously separated, the operation must be continued and repeated upon vegetable substances, till no residuum is left. The powders obtained at different times must then be intimately mixed together, so as to bring the whole to a state of perfect uniformity.

36. Very hard stony substances must be repeatedly heated to a red heat, and then suddenly quenched in cold water, until they become sufficiently friable. Some metals may be powdered hot in a heated iron mortar, or may be rendered brittle by alloying them with a little mercury.

37. *Trituration* is intended for the still more minute division of bodies. It is performed in flat mortars of glass, agate, or other hard materials, by giving a rotatory motion to the pestle; or on a levigating stone, which is generally of porphyry, by means of a muller of the same substance. On large quantities it is performed by rollers of hard stone, turning horizontally upon each other, or by one vertical roller turning on a flat stone.

38. The substances subjected to this operation are generally previously powdered or ground.

39. *Levigation* differs from trituration only in the addition of water or spirit of wine to the powder operated upon, so as to form the whole mass into a kind of paste, which is rubbed until it be of sufficient smoothness or fineness. Earths, and some metallic substances, are levigated.

40. *Granulation* is employed for the mechanical division of some metals. It is performed, either by stirring the melted metal with an iron-rod until it cools, or by pouring it into water, and stirring it continually as before, or by pouring it into a covered box, previously well

rubbed with chalk, and shaking it until the metal cools, when the rolling motion will be converted into a rattling one. The adhering chalk is then to be washed away.

MECHANICAL SEPARATION.

41. *Sifting.* From dry substances, which are reduced to the due degree of minuteness, the coarser particles are to be separated by sieves of iron-wire, hair-cloth or gauze, or by being dusted through bags of fine linen. For very light and valuable powders, or acrid substances, compound sieves, having a close lid and receiver, must be used. The particles which are not of sufficient fineness to pass through the interstices of the sieve, may be again powdered.

42. *Elutriation* is confined to mineral substances, on which water has no action. It is performed for separating them from foreign particles and impurities, of a different specific gravity, in which case they are said to be washed: or for separating the impalpable powders, obtained by trituration and levigation, from the coarser particles. This process depends upon the property that very fine or light powders have of remaining for some time suspended in water; and is performed by diffusing the powder or paste formed by levigation through plenty of water, letting it stand a sufficient time, until the coarser particles settle at the bottom, and then pouring off the liquid in which the finer or lighter particles are suspended. Fresh water may be poured on the residuum, and the operation repeated; or the coarser particles which fall to the bottom may be previously levigated a second time. The fine powder which is washed over with the water, is separated from it, by allowing it to subside completely, and by decanting off the water very carefully.

43. *Decantation* is very frequently made use of for separating the clear from the turbid part of a fluid, and for separating fluids from solids, which are specifically heavier, especially when the quantity is very large, or the solid so subtile as to pass through the pores of most substances employed for filtration, or the liquid so acrid as to corrode them.

44. *Filtration.* For the purposes of separating fluids from solids, straining and filtration are often used. These differ only in degree, and are employed when the powder either does not subside at all, or too slowly and imperfectly for decantation.

45. The instruments for this purpose are of various materials, and must in no instance be acted upon by the substances for which they are employed. Fats, resins, wax and oils, are strained through hemp or flax, spread evenly over a piece of wire-cloth or net stretched in a frame. For saccharine and mucilaginous liquors, fine flannel may be used; for some saline solutions, linen. Where these are not fine enough, unsized paper is employed, but it is extremely apt to burst by hot watery liquors. Very acrid liquors, such as acids, are filtered by means of a glass funnel, filled with powdered quartz, a few of the larger pieces being put in the neck, smaller pieces over these, and the fine powder placed over all. The porosity of this last filter retains much of the liquor; but it may be obtained by gently

pouring on it an equal quantity of distilled water; the liquor will then pass through, and the water will be retained in its place.

46. Water may be filtrated in large quantities through basins of porous stone, or artificial basins of nearly equal parts of fine clay and coarse sand. In large quantities it may be easily purified *per ascensum*, the purified liquor and impurities thus taking opposite directions. The simplest apparatus of this kind is a barrel, divided perpendicularly, by a board perforated with a row of holes along the lower edge. Into each side, as much well washed sand is put as will cover these holes an inch or two, over which must be placed a layer of pebbles to keep it steady. The apparatus is now fit for use. Water poured into the one half will sink through the sand in that side, pass through the holes in the division to the other, and rise through the sand in the other half, from which it may be drawn by a stopcock.

47. The size of the filters depends on the quantity of matter to be strained. When large, the flannel or linen is formed into a conical bag, and suspended from a hoop or frame; the paper is either spread on the inside of these bags, or folded into a conical form, and suspended by a funnel. It is of advantage to introduce glass rods or quills between the paper and the funnel, to prevent them from adhering too closely.

48. What passes first is seldom fine enough, and must be poured back again until by the swelling of the fibres of the filter, or filling up of its pores, the fluid acquires the requisite degree of limpidity. The filter is sometimes covered with charcoal powder, which is a useful addition to muddy and deep-coloured liquors. The filtration of some viscid substances is much assisted by heat.

49. *Expression* is a species of filtration, assisted by mechanical force. It is principally employed to obtain the juices of fresh vegetables, and the unctuous vegetable oils. It is performed by means of a screw press, with plates of wood, iron, or tin. The subject of the operation is previously beaten, ground or bruised. It is then inclosed in a bag, which must not be too much filled, and introduced between the plates of the press. The bags should be of hair-cloth, or canvas inclosed in hair-cloth. Hempen and woollen bags are apt to give vegetable juices a disagreeable taste. The pressure should be gentle at first, and increased gradually.

50. Vegetables intended for this operation should be perfectly fresh, and freed from all impurities. In general they should be expressed as soon as they are bruised, for it disposes them to ferment; but subacid fruits give a larger quantity of juice, and of finer quality, when they are allowed to stand some days in a wooden or earthen vessel after they are bruised. To some vegetables which are not juicy enough, the addition of a little water is necessary. Lemons and oranges must be peeled, as their skins contain a great deal of essential oil, which would mix with the juice. The oil itself may be obtained separately, by expression with the fingers on a piece of glass.

51. For unctuous seeds iron plates are used; and it is customary not only to heat the plates, but to warm the bruised seeds in a kettle over the fire, after they have been sprinkled with water, as by

these means the product is increased, and the oil obtained is more limpid. But as the oils obtained in this way are more disposed to rancidity, this process should either be laid aside altogether, or changed to exposing the bruised seeds, inclosed in a bag, to the steam of hot water.

52. *Despumation* is generally practised on thick and clammy liquors, which contain much slimy and other impurities, not easily separable by filtration. The scum is made to arise, either by simply heating the liquor, or by *clarifying* it, which last is done by mixing with the liquor, when cold, white of egg well beaten with a little water, which on being heated coagulates and rises to the surface, carrying with it all the impurities. The liquor may now be filtered with ease, or may be skimmed with a perforated ladle. Spirituous liquors are clarified without the assistance of heat, by means of isinglass dissolved in water, or of any albuminous fluid, as milk, which coagulates with the action of alcohol. Some expressed juices, as those of all the antiscorbutic plants, are instantly clarified by the addition of any vegetable acid, as the juice of bitter oranges.

53. Fluids can only be separated from each other, when they have no tendency to combine, and when they differ in specific gravity. The separation may be effected by skimming off the lighter fluid with a silver or glass spoon; or by drawing it off by a syringe or syphon; or by means of a glass separatory, which is an instrument having a projecting tube, terminating in a very slender point, through which the heavier fluid alone is permitted to run; or by means of the capillary attraction of a spongy woollen thread; for no fluid will enter a substance whose pores are filled by another, for which it has no attraction; and lastly, upon the same principle, by means of a filter of unsized paper, previously soaked in one of the fluids, which in this way readily passes through it, while the other remains behind.

54. *Mechanical mixture* is performed by agitation, trituration, or kneading; but these will be best considered in treating of the forms in which medicines are exhibited.

APPARATUS.

55. Before entering on the chemical operations, it will be necessary to make a few remarks on the instruments employed in performing them. They may be divided into

a. The vessels in which the effects are performed;
b. Fuel, or the means of producing heat; and
c. The means of applying and regulating the heat, or lamps and furnaces.

VESSELS.

56. The vessels, according to the purposes for which they are intended, vary

a. In form; and
b. In materials.

57. The different forms will be best described when treating of the particular operations.

58. No substance possesses properties which render it proper to be employed as a material in every instance. We are therefore obliged to select those substances which possess the properties more especially required in the particular operations for which they are intended.

59. The properties most generally required, are

a. The power of resisting chemical agents;
b. Transparency;
c. Compactness;
d. Strength;
e. Fixity and infusibility;
f. And the power of bearing sudden variations of temperature without breaking.

60. The metals in general possess the four last properties in considerable perfection, but they are all opaque. Iron and copper are apt to be corroded by chemical agents, and the use of the latter is often attended with dangerous consequences. These objections are in some measure, but not entirely, removed by tinning them. Tin and lead are too fusible. Platinum, gold, and silver, resist most of the chemical agents, but their expense is an insurmountable objection to their general use.

61. Good earthen ware resists the greatest intensity of heat, but is deficient in all the other properties. The basis of all kinds of earthenware is clay, which possesses the valuable quality of being very plastic when wrought with water, and of becoming extremely hard when burnt with an intense heat. But it contracts so much by heat, that it is extremely apt to crack and split, on being exposed to sudden changes of temperature; it is therefore necessary to add some substance which may counteract this property. Siliceous sand, clay reduced to powder, and then burnt with a very intense heat, and plumbago, are occasionally used. These additions, however, are attended with other inconveniences; plumbago, especially, is liable to combustion, and sand diminishes the compactness, so that it becomes necessary to glaze most kinds of earthen-ware; but when glazed, they are acted upon by chemical agents. The vessels manufactured by Messrs. Wedgwood are the best of this description, except those of porcelain, which are too expensive.

62. Glass possesses the three first qualities in an eminent degree, and may be heated red hot without melting. Its greatest inconvenience is its disposition to crack, or break in pieces, when suddenly heated or cooled. As this is occasioned by its unequal expansion or contraction, glass vessels should be made very thin, and of a round form. They should also be well annealed, that is cooled very slowly, when blown, by placing them immediately in a heated oven, while they are yet in a soft state. When ill annealed, or cooled suddenly, glass is apt to fly in pieces on the slightest change of temperature, or touch of a sharp point. We sometimes take advantage of this imperfection; for by means of a red-hot wire, charcoal, or bit of a to-

bacco-pipe, glass-vessels may be cut into any shape. When there is not a crack already in the glass, the point of the wire is applied near the edge, a crack is formed, which is afterwards easily led in any direction.

63. Reaumeur's porcelain, on the contrary, is glass, which by surrounding it with hot sand, is made to cool so slowly, that it assumes a crystalline texture, which destroys its transparency, but imparts to it every other quality wished for in chemical vessels. The coarser kinds of glass are commonly used in making it; but as there is no manufacture of this valuable substance, its employment is still very limited.

LUTES.

64. Lutes also form a necessary part of chemical apparatus. They are compositions of various substances, intended,

a. To close the joinings of vessels;
b. To coat glass vessels;
c. To line furnaces.

65. Lutes of the first description are commonly employed to confine elastic vapours. They should therefore possess the following properties:

a. Viscidity, plasticity, and compactness;
b. The power of resisting acrid vapours;
c. The power of resisting certain degrees of heat.

66. The viscidity of lutes depends on the presence either of

a. Unctuous or resinous substances;
b. Mucilaginous substances; or
c. Clay or lime.

67. Lutes of the first kind possess the two first class of properties in an eminent degree; but they are in general so fusible, that they cannot be employed when they are exposed even to very low degrees of heat, and they will not adhere to any substance that is at all moist. Examples.

a. Eight parts of yellow wax, melted with one of oil of turpentine, with or without the addition of resinous substances, according to the degree of pliability and consistence required. Lavoisier's lute.
b. Four parts of wax, melted with two of varnish and one of olive oil. Saussure's lute.
c. Three parts of powdered clay, worked up into a paste, with one of drying oil, or, what is better, amber varnish. The drying oil is prepared by boiling 22.5 parts of litharge in 16 of linseed oil until it be dissolved. Fat lute.
d. Chalk and oil, or glazier's putty, is well fitted for luting tubes permanently into glass vessels, for it becomes so hard that it cannot be easily removed.
e. Equal parts of litharge, quicklime, and powdered clay, worked

into a paste with oil varnish, is sometimes applied over the cracks in glass vessels, so as to fit them for some purposes.

f. Melted pitch and brick dust.

68. Mucilaginous substances, such as flour, starch, gum, and glue, mixed with water, are sufficiently adhesive, are dried by moderate degrees of heat, and are easily removed after the operation, by moistening them with water; but a high temperature destroys them, and they do not resist corrosive vapours. The addition of an insoluble powder is often necessary to give them a sufficient degree of consistency. Examples.

a. Slips of bladder, softened in water, and applied with the inside next the vessels. They are apt, however, from their great contraction in drying, to break weak vessels.

b. One part of gum-arabic with six or eight of chalk, formed into a paste with water.

c. Flour worked into a paste with powdered clay or chalk.

d. Almond or linseed meal formed into a paste with mucilage or water.

e. Quicklime in fine powder, hastily mixed with white of egg, and instantly applied, sets very quickly, but becomes so hard that it can scarcely be removed.

f. Slaked lime in fine powder, with glue, does not set so quickly as the former.

g. The cracks of glass vessels may be cemented by daubing them and a suitable piece of linen over with white of egg, strewing both over with finely powdered quicklime, and instantly applying the linen closely and evenly.

69. Earthy lutes resist very high temperatures, but they become so hard that they can scarcely be removed, and often harden so quickly after they are mixed up, that they must be applied immediately. Examples.

a. Quicklime well incorporated with a sixth part of muriat of soda.

b. Burnt gypsum, made up with water.

c. One ounce of borax dissolved in a pound of boiling water, mixed with a sufficient quantity of powdered clay. Mr. Watt's fire lute.

d. One part of clay with four of sand, formed into a paste with water. This is also used for coating glass vessels, in order to render them stronger, and capable of resisting intense heat. It is then made into a very thin mass, and applied in successive layers, taking care that each coat be perfectly dry before another be laid on.

70. The lutes for lining furnaces will be described when treating of furnaces.

71. The junctures of vessels which are to be luted to each other, should previously be accurately and firmly fitted, by introducing between them, when necessary, short pieces of wood or cork, or, if the

disproportion be very great, by means of a cork fitted to the one vessel, having a circular hole bored through it, through which the neck of the other vessel or tube may pass.

72. After being thus fitted, the lute is either applied very thin, by spreading it on slips of linen or paper, and securing it with thread; or if it is a paste lute, it is formed into small cylinders, which are successively applied to the junctures, taking care that each piece be made to adhere firmly and perfectly close in every part before another is put on. Lastly, the whole is secured by slips of linen or bladder.

73. In many cases, to permit the escape of elastic vapours, a small hole is made through the lute with a pin, or the lute is perforated by a small quill, fitted with a stopper.

HEAT AND FUEL.

74. As caloric is an agent of the most extensive utility in the chemical operations of pharmacy, it is necessary that we should be acquainted with the means of employing it in the most economical and efficient manner.

75. The rays of the sun are used in the drying of many vegetable substances; and the only attentions necessary, are to expose as large a surface as possible, and to turn them frequently, that every part may be dried alike. They are also sometimes used for promoting spontaneous evaporation.

76. Combustion is a much more powerful and certain source of heat. Alcohol, oil, tallow, wood, turf, coal, charcoal, and coke, are all occasionally employed.

77. Alcohol, oil, and melted tallow, can only be burnt on porous wicks, which draw up a portion of the fluid to be volatilized and inflamed. Fluid inflammables are therefore burnt in lamps of various constructions. But although commonly used to produce light, they afford an uniform, but not high temperature. This may however be increased, by increasing the number and size of the wicks. Alcohol produces a steady heat, no soot, and, if strong, leaves no residuum. Oil gives a higher temperature, but on a common wick produces much smoke and soot. These are diminished, and the light and heat increased, by making the surface of the flame bear a large proportion to the center; which is best done by a cylindrical wick so contrived that the air has free access both to the outside and inside of the cylinder, as in Argand's lamp, invented by Mr. Bolton of Birmingham. In this way, oil may be made to produce a considerable temperature, of great uniformity, and without the inconvenience of smoke.

78. Wicks have the inconvenience of being charred by the high temperature to which they are subjected, and becoming so clogged as to prevent the fluid from rising in them. They must then be trimmed; but this is seldomer necessary with alcohol and fine oils than with the coarser oils. Lamps are also improved by adding a chimney to them. It must admit the free access of air to the flame, and then it increases the current, confines the heat, and steadies the flame. The intensity of the temperature of flame may be greatly increased by forcing a small current of hot air through it, as by the blowpipe.

79. Wood, turf, coal, charcoal, and coke, solid combustibles, are burnt in grates and furnaces. Wood has the advantage of kindling readily, but affords a very unsteady temperature, is inconvenient from its flame, smoke, and soot, and requires much attention. The heavy and dense woods give the greatest heat, burn longest, and leave a dense charcoal.

80. Dry turf gives a steady heat, and does not require so much attention as wood; but it consumes fast, its smoke is copious and penetrating, and the empyreumatic smell which it imparts to every thing it comes in contact with, adheres to them with great obstinacy. The heavy turf of marshes is preferable to the light surface turf

81. Coal is the fuel most commonly used in this country, (Scotland.) Its heat is considerable, and sufficiently permanent, but it produces much flame and smoke.

82. Charcoal, especially of the dense woods, is a very convenient and excellent fuel. It burns without flame or smoke, and gives a strong, uniform, and permanent heat, which may be easily regulated, especially when it is not in too large pieces, and is a little damp. But it is costly, and burns quickly.

83. Coke, or charred coal, possesses similar properties with charcoal; it is less easily kindled, but is capable of producing a higher temperature, and burns more slowly.

84. When an open grate is used for chemical purposes, it should be provided with cranes to support the vessels, that they may not be overturned by the burning away of the fuel.

FURNACES.

85. In all furnaces, the principal objects are, to produce a sufficient degree of heat, with little consumption of fuel, and to be able to regulate the degree of heat.

86. An unnecessary waste of fuel is prevented by forming the sides of the furnace of very imperfect conductors of caloric, and by constructing it so that the subject operated on may be exposed to the full action of the fire.

87. The degree of heat is regulated by the quantity of air which comes in contact with the burning fuel. The quantity of air is in the compound ratio of the size of the aperture through which it enters, and its velocity. The velocity is increased by mechanical means, as by bellows, or by increasing the height and width of the chimney.

88. The size and form of furnaces, and the materials of which they are constructed, are various, according to the purposes for which they are intended.

89. The essential parts of a furnace are,

a. A body for the fuel to burn in;
b. A grate for it to burn upon;
c. An ash-pit to admit air and receive the ashes;
d. A chimney for carrying off the smoke and vapours.

90. The ash-pit should be perfectly close, except the door, which

should be furnished with a register-plate, to regulate the quantity of air admitted.

91. The bars of the grate should be triangular, and placed with an angle pointed downwards, and not above half an inch distant. The grate should be fixed on the outside of the body.

92. The body may be cylindrical or elliptical, with apertures for introducing the fuel and the subjects of the operation, and for conveying away the smoke and vapours.

93. When the combustion is supported by the current of air naturally excited by the burning of the fuel, it is called a wind-furnace; when it is accelerated by increasing the velocity of the current by bellows, it forms a blast furnace; and when the body of the furnace is covered with a dome, which terminates in the chimney, it constitutes a reverberatory furnace.

94. Furnaces are either fixed and built of fire-brick, or portable, and fabricated of plate-iron. When of iron, they must be lined with some badly conducting and refractory substance, both to prevent the dissipation of heat, and to defend the iron against the action of the fire. A mixture of scales of iron and powdered tiles, worked up with blood, hair, and clay, is much recommended; and Professor Hagen says, that it is less apt to split and crack when exposed at once to a violent heat, than when dried gradually, according to the common directions. Dr. Black employed two different coatings. Next to the iron, he applied a composition of three parts, by weight, of charcoal, and one of fine clay, first mixed in the state of fine powder, and then worked up with as much water as permitted the mass to be formed into balls, which were applied to the sides of the furnace, and beat very firm and compact with the face of a broad hammer, to the thickness of about one inch and a half, in general, but so as to give an elliptical form to the cavity. Over this, another lute, composed of six or seven parts of sand, and one of clay, was applied, in the same manner, to the thickness of about half an inch. These lutes must be allowed to become perfectly dry before the furnace is heated, which should at first be done gradually. They may also be lined with fire-bricks of a proper form, accurately fitted and well-cemented together before the top-plate is screwed on.

95. The general fault of furnaces is, that they admit so much air, as to prevent us from regulating the temperature, which either becomes too violent and unmanageable, or when more cold air is admitted than what is necessary for supporting the combustion, the heat is carried off, and the temperature cannot be raised sufficiently. The superior merit of Dr. Black's furnace consists in the facility with which the admission of air is regulated; and every attempt hitherto made to improve it, by increasing the number of its apertures, have in reality injured it.

96. Heat may be applied to vessels employed in chemical operations,

a. Directly, as in the open fire and reverberatory furnace;
b. Or through the medium of sand; the sand bath;
c. Of water; the water bath;

d. Of steam; the vapour bath;
e. Of air, as in the muffle.

CHEMICAL OPERATIONS.

97. In all chemical operations, combination takes place, and there are very few of them in which decomposition does not also occur. For the sake of method, we shall consider them as principally intended to produce,

a. Change in the form of aggregation;
b. Combination;
c. Decomposition.

98. The form of aggregation may be altered by,

a. Fusion;
b. Vaporization;
c. Condensation;
d. Congelation;
e. Coagulation.

99. *Liquefaction* is commonly employed to express the melting of substances, as tallow, wax, resin, &c. which pass through intermediate states of softness before they become fluid.

100. *Fusion* is the melting of substances which pass immediately from the solid to the fluid state, as the salts and the metals, except iron and platinum. Substances differ very much in the degrees of their fusibility; some, as water and mercury, existing as fluids in the ordinary temperatures of the atmosphere; while others, as the pure earths, cannot be melted by any heat we can produce.

101. When a substance acquires by fusion a degree of transparency, a dense uniform texture, and great brittleness, and exhibits a conchoidal fracture, with a specular surface, and the edges of the fragments very sharp, it is said to be *vitrified.*

102. In general, simple substances are less fusible than compounds; thus the simple earths cannot be melted singly, but when mixed are easily fused. The additions which are sometimes made to refractory substances to promote their fusion, are termed *fluxes.*

103. These fluxes are generally saline bodies.

a. The alkalies, potass, and soda, promote powerfully the fusion siliceous stones; but they are only used for accurate experiments. The *white flux* is a mixture of a little potass with carbonat of potass, and is prepared by deflagrating together equal parts of nitrat of potass and supertartrat of potass. When an oxyd is at the same time to be reduced, the *black* flux is to be preferred, which is produced by the deflagration of two parts of supertartrat of potass, and one of nitrat of potass. It differs from the former only in containing a little charcoal. Soap promotes fusion by being converted by the fire into carbonat of soda and charcoal.

b. Aluminous stones have their fusion greatly promoted by the addition of sub-borat of soda.

c. Muriat of soda, the mixed phosphat of soda and ammonia, and other salts, are also occasionally employed.

104. An open fire is sufficient to melt some substances; others require the heat of a furnace.

105. The vessels in which fusion is performed, must resist the heat necessary for the operation. In some instances, an iron or copper ladle or pot may be used; but most commonly crucibles are employed. *Crucibles* are of various sizes.—The large crucibles are generally conical, with a small spout for the convenience of pouring out: the small ones are truncated triangular pyramids, and are commonly sold in nests.

106. The Hessian crucibles are composed of clay and sand, and when good, will support an intense heat for many hours, without softening or melting; but they are disposed to crack when suddenly heated or cooled. This inconvenience may be on many occasions avoided, by using a double crucible, and filling up the interstice with sand, or by covering the crucible with a lute of clay and sand, by which means the heat is transmitted more gradually and equally. Those which give a clear sound when struck, and are of an uniform thickness, and have a reddish-brown colour, without black spots, are reckoned the best.

107. Wedgwood's crucibles are made of clay mixed with baked clay finely pounded, and are in every respect superior to the Hessian, but they are expensive.

108. The black lead crucibles, formed of clay and plumbago, are very durable, resist sudden changes of temperature, and may be repeatedly used; but they are destroyed when saline substances are melted in them, and suffer combustion when exposed red-hot to a current of air.

109. When placed in a furnace, crucibles should never be set upon the bars of the grate, but always upon a support. Dr. Kennedy found the hottest part of a furnace to be about an inch above the grate. They may be covered, to prevent the fuel or ashes from falling into them, with a lid of the same materials, or with another crucible inverted over them.

110. When the fusion is completed, the substance may be either permitted to cool in the crucible, or poured into a heated mould anointed with tallow, never with oil, or, what is still better, covered with a thin coating of chalk, which is applied by laying it over with a mixture of chalk diffused in water, and then evaporating the water completely by heat. To prevent the crucible from being broken by cooling too rapidly, it should be either replaced in the furnace, to cool gradually with it, or covered with some vessel to prevent its being exposed immediately to the air.

111. Fusion is performed with the intentions,

a. Of weakening the attraction of aggregation,
  1. To facilitate mechanical division;
  2. To promote chemical action.

b. Of separating from each other, substances of different degrees of fusibility.

112. *Vaporization* is the conversion of a solid or fluid into vapour by the agency of caloric. Although vaporability be merely a relative term, substances are said to be permanently elastic, volatile, or fixed. The permanently elastic fluids or gases are those which cannot be condensed into a fluid or solid form by any abstraction of caloric we are capable of producing. Fixed substances, on the contrary, are those which cannot be converted into vapour, by great increase of temperature. The pressure of the atmosphere has a very considerable effect in varying the degree at which substances are converted into vapour. Some solids, unless subjected to very great pressure, are at once converted into vapour, although most of them pass through the intermediate state of fluidity.

113. Vaporization is employed,

a. To separate substances differing in volatility.
b. To promote chemical action, by disaggregating them.

114. When employed with either of these views, either

a. No regard is paid to the substances volatilized,
  1. From solids, as in ustulation and charring;
  2. From fluids, as in evaporation;
b. Or the substances vaporized are condensed in proper vessels,
  1. In a liquid form, as in distillation,
  2. In a solid form, as in sublimation;
c. Or the substances disengaged are permanently elastic, and are collected in their gaseous form, in a pneumatic apparatus.

115. *Ustulation* is almost entirely a metallurgic operation, and is employed to expel the sulphur and arsenic contained in some metallic ores. It is performed on small quantities in tests placed within a muffle. Tests are shallow vessels made of bone ashes, or baked clay. Muffles are vessels of baked clay, of a semi-cylindrical form, the flat side forming the floor, and the arched portion the roof and sides. The end and sides are perforated with holes for the free transmission of the heated air, and the open extremity is placed at the door of the furnace, for the inspection and manipulation of the process. The reverberatory furnace is commonly employed for roasting, and the heat is at first very gently, and slowly raised to redness. The process is accelerated by exposing as large a surface of the substance to be roasted as possible, and by stirring it frequently, so as to prevent any agglutination, and to bring every part in succession to the surface.

116. *Charring* may be performed on any of the compound oxyds, by subjecting them to a degree of heat sufficient to expel all their hydrogen, nitrogen, and oxygen, while the carbon, being a fixed principle, remains behind in the state of charcoal. The temperature necessary for the operation may be produced either by the combustion of other substances, or by the partial combustion of the substance to be charred. In the former case, the operation may be performed in any vessel which excludes the air while it permits the escape of the vapours formed. In the latter, the access of air must be regulated in such a manner, that it may be suppressed whenever the combustion has reached the requisite degree; for if continued to be admitted, the charcoal itself would be dissipated in the form of carbonic acid gas,

and nothing would remain but the alkaline and earthy matter, which these substances always contain. When combustion is carried this length, the process is termed *incineration.* The vapours which arise in the operation of charring, are sometimes condensed, as in the manufacture of tar.

117. *Evaporation* is the conversion of a fluid into vapour, by its combination with caloric. In this process, the atmosphere is not a necessary agent, but rather a hindrance, by its pressure. This forms a criterion between evaporation and spontaneous evaporation, which is merely the solution of a fluid in air.

118. It is performed in open, shallow, or hemispherical vessels of silver, tinned copper or iron, earthen-ware or glass. The necessary caloric may be furnished by means of an open fire, a lamp or a furnace, and applied either directly, or by the intervention of sand, water, or vapour. The degree of heat must be regulated by the nature of the substance operated on. In general, it should not be greater than what is absolutely necessary.

119. Evaporation may be,

a. Partial:
  1. From saline fluids, Concentration;
  2. From viscid fluids, Inspissation.

b. Total, Exsiccation.

120. *Concentration* is employed,

a. To lessen the quantity of diluting fluids; Deflegmation:
b. As a preliminary step to Crystallization.

121. *Inspissation* is almost confined to animal and vegetable substances; and as these are apt to be partially decomposed by heat, or to become empyreumatic, the process should always be performed, especially towards the end, in a water or vapour bath.

122. *Exsiccation* is here taken in a very limited sense; for the term is also with propriety used to express the drying of vegetables by a gentle heat, the efflorescence of salts, and the abstraction of moisture from mixtures of insoluble powders with water, by means of chalk-stones, or powdered chalk pressed into a smooth mass. At present, we limit its meaning to the total expulsion of moisture from any body by means of caloric.

123. The exsiccation of compound oxyds should always be performed in the water bath.

124. Salts are deprived of their water of crystallization by exposing them to the action of heat in a glass vessel or iron ladle. Sometimes they first dissolve in their water of crystallization (or undergo what is called the *watery fusion,*) and are afterwards converted into a dry mass by its total expulsion; as in the calcination of borax or burning of alum.

125. When exsiccation is attended with a crackling noise, and splitting of the salt, as in muriat of soda, it is termed *decrepitation,* and is performed by throwing into a heated iron vessel, small quantities of the salt at a time, covering it up, and waiting until the decrepitation be over, before a fresh quantity is thrown in.

126. Exsiccation is performed on saline bodies, to render them

more acrid or pulverulent, or to prepare them for chemical operations. Animal and vegetable substances are exsiccated to give them a solid form, and to prevent their fermentation.

127. *Condensation* is the reverse of expansion, and is produced either,

- *a.* By mechanical pressure forcing out the caloric in a sensible form, as water is squeezed out of a sponge; or,
- *b.* By the chemical abstraction of caloric, which is followed by an approximation of the particles of the substance.

128. The latter species of condensation only is the object of our investigation at present. In this way we may be supposed to condense,

a. Substances existing naturally as gases or vapours;

b. Substances, naturally solid or fluid, converted into vapours by adventitious circumstances.

129. The former instance is almost supposititious; for we are not able, by any diminution of temperature, to reduce the permanently elastic fluids to a fluid or solid state.

130. The latter instance is always preceded by vaporization, and comprehends those operations in which the substances vaporised are condensed in proper vessels. When the product is a fluid, it is termed distillation; when solid, sublimation.

131. *Distillation* is said to be performed,

- *a. Viâ humidâ*, when fluids are the subject of the operation;
- *b. Viâ siccâ*, when solids are subjected to the operation, and the fluid product arises from decomposition, and a new arrangement of the constituent principles.

132. The objects of distillation are,

- *a.* To separate more volatile fluids from less volatile fluids or solids;
- *b.* To promote the union of different substances;
- *c.* To generate new products by the action of fire.

133. In all distillations, the heat applied should not be greater than what is necessary for the formation of the vapour, and even to this degree it should be gradually raised. The vessels also in which the distillation is performed, should never be filled above one-half, and sometimes not above one-fourth, lest the substance contained in them should boil over.

134. As distillation is a combination of evaporation and condensation, the apparatus consists of two principal parts;

- *a.* The vessels in which the vapours are formed;
- *b.* The vessels in which they are condensed.

135. The vessels employed for both purposes are variously shaped, according to the manner in which the operation is conducted. The first difference depends on the direction of the vapour after its formation. It either

a. Descends; distillation *per descensum;*

b. Ascends; distillation *per ascensum:*

c. Or passes off by the side; distillation *per latus*.

136. In the distillation *per descensum*, a perforated plate, generally of tinned iron, is fixed within any convenient vessel, so as to leave a space beneath it. The subject of the operation is laid on this plate, and is covered by another, accurately fitting the vessel, and sufficiently strong to support the fuel which is burnt upon it. Thus the heat is applied from above, and the vapour is forced to descend into the inferior cavity, where it is condensed. In this way the oil of cloves is prepared, and on the same principles tar is manufactured, and mercury and zinc are separated from their ores.

137. In the distillation *per ascensum* the vapour is allowed to arise to some height, and then is conveyed away to be condensed. The vessel most commonly employed for this purpose is the common copper-still, which consists of a body for containing the materials, and a head into which the vapour ascends. From the middle of the head a tube arises a short way, and is then reflected downwards, through which the steam passes to be condensed. Another kind of head, rising to a great height before it is reflected, is sometimes used for separating fluids, which differ little in volatility, as it was supposed that the less volatile vapours would be condensed, and fall back into the still, while only the more volatile vapours would arise to the top, so as to pass to the refrigeratory. The same object may be more conveniently attained by managing the fire with caution and address. The greater the surface exposed, and the less the height the vapours have to ascend, the more rapidly does the distillation proceed; and so well are these principles understood by the Scotch distillers, that they do not take more than three minutes to discharge a still containing 50 gallons of fluid.

138. The condensing apparatus used with the common still is very simple. The tube in which the head terminates, is inserted into the upper end of a pipe, which is kept cool by passing through a vessel filled with water, called the Refrigeratory. This pipe is commonly made of a serpentine form; but as this renders it difficult to be cleaned, Dr. Black recommends a sigmoid pipe. The refrigeratory may be furnished with a stop-cock, that when the water it contains becomes too hot, and does not condense all the vapour produced, it may be changed for cold water. From the lower end of the pipe, the product of the distillation drops into the vessel destined to receive it; and we may observe, that when any vapour issues along with it, we should either diminished the power of the fire, or change the water in the refrigeratory.

139. *Circulation* was a process formerly in use. It consisted in arranging the apparatus, so that the vapours were no sooner condensed into a fluid form, than this fluid returned back into the distilling vessels, to be again vaporised; and was effected by distilling in a glass vessel, with so long a neck that the vapours were condensed before they escaped at the upper extremity, or by inverting one matrass within another.

140. When corrosive substances are distilled *per ascensum*, the

cucurbit and alembic are used; but these substances are more conveniently distilled *per latus.*

141. The distillation *per latus* is performed in a retort, or pear-shaped vessel, having the neck bent to one side. The body of a good retort is well rounded, uniform in its appearance, and of an equal thickness, and the neck is sufficiently bent to allow the vapours, when condensed, to run freely away, but not so much as to render the application of the receiver inconvenient, or to bring it too near the furnace. The passage from the body into the neck must be perfectly free and sufficiently wide, otherwise the vapours produced in the retort only circulate in its body, without passing over into the receiver. For introducing liquors into the retort without soiling its neck, which would injure the product, a bent funnel is necessary. It must be sufficiently long to introduce the liquor directly into the body of the retort; and in withdrawing it, we must keep it carefully applied to the upper part of the retort, that the drop hanging from it may not touch the inside of the neck. In some cases, where a mixture of different substances is to be distilled, it is convenient and necessary to have the whole apparatus properly adjusted before the mixture is made, and we must therefore employ a tubulated retort, or a retort furnished with an aperture, accurately closed with a ground stopper.

142. The tubulature should be placed on the upper convex part of the retort before it bends to form the neck, so that a fluid poured through it may fall directly into the body without soiling the neck.

143. Retorts are made of various materials. Flint-glass is commonly used when the heat is not so great as to melt it. For distillations which require excessive degrees of heat, retorts of earthen ware, or coated glass retorts, are employed. Quicksilver is distilled in iron retorts.

144. The simplest condensing apparatus used with the retort, is the common glass receiver; which is a vessel of a conical or globular form, having a neck sufficiently wide to admit the neck of a retort. To prevent the loss and dissipation of the vapours to be condensed, the retort and receiver may be accurately ground to each other, or secured by some proper lute. Means must also be used to prevent the receiver from being heated by the caloric evolved during the condensation of the vapours. It may either be immersed in cold water, or covered with snow or pounded ice; or a constant evaporation may be supported from its surface, by covering it with a cloth, kept moist by means of the descent of water, from a vessel placed above it, through minute syphons or spongy worsted threads. But as, during the process of distillation, permanently elastic fluids are often produced, which would endanger the breaking of the vessels, these are permitted to escape, either through a tubulature, or hole in the side of the receiver, or rather through a hole made in the luting. Receivers having a spout issuing from their side, are used when we wish to keep separate the products obtained at different periods of any distillation. For condensing very volatile vapours, a series of receivers, communicating with each other, termed Adopters, were formerly used; but these are now entirely superseded by Woulfe's apparatus.

145. This apparatus consists of a tubulated retort, adapted to a tu-

bulated receiver. With the tubulature of the receiver, a three-necked bottle is connected by means of a bent tube, the further extremity of which is immersed, one or more inches, in some fluid contained in the bottle. A series of two or three similar bottles are connected with this first bottle in the same way. In the middle tubulature of each bottle, a glass tube is fixed, having its lower extremity immersed about a quarter of an inch in the fluid. The height of the tube above the surface of the fluid must be greater than the sum of the columns of fluid standing over the farther extremities of the connecting tubes, in all the bottles or vessels more remote from the retort. Tubes so adjusted are termed Tubes of safety, for they prevent that reflux of fluid from the more remote into the nearer bottles, and into the receiver itself, which would otherwise inevitably happen, on any condensation of vapour taking place in the retort, receiver, or nearer bottles. Different contrivances for the same purpose have been described by Messrs. Welter and Burkitt; and a very ingenious mode of connecting the vessels without lute has been invented by Citizen Girard, but they would not be easily understood without plates. The further tubulature of the last bottle is commonly connected with a pneumatic apparatus, by means of a bent tube. When the whole is properly adjusted, air blown into the retort should pass through the receiver, rise in bubbles through the fluids contained in each of the bottles, and at last escape by the bent tube. In the receiver, those products of distillation are collected, which are condensable by cold alone. The first bottle is commonly filled with water, and the others with alkaline solutions, or other active fluids; and as the permanently elastic fluids produced are successively subjected to the action of all these, only those gases will escape by the bent tube which are not absorbable by any of them.

PNEUMATIC APPARATUS.

146. The great importance of the elastic fluids in modern chemistry, has rendered an acquaintance with the means of collecting and preserving them indispensable.

147. When a gas is produced by any means, it may be received either,

a. Into vessels absolutely empty; or

b. Into vessels filled with some fluid, on which it exerts no action.

148. The first mode of collecting gases, may be practised by means of a bladder, moistened sufficiently to make it perfectly pliable, and then compressed so as to empty it entirely. In this state it may be easily filled with any gas. An oiled silk bag will answer the same purpose, and is more convenient in some respects, as it may be made of any size or form.

149. Glass or metallic vessels, such as balloons, may also be emptied for the purpose of receiving gases, by fitting them with a stop-cock, and exhausting the air from them by means of an air-pump.

150. But the second mode of collecting gases is the most convenient and common.

151. The vessels may be filled either,

a. With a fluid lighter; or
b. Heavier than the gas to be received into it.

152. The former method is seldom employed; but if we conduct a stream of any gas heavier than atmospheric air, such as carbonic acid gas, muriatic acid gas, &c. to the bottom of any vessel, it will gradually displace the air, and fill the vessel.

153. On the contrary, a gas lighter than the atmospheric air, such as hydrogen, may be collected in an inverted vessel by conducting a stream of it to the top.

154. But gases are most commonly collected by conducting the stream of gas into an inverted glass jar, or any other vessel filled with water or mercury. The gas ascends to the upper part of the vessel, and displaces the fluid. In this way gas may be kept a very long time, provided a small quantity of the fluid be left in the vessels, which prevents both the escape of the gas, and the admission of atmospheric air.

155. The vessels may be of various shapes; but the most commonly employed are cylindrical. They may be either open only at one extremity, or furnished at the other with a stop-cock.

156. The manner of filling these vessels with fluid, is to immerse them completely in it, with the open extremity directed a little upwards, so that the whole air may escape from them, and then inverting them with their mouths downwards.

157. For filling them with convenience, a trough or cistern is commonly used. This either should be hollowed out of a solid block of wood or marble; or, if it be constructed of wood, it should be well painted, or lined with lead or tinned copper. Its size may vary very much; but it should contain a sufficient depth of fluid to cover the largest transverse diameter of the vessels to be filled in it. At one end or side, there should be a shelf for holding the vessels after they are filled. This shelf should be placed about an inch and a half below the surface of the fluid, and should be perforated with several holes, forming the apices of corresponding conical excavations on the lower side, through which, as through inverted funnels, gaseous fluids may be more easily introduced into the vessels placed over them. In general, the vessels used with a mercurial apparatus should be stronger and smaller than those for a water-cistern.

158. We should also have a variety of glass and elastic tubes for conveying the gases from the vessels in which they are formed to the funnels under the shelf.

159. *Rectification* is the repeated distillation of any fluid. When distillation renders the fluid stronger, or abstracts water from it, it is termed *Dephlegmation.* When a fluid is distilled off from any substance, it is called *Abstraction;* and if the product be redistilled from the same substance, or a fresh quantity of the substance, it is denominated *Cohobation.*

160. *Sublimation* differs from distillation only in the form of the product. When it is compact, it is termed a Sublimate; when loose and spongy, it formerly had the improper appellation of Flowers.

Sublimation is sometimes performed in a crucible, and the vapours are condensed in a paper cone, or in another crucible inverted over it; sometimes in the lower part of a glass flask, cucurbit, or phial, and the condensation is effected in the upper part or capital, and sometimes in a retort with a very short and wide neck, to which a conical receiver is fitted. The heat is most commonly applied through the medium of a sand-bath; and the degree of heat, and the depth to which the vessel is inserted in it are regulated by the nature of the sublimation.

161. *Congelation* is the reduction of a fluid into a solid form, in consequence of the abstraction of caloric. The means employed for abstracting caloric are the evaporation of volatile fluids, the solution of solids, and the contact of cold bodies.

162. *Coagulation* is the conversion of a fluid into a solid of greater or less consistence, merely in consequence of a new arrangement of its particles, as during the process there is no separation of caloric or any other substance. The means of producing coagulation are, increase of temperature, and the addition of certain substances, as acids and runnets.

COMBINATION.

163. Chemical combination is the intimate union of the particles of at least two heterogeneous bodies. It is the effect resulting from the exertion of the attraction of affinity, and is therefore subjected to all the laws of affinity.

164. To produce the chemical union of any bodies, it is necessary,

1. That they possess affinity for each other;
2. That their particles come into actual contact;
3. That the strength of the affinity be greater than any counteracting causes which may be present.

165. The principal counteracting causes are,

1. The attraction of aggregation;
2. Affinities for other substances.

166. The means to be employed for overcoming the action of other affinities will be treated of under Decomposition.

167. The attraction of aggregation is overcome by means of

1. Mechanical division.
2. The action of caloric.

168. Combination is facilitated by increasing the points of actual contact,

1. By mechanical agitation;
2. By condensation; compression.

169. The processes employed for producing combination, may be considered,

1. With regard to the nature of the substances combined; and,
2. To the nature of the compound produced.

Gases,

1. Combine with gases;
2. Dissolve fluids or solids;
3. Or are absorbed by them.

Fluids,

1. Are dissolved in gases;
2. Or absorb them;
3. Combine with fluids;
4. And dissolve solids;
5. Or are rendered solid by them.

Solids,

1. Are dissolved in fluids and in gases; or,
2. Absorb gases;
3. And solidify fluids.

170. The combination of gases with each other, in some instances, takes place when simply mixed together: thus nitrous and oxygen gases combine as soon as they come into contact; in other instances, it is necessary to elevate their temperature to a degree sufficient for their inflammation, either by means of the electric spark, or the contact of an ignited body, as in the combination of oxygen gas with hydrogen or nitrogen gas.

171. When gases combine with each other, there is always a considerable diminution of bulk, and not unfrequently they are condensed into a liquid or solid form. Hydrogen and oxygen gases form water: muriatic acid and ammonia gases form solid muriat of ammonia. But when the combination is effected by ignition, a violent expansion, which endangers the bursting of the vessels, previously takes place, in consequence of the increase of temperature.

172. *Solution* is the diminution of aggregation in any solid or fluid substance, in consequence of its entering into chemical combination. The substance, whether solid or fluid, whose aggregation is lessened, is termed the *Solvend;* and the substance, by whose agency the solution is effected, is often called the *Menstruum* or *Solvent.*

173. Solution is said to be performed *via humida*, when the natural form of the solvent is fluid; but when the agency of heat is necessary to give the solvent its fluid form, the solution is said to be performed *via sicca.*

174. The dissolving power of each menstruum is limited, and is determinate with regard to each solvend. The solubility of bodies is also limited and determinate with regard to each menstruum.

175. When any menstruum has dissolved the greatest possible quantity of any solvend, it is said to be saturated with it. But, in some cases, although saturated with one substance, it is still capable of dissolving others. Thus a saturated solution of muriat of soda will dissolve a certain quantity of nitrat of potass, and after that a portion of muriat of ammonia.

176. The dissolving power of solvents, and consequently the solubility of solvends, are generally increased by increase of temperature;

and conversely, this power is diminished by diminution of temperature; so that, from a saturated solution, a separation of a portion of the solvend generally takes place on any reduction of temperature. This property becomes extremely useful in many chemical operations, especially in crystallization.

177. Particular terms have been applied to particular cases of solution.

178. The solution of a fluid in the atmosphere is termed *spontaneous evaporation.* It is promoted by exposing a large surface, by frequently renewing the air in contact with the surface, and by increase of temperature.

179. Some solids have so strong an affinity for water, that they attract it from the atmosphere in sufficient quantity to dissolve them. These are said to *deliquesce.* Others, on the contrary, retain their water of crystallization with so weak a force, that the atmosphere attracts it from them, so that they crumble into powder. These are said to *effloresce.* Both operations are promoted by exposing large surfaces, and by a current of air; but the latter is facilitated by a warm dry air, and the former by a cold humid atmosphere.

180. Solution is also employed to separate substances (for example, saline bodies,) which are soluble in the menstruum, from others which are not. When our object is to obtain the soluble substance in a state of purity, the operation is termed *lixiviation.* In this as small a quantity of the menstruum as is possible is used. When, however, solution is employed to free an insoluble substance from soluble impurities, it is termed *edulcoration*, which is best performed by using a very large quantity of the menstruum.

181. Organic products being generally composed of heterogeneous substances, are only partially soluble in the different menstrua. To the solution of any of these substances, while the others remain undissolved, the term *extraction* is applied; and when, by evaporation, the substance extracted is reduced to a solid form, it is termed an Extract, which is hard or soft, watery or spiritous, according to the degree of consistency it acquires, and the nature of the menstruum employed.

182. *Infusion* is employed to extract the virtues of aromatic and volatile substances, which would be dissipated by decoction, and destroyed by maceration, and to separate substances of easy solution from others which are less soluble. The process consists in pouring upon the substance to be infused, placed in a proper vessel, the menstruum, either hot or cold, according to the direction, covering it up, agitating it frequently, and after a due time straining or decanting off the liquor, which is then termed the Infusion.

183. *Maceration* differs from infusion, it being continued for a longer time, and can only be employed for substances which do not easily ment or spoil.

184. *Digestion*, on the hand, differs from maceration only in the activity of the menstruum being promoted by a gentle degree of heat. It is commonly performed in a glass matrass, which should only be filled one-third, and covered with a piece of wet bladder, pierced with one or more small holes, so that the evaporation of the menstruum

may be prevented as much as possible, without risk of bursting the vessel. The vessel may be heated, either by means of the sun's rays, of a common fire, or of the sand-bath; and when the last is employed, the vessel should not be sunk deeper in the sand than the portion that is filled. Sometimes, when the menstruum employed is valuable, a distilling apparatus is used to prevent any waste of it. At other times, a blind capital is luted on the matrass, or a smaller matrass is inverted within a larger one; and as the vapour which arises is condensed in it, and runs back into the larger, the process in this form has got the name of *Circulation.*

185. *Decoction* is performed by subjecting the substances operated on to a degree of heat, which is sufficient to convert the menstruum into vapour, and can only be employed with advantage for extracting principles which are not volatile, and from substances whose texture is so dense and compact as to resist the less active methods of solution. When the menstruum is valuable, that portion of it which is converted into vapour is generally saved by condensing it in a distilling apparatus.

186. Solutions in alcohol are termed Tinctures, and in vinegar or wine, Medicated vinegars or wines. The solution of metals in mercury is termed Amalgamation. The combinations of other metals with each other form Alloys.

187. *Absorption* is the condensation of a gas into a fluid or solid form, in consequence of its combination with a fluid or solid. It is facilitated by increase of surface and agitation; and the power of absorption in fluids is much increased by compression and diminution of temperature, although in every instance it be limited and determinate. Dr. Nooth invented an ingenious apparatus for combining gases with fluids; and Messrs. Schweppe, Henry, Paul, and Cuthbertson, have very advantageously employed compression.

188. *Consolidation.* Fluids often become solid by entering into combination with solids; and this change is always accompanied by considerable increase of temperature, as in the slaking of lime.

DECOMPOSITION.

189. *Decomposition* is the separation of bodies which were chemically combined.

190. It can only be effected by the agency of substances possessing a stronger affinity for one or more of the constituents of the compound, than these possess for each other.

191. Decomposition has acquired various appellations, according to the phenomena which accompany it.

192. *Dissolution* differs from solution in being accompanied by the decomposition, or a change in the nature of the substance dissolved. Thus, we correctly say, a solution of lime in muriatic acid, and a dissolution of chalk in muriatic acid.

193. Sometimes a gas is separated during the action of bodies on each other. When this escapes with considerable violence and agitation of the fluid, it is termed *effervescence.* The gas is very frequently allowed to escape into the atmosphere, but at other times is either collected in a pneumatic apparatus, or made to enter into

some new combination.—The vessels in which an effervescing mixture is made, should be high and sufficiently large, to prevent any loss of the materials from their running over; and in some cases the mixture must be made slowly and gradually.

194. *Precipitation* is the reverse of solution. It comprehends all those processes in which a solid is obtained by the decomposition of a solution. The substance separated is termed a Precipitate, if it sink to the bottom of the fluid; or a Cream, if it swim above it. Precipitation, like solution, is performed either *via humida* or *via sicca*.

195. The objects of precipitation are,

1. The separation of substances from solutions in which they are contained;
2. The purification of solutions from precipitable impurities;
3. The formation of new combinations.

196. Precipitation is effected,

1. By lessening the quantity of the solvent by evaporation;
2. By diminishing its solvent power, as by reduction of temperature, or dilution;
3. Or by the addition of some chemical agent, which from its more powerful affinities,
   a. Either combines with the solvent, and precipitates the solvend,
   b. Or forms itself an insoluble compound with some constituen of the solution.

197. The two first means of precipitation have been already noticed. Indeed they are rarely considered as instances of precipitation, as the effect is gradual, and the precipitated matter most commonly assumes determinate figures.

198. In performing it in the last manner, we may observe the following rules:

1. The solution and precipitant must possess the requisite degree of purity.
2. The solution should be perfectly saturated, to avoid unnecessary consumption of the solvent or precipitant.
3. The one is to be added slowly and gradually to the other.
4. After each addition, they are to be thoroughly mixed by agitation.
5. We must allow the mixture to settle, after we think that enough of the precipitant has been added, and try a little of the clear solution, by adding to it some of the precipitant: if any precipitation takes place, we have not added enough of precipitant. This precaution is necessary, not only to avoid loss, but, in many instances, the precipitant, if added in excess, redissolves, or combines with, the precipitate.

199. After the precipitation is completed, the precipitate is to be separated from the supernatant fluid by some of the means already noticed.

200. When the precipitate is the chief object of our process, and when it is not soluble in water, it is often advisable to dilute, to a

considerable degree, both the solution and precipitant, before performing the operation. When it is only difficultly soluble, we must content ourselves with washing the precipitate, after it is separated by filtration. In some cases, the separation of the precipitate is much assisted by a gentle heat.

201. *Crystallization* is a species of precipitation, in which the particles of the solvend, on separating from the solution, assume certain determinate forms.

202. The conditions necessary for crystallization are,

1. That the integrant particles have a tendency to arrange themselves in a determinate manner when acted on by the attraction of aggregation;
2. That they be disaggregated, at least so far as to possess sufficient mobility to assume their peculiar arrangement;
3. That the causes disaggregating them be slowly and gradually removed.

203. Notwithstanding the immense variety in the forms of crystals, M. Hauy has rendered it probable, that there are only three forms of the integrant particles:

1. The parallelopiped.
2. The triangular prism.
3. The tetrahedron.

204. But as these particles may unite in different ways, either by their faces or edges, they will compose crystals of various forms.

205. The primitive forms have been reduced to six:

1. The parallelopiped.
2. The regular tetrahedron.
3. The octohedron with triangular faces.
4. The six-sided prism.
5. The dodecahedron terminated by rhombs.
6. The dodecahedron with isosceles triangular faces.

206. Almost all substances, on crystallizing, retain a portion of water combined with them, which is essential to their existence as crystals, and is therefore denominated water of crystallization. Its quantity varies very much in different crystallized substances.

207. The means by which the particles of bodies are disaggregated, so as to admit of crystallization, are solution, fusion, vaporization, or mechanical division and suspension in a fluid medium.

208. The means by which the disaggregating causes are removed, are, evaporation, reduction of temperature, and rest.

209. When bodies are merely suspended in a state of extreme mechanical division, nothing but rest is necessary for their crystallization.

210. When they are disaggregated by fusion or vaporization, the regularity of their crystals depends on the slowness with which their temperature is reduced; for if cooled too quickly, their particles have not time to arrange themselves, and are converted at once into a confused or unvaried solid mass. Thus glass, which, when cooled quickly, is so perfectly uniform in its appearance, when cooled slowly, has a crystalline texture. But in order to obtain crystals by means of fusion,

it is often necessary, after the substance has begun to crystallize, to remove the part which remains fluid; for otherwise it would fill up the interstices among the crystals first formed, and give the whole the appearance of one solid mass. Thus, after a crust has formed on the top of melted sulphur, by pouring off the still fluid part, we obtain regular crystals.

211. The means by which bodies, which have been disaggregated by solution, are made to crystallize most regularly, vary according to the habitudes of the bodies with their solvents and caloric.

212. Some saline substances are much more soluble in hot than in cold water; therefore, a boiling saturated solution of any of these will deposite, on cooling, the excess of salt, which it is unable to dissolve when cold. These salts commonly contain much water of crystallization.

213. Other salts are scarcely, if at all, more soluble in hot than in cold water; and therefore, their solutions must be evaporated, either by heat, or spontaneously. These salts commonly contain little water of crystallization.

214. The beauty and size of the crystals depend upon the purity of the solution, its quantity, and the mode of conducting the evaporation and cooling.

215. When the salt is not more soluble in hot than in cold water, by means of gentle evaporation, a succession of pellicles is formed on the top of the solution, which either are removed, or permitted to sink to the bottom by their own weight; and the evaporation is continued until the crystallization be completed.

216. But when the salt is capable of crystallizing on cooling, the evaporation is only continued until a drop of the solution, placed upon some cold body, shows a disposition to crystallize, or at farthest only until the first appearance of a pellicle. The solution is then covered up, and set aside to cool; and the more slowly it cools, the more regular are the crystals. The mother-water, or solution which remains after the crystals are formed, may be repeatedly treated in the same way as long as it is capable of furnishing any more salt.

217. When very large and beautiful crystals are wanted, they may be obtained by laying well-formed crystals in a saturated solution of the same salt, and turning them every day. In this way their size may be considerably increased, though not without limitation; for after a certain time, they grow smaller instead of larger.

218. Crystallization is employed,

1. To obtain crystallizable substances in a state of purity;
2. To separate them from each other, by taking advantage of their different solubility at different temperatures.

OXYGENIZEMENT.

219. The combination of oxygen is the object of many chemical and pharmaceutical processes.

220. With regard to the manner of combination, the oxygenizement may take place, either,

a. Without the production of heat and light, to express which there is no other than the generic term *oxygenizement*; or,

b. With the production of heat and light; *combustion.*

1. In substances which remain fixed at the temperature necessary for their combustion, there is no other more specific term;
2. In substances which exist as gases, or are previously reduced to the state of vapour by the temperature necessary, it is termed *inflammation;* and if it proceed with very great violence and rapidity, *deflagration.*

221. Combustion and inflammation have been already described.

222. *Deflagration*, from its violence, must always be performed with caution. The common mode of conducting this process is, to introduce the substances to be deflagrated together into any convenient vessel, commonly an iron pot, or crucible, heated to redness. But to obviate any inconvenience, and to insure the success of the process, they are previously made perfectly dry, reduced to powder, and thoroughly mixed together. The compound is then deflagrated gradually, generally by spoonfuls; but we must take care always to examine the spoon, lest a spark should adhere to it, which might set fire to the whole mass. During the process, the portion introduced should be frequently stirred.

223. The oxygen necessary for the process of oxygenation may be derived from the decomposition,

a. Of oxygen gas, or atmospheric air;
b. Of oxyds, particularly water;
c. Of acids and their combinations.

224. The different modes of oxygenizement are intended, either,

a. To produce heat and light;

b. To obtain an oxygenized product;

1. An oxyd, when the process may be termed *Oxydizement.*
2. An acid, *Acidification.*

c. To remove an oxygenizable substance.

225. Hydrogen, carbon, and nitrogen, are never, unless for experiment, oxygenized as simple substances.

226. Sulphur is converted into sulphuric acid by burning it in leaden chambers, or by deflagrating it with nitrat of potass: and phosphorus is acidified by inflammation in the atmosphere.

227. Of all the simple oxygenizable substances, the metals are most frequently combined with oxygen; and, as in consequence of this combination, they lose their metallic appearance, they were formerly said to be calcined or corroded.

228. Metals differ very much in the facility with which they are oxygenized by the contact of oxygen gas. For some, as iron and manganese, the ordinary temperature of the atmosphere is necessary; but others, as potassium and sodium, are oxygenized even by the contact of ice; while others as gold, and platinum, scarcely undergo any change in the most violent heat. Upon these the operation is performed by heating them to the requisite temperature, and expo-

sing them to the action of the air: and on the fusible metals it is promoted by stirring them when melted.

229. Metals also differ in the mode of their action upon water. They are either capable of decomposing water,

a. At every temperature, as potassium and sodium.
b. At ordinary temperatures, as iron, zinc, manganese, &c.
c. At elevated temperatures, as antimony and tin; or
d. When acted upon at the same time by an acid or an alkali, as copper, lead, bismuth; or, lastly,
e. They are incapable of decomposing it, as gold, silver, mercury, platinum.

230. The oxygenizement of metals by water is promoted by the action of air. Iron, for example, is more quickly rusted by being merely moistened with water, than when totally immersed in water.

231. But the acids are the most powerful agents in oxygenizing metals. They act, in two ways, either,

1. By enabling them to decompose water;
2. By being decomposed themselves.

232. The metals are susceptible of different degrees of oxygenizement, some of them even of acidification, and, in general, they are more oxygenized according to the rapidity of the process. When proceeding too slowly, it may be accelerated by heat; when too violent, it must be checked by diminution of temperature, as by plunging the vessel in which the operation is performed into cold water.

233. When the degree of oxygenizement is not very great, the oxyd formed generally enters into combination with the acid employed, and forms a metallic salt; but when carried to its highest degree, the oxyd is often insoluble.

DISOXYGENIZEMENT OF METALLIC OXYDS AND ACIDS.

234. This process was formerly termed *reduction*, from its restoring the metals to their metallic splendour, and is performed by causing some body to act upon them, which has a greater affinity for oxygen than they have. The different metals themselves vary very much in the degree of this affinity, so that they are reduced with very different degrees of facility. Gold, silver, platinum, and mercury, are reduced by merely exposing them to a sufficient degree of heat in close vessels. The oxygen at this temperature has a greater affinity for caloric than for the metals, and is therefore driven off in the form of very pure oxygen gas.

235. Some other metallic oxyds which resist the simple action of heat, may be reduced by melting them in contact with charcoal, or substances which may be charred, such as oil, fat, resin, pitch, &c. Besides the charcoal, different saline fluxes are also added to facilitate the fusion of the oxyd.

236. The oxyd to be reduced is mixed with a sufficient quantity of any of these substances, and placed in the bottom of a crucible, which is afterwards filled up with charcoal powder, to prevent entirely the access of the air, and exposed for a length of time to a

sufficiently high temperature, when a button of the metal will commonly be found in the bottom of the crucible. Upon the volatile metals, such as arsenic and zinc, this operation must be performed in a distilling or subliming apparatus. Some metallic oxyds, such as those of platinum, columbium, &c. cannot be reduced, from our being unable to produce a degree of heat sufficient to melt them.

237. But galvanism is by far the most powerful disoxygenizing process. By means of it the metallic bases of the alkalies and earths have been discovered.

238. Metals may be also obtained from the metallic salts, by inserting in a solution of these a plate of another metal, possessing a stronger affinity for oxygen than for the acid. This copper is precipitated by iron, and arsenic by zinc. We must only take care that the two metals have no remarkable affinity for each other, as in that case an alloy is commonly produced. For example, when mercury is placed in a solution of silver, a crystallized amalgam of silver, is obtained, formerly called the Arbor Dianæ.

239. The compound oxyds, (vegetable and animal substances), may be further oxygenized, by treating them with nitric acid. In this way various oxyds and acids are formed, according to the nature of the oxyd operated on, the quantity of the acid, and the mode of conducting the process.

240. These substances also undergo changes by gradually combining with the oxygen of the atmosphere. In some cases, this combination is attended with remarkable phenomena, which have been classed under the term *fermentation.*

241. There are several species of fermentation, which have been named from the products they afford.

1. The saccharine, which produces sugar.
2. The vinous, which produces wine, beer, and similar fluids.
3. The panary, which produces bread.
4. The acetous, which produces vinegar.
5. The putrefactive, which produces ammonia.

242. The same substances are sometimes capable of undergoing the first, second, fourth, and fifth; or third, fourth, and fifth, successively, but never in a retrograde order.

243. The conditions necessaary for all of them are,

1. The presence of a sufficient quantity of fermentable matter;
2. The presence of a certain proportion of water;
3. The contact of atmospheric air; and,
4. A certain temperature.

244. *The saccharine fermentation.*—The seeds of barley, when moistened with a certain quantity of water, and exposed to the contact of the atmospheric air, at a temperature of not less than 50°, swell, and show marks of incipient vegetation, by pushing forth the radicle. If at this period the fermentation be checked, by exposing them to a considerable degree of heat, and drying them thoroughly, the insipid amylaceous matter, of which the seeds principally consisted, will be found to be changed in part into a sweet saccharine sub-

stance. The oxygen of the air, in contact with the seeds, is at the same time converted into carbonic acid gas, by combining with part of the carbon of the seeds; and there is a considerable increase of temperature in the fermenting mass, even to such a degree as sometimes to set it on fire. Similar phenomena occur in the maturation of fruits; in the cookery of some roots and fruits, and during the heating of hay, when put up too wet.

245. *The vinous fermentation.*—The conditions necessary for the vinous fermentation, are, the presence of proper proportions of sugar, acid, extract, and water, and a temperature of about 70°. When these circumstances exist, an intestine motion commences in the fluid; it becomes thick and muddy, its temperature increases, and carbonic acid gas is evolved. After a time the fermentation ceases, the feces rise to the top, or subside to the bottom, the liquor becomes clear, it has lost its saccharine taste, and assumed a new one, and its specific gravity is diminished. If the fermentation has been complete, the sugar is entirely decomposed, and the fermented liquor consists of a large proportion of water, of alcohol, of malic acid, of extract, of essential oil, and colouring matter. The substances most commonly subjected to this fermentation are must, which is the expressed juice of the grape, and which produces the best wines; the juice of the currant and gooseberry, which, with the addition of sugar, form our home-made wines; the juices of the apple and pear, which give cyder and perry; and an infusion of malt, which, when fermented with yeast, forms beer. The briskness and sparkling of some of these liquors depend on their being put into close vessels before the fermentation is completed, by which means a portion of carbonic acid gas is retained.

246. *The acetous fermentation.*—All vinous liquors are susceptible of the acetous fermentation, provided they be exposed to the action of the atmosphere, in a temperature not less than 70°. An intestine motion and hissing noise sensibly take place in the fluid; it becomes turbid, with filaments floating in it, and its temperature increases; it exhales a pungent acid smell, without any disengagement of carbonic acid gas. Gradually these phenomena cease; the temperature decreases, the motion subsides, and the liquor becomes clear, having deposited a sediment and red glairy matter, which adheres to the sides of the vessel. During this process, the alcohol and malic acid disappear entirely, oxygen is absorbed, and acetous acid formed.

247. *The panary and colouring fermentation*—is less understood than those already described. A paste of wheat-flour and water, exposed to a temperature of 65°, swells, emits a small quantity of gas, and acquires new properties. The gluten disappears, and the paste acquires a sour disagreeable taste. If a just proportion of this fermented paste or leaven, or, what is still better, if some barm, be formed into a paste with wheat-flour and water, the same fermentation is excited, without the disagreeable taste being produced; the gas evolved is prevented from escaping by the viscidity of the paste, which therefore swells, and if baked, forms light spongy bread.

248. *The putrefactive fermentation.*—Although vegetable substances, when they are destroyed by spontaneous decomposition, are

said to putrefy, we shall consider this fermentation as belonging exclusively to animal substances, or those which contain nitrogen as an elementary principle. The essential conditions of putrefaction are humidity, and a temperature between 45° and 110°. The presence of air, the diminution of pressure, and the addition of ferments, are not essential, but accelerate its progress. The smell is at first vapid and disagreeable, but afterwards insupportably fetid, although the fetor, for a time, is somewhat diminished by the mixture of an ammoniacal odour. Liquids become turbid and flocculent. Soft substances melt down into a gelatinous mass, in which there is a kind of gentle motion and swelling up from the slow and scanty formation of elastic fluids. Solids, beside the general softening, exude a serosity of various colours, and by degrees the whole mass dissolves, the swelling ceases, the matter settles, and its colour deepens; at last its odour becomes somewhat aromatic, its elements are finally dissipated, and there remains only a kind of fat, viscid, and still fetid mould. The products of putrefaction are carburetted, sulphuretted, and phosphuretted hydrogen gases, water, ammonia, azote, and carbonic acid. These are all dissipated in the form of gas or vapour. When in contact with air, oxygen is absorbed. Acetic acid, a fatty matter, a soap composed of this fat and ammonia, and often the nitric acid, fixed by a salifiable base, are also produced; and the ultimate remains, besides salts, composed of acid and earths, contain for a long time a portion of fat charry matter.

APPENDIX.

TABLES OF WEIGHTS AND MEASURES.

ENGLISH.

APOTHECARIES' WEIGHT, L.

Pound.		Ounces.		Drams.		Scruples.		Grains.		Grammes.
℔ 1	=	12	=	96	=	288	=	5760	=	372.96
		℥ 1	=	8	=	24	=	480	=	31.08
				ʒ 1	=	3	=	60	=	3.885
						℈ 1	=	20	=	1.295
								gr. 1	=	0.06475

SIGNS OF QUANTITY.

A pound	℔i	A scruple	℈i
An ounce	℥i	A grain	gr. i
A drachm	ʒi		

Table for converting Ounces, Drams, and Grains Troy into Decimals of the Troy Pound.

Grain.	lbs. Troy.	Dram.	lbs. Troy.	Oz.	lbs. Troy.
1 =	.000173611	1 =	.0104166	1 =	.0833
2 =	.000347222	2 =	.0208333	2 =	.1666
3 =	.000520833	3 =	.0312500	3 =	.2500
4 =	.000694444	4 =	.0416666	4 =	.3333
5 =	.000868055	5 =	.0520833	5 =	.4166
6 =	.001041666	6 =	.0625000	6 =	.5000
7 =	.001215277	7 =	.0729166	7 =	.5833
8 =	.001388888			8 =	.6666
9 =	.001562500			9 =	.7500
				10 =	.8333
				11 =	.9166

Table for converting Decimals of the Troy Pound into Troy Ounces, Drams, and Grains.

lb.		oz.	dr.	grs.	lb.		oz.	dr.	grs.	lbs.		grains.
.1	=	1	1	36	.01	=	0	0	57.6	.001	=	5.76
.2	=	2	3	12	.02	=	0	1	55.2	.002	=	11.52
.3	=	3	4	48	.03	=	0	2	52.8	.003	=	17.28
.4	=	4	6	24	.04	=	0	3	50.4	.004	=	23.04
.5	=	6	0	0	.05	=	0	4	48.0	.005	=	28.80
.6	=	7	1	36	.06	=	0	5	45.6	.006	=	34.56
.7	=	8	3	12	.07	=	0	6	43.2	.007	=	40.32
.8	=	9	4	48	.08	=	0	7	40.8	.008	=	46.08
.9	=	10	6	24	.09	=	0	8	38.4	.009	=	51.84

AVOIRDUPOIS WEIGHT.

Pounds.		Ounces.		Drams.		Troy grains.		Grammes.
1	=	16	=	256	=	7000	=	453.35
		1	=	16	=	437.5	=	28.32
				1	=	27.34375	=	1.81

Table for converting Avoirdupois Ounces into Decimals of the Avoirdupois Pound.

oz. Av.		lbs. Av.	oz. Av.		lbs. Av.
.25	=	.015625	8.00	=	.5000
.50	=	.03125	9.00	=	.5625
1.00	=	.0625	10.00	=	.6250
2.00	=	.1250	11.00	=	.6875
3.00	=	.1875	12.00	=	.7500
4.00	=	.2500	13.00	=	.8125
5.00	=	.3125	14.00	=	.8750
6.00	=	.3750	15.00	=	.9375
7.00	=	.4375			

Table for converting Decimals of the Avoirdupois Pound into Avoirdupois Ounces and Decimals.

lbs. Av.		oz. Av.	lbs. Av.		oz. Av.
.1	=	1.6	.01	=	.16
.2	=	3.2	.02	=	.32
.3	=	4.8	.03	=	.48
.4	=	6.4	.04	=	.64
.5	=	8.0	.05	=	.80
.6	=	9.6	.06	=	.96
.7	=	11.2	.07	=	1.12
.8	=	12.8	.08	=	1.28
.9	=	14.44	.09	=	1.44

Table for converting Troy Pounds into their equivalent Avoirdupois Pounds.

lbs. Troy.		lbs. Avoirdup.
1	=	0.82285714
2	=	1.64571428
3	=	2.46857142
4	=	3.29142857
5	=	4.11428571
6	=	4.93714285
7	=	5.76000000
8	=	6.58285714
9	=	7.40571428

Table expressing the relative Weight in Avoirdupois of various Weights Troy.

TROY.		AVOIRDUPOIS.		
dr.		dr.		gr.
1	=	2	:	5.3125
2	=	4	:	10.625
3	=	6	:	15.9375
4	=	8	:	21.25
5	=	10	:	26.5625
6	=	13	:	4.53125
7	=	15	:	9.84375
8	=	17	:	15.15625

TROY.		AVOIRDUPOIS.		
oz.		oz.		gr.
1	=	1	:	42.5
2	=	2	:	85.
3	=	3	:	127.5
4	=	4	:	170.
5	=	5	:	212.5
6	=	6	:	255.
7	=	7	:	297.5
8	=	8	:	340.
9	=	9	:	382.5
10	=	10	:	425.
11	=	12	:	30.
12	=	13	:	72.5

TROY.		AVOIRDUPOIS.		
lb.		lb.	oz.	gr.
1	=	0	13	72.5
2	=	1	10	145
3	=	2	7	217.5
4	=	3	4	290
5	=	4	1	362.5
6	=	4	14	435
7	=	5	12	70
8	=	6	9	142.5
9	=	7	6	215
10	=	8	3	287.5
11	=	8	0	360
12	=	9	13	432.5
13	=	10	11	67.5
14	=	11	8	140
15	=	12	5	212.5
16	=	13	2	285
17	=	13	15	359.5
18	=	14	12	430
19	=	15	10	65
20	=	16	7	137.5
30	=	24	10	425
40	=	32	14	275
50	=	41	2	125
60	=	49	5	412.5
70	=	57	9	262.5
80	=	65	13	112.5
90	=	74	0	400
100	=	82	4	250
200	=	164	9	62.5
300	=	246	13	312.5
400	=	293	2	125
500	=	411	6	375

Table for converting Avoirdupois Pounds into their equivalent Troy Pounds.

lbs. Avoird.		lbs. Troy.	lbs. Avoird.		lbs. Troy.
1	=	$1.21527\dot{7}$	6	=	$7.29166\dot{6}$
2	=	$2.43055\dot{5}$	7	=	$8.50694\dot{4}$
3	=	$3.64583\dot{3}$	8	=	$9.72222\dot{2}$
4	=	$4.86111\dot{1}$	8	=	10.937500
5	=	$6.07638\dot{8}$			

Table expressing the relative value in Troy Weight of various Weights Avoirdupois.

AVOIRDUPOIS. dr.		TROY. dr.	gr.	AVOIRDUPOIS. oz.		TROY. oz.	dr.	gr.
1	=	0	27.34375	1	=	0	7	17.5
2	=	0	54.68750	2	=	1	6	35
3	=	1	22.03125	3	=	2	5	52.5
4	=	1	49.37500	4	=	3	5	10
5	=	2	16.71875	5	=	4	4	27.5
6	=	2	44.06250	6	=	5	3	55
7	=	3	11.40625	7	=	6	3	2.5
8	=	3	38.75000	8	=	7	2	20
9	=	4	6.09375	9	=	8	1	37.5
10	=	4	33.43750	10	=	9	0	55
11	=	5	00.78125	11	=	10	0	22.5
12	=	5	28.13500	12	=	10	7	50
13	=	5	55.46875	13	=	11	6	57.5
14	=	6	22.81250	14	=	12	6	5
15	=	6	50.15625	15	=	13	5	22.5
16	=	7	17.50000	16	=	14	4	40

AVOIRDUPOIS. lb.		TROY. lb.	oz.	dr.	gr.	AVOIRDUPOIS. lb.		TROY. lb.	oz.	dr.	gr.
1	=	1	2	4	40	17	=	20	7	7	20
2	=	2	5	1	20	18	=	21	10	4	00
3	=	3	7	6	00	19	=	23	1	0	40
4	=	4	10	2	40	20	=	24	3	5	20
5	=	6	0	7	20	30	=	36	5	4	00
6	=	7	3	4	00	40	=	48	7	2	40
7	=	8	6	0	40	50	=	60	9	1	20
8	=	9	8	5	20	60	=	72	11	0	00
9	=	10	11	2	00	70	=	85	0	6	40
10	=	12	1	6	40	80	=	97	2	5	20
11	=	13	4	3	20	90	=	109	4	4	00
12	=	14	7	0	00	100	=	121	6	2	40
13	=	15	9	4	40	200	=	243	0	5	20
14	=	17	0	1	20	300	=	364	7	0	00
15	=	18	2	6	00	400	=	486	1	2	40
16	=	19	5	2	40	500	=	607	7	5	20

MEASURE, LONDON PHARMACOPŒIA.

Gal.	Pints.	Fluidoun.	Fluidr.	Minims.	Troy Gr.	Cub. Inch.	Litres.
1	8	128	1024	61440	58443	231	3.78515
	O 1	16	128	7680	7305	28.875	0.47398
		f℥ 1	8	480	456.5	1.8047	0.02957
			fʒ 1	60	57	9.2256	0.00396
				♏ 1	0.9	0.0374	0.00066

ENGLISH WINE MEASURE.

Ton.	Pipe or Butt.	Punch.	Hogsh.	Tierce.	Gallon.	Cub. Inch.
1	2	3	4	6	252	58212
	1	$1\frac{1}{2}$	2	3	126	29106
		1	$1\frac{1}{3}$	2	84	19404
			1	$1\frac{1}{2}$	63	14553
				1	42	9902
					1	231

ENGLISH ALE MEASURE.

Hogsh.	Barrel.	Kilderk.	Firkin.	Gallon.	Quart.	Pint.	Cub. Inch.
1	$1\frac{1}{2}$	3	6	51	204	408	14382
	1	2	4	34	136	272	9588
		1	2	17	68	136	4794
			1	$8\frac{1}{2}$	34	68	2397
				1	4	8	282
					1	2	$70\frac{1}{2}$
						1	$35\frac{1}{4}$

SCOTS LIQUID MEASURE.

Gal.	Quart.	Pint.	Choppin.	Mutchkin.	Gills.	Cub. Inch.
1	4	8	16	32	128	840
	1	2	4	8	32	210
		1	2	4	16	105
			1	2	8	52.5
				1	4	26.25
					1	6.56

In the preceding Tables, the cubic inch of water is estimated at 253 Troy Grains. In the succeeding Tables calculated by Mr. Fletcher it is estimated at 252.506 Troy Grains 60° Fahr. and 29.5 Bar.

	Cubic Inches.		Wine Pint.		Ale Pint.
1 lb. Troy,	22.81134	=	0.7900031	=	0.6471302
1 lb. Avoirdupois,	27.72135	=	0.960073	=	0.7864429

	Cubic Inches.	Troy.	lbs. oz. dr. grs.	lbs. Avoir.
1 ale gallon	= 282	= 12.362372	= 12 : 4 : 2 : 48.12672	= 10.172384
1 ale quart	= 70.5	= 3.090568	= 3 : 1 : 0 : 42.03168	= 2.543096
1 ale pint	= 35.25	= 1.545284	= 1 : 6 : 4 : 21.01584	= 1.271543

Table for converting Wine Pints of Water into their equivalent Troy and Avoirdupois Pounds.

Wine Pints.	lbs. Troy.	lbs. Troy.	oz.	dr.	grs.	lbs. Avoirdup.
1 =	1.26581783 =	1 :	3 :	1 :	31.1 =	1.04158725
2 =	2.53163566 =	2 :	6 :	3 :	2.2 =	2.08317450
3 =	3.79745349 =	3 :	9 :	4 :	33.3 =	3.12476175
4 =	5.06327132 =	5 :	0 :	6 :	4.4 =	4.16634900
5 =	6.32908915 =	6 :	3 :	7 :	35.5 =	5.20793625
6 =	7.59490698 =	7 :	7 :	1 :	6.6 =	6.24952350
7 =	8.86072481 =	8 :	10 :	2 :	37.7 =	7.29111075
8 =	10.12654264 =	10 :	1 :	4 :	8.8 =	8.33269800
9 =	11.39236047 =	11 :	4 :	5 :	39.9 =	9.37428525

Table for converting Cubic Inches of Water (at 60° Fahr. and 29.5 Bar.) into their equivalents in Troy weight.

Cub. Inch of Water.		Troy grs.		oz.		dr.		grs.
1	weighs	252.506	=	0	:	4	:	12.506
2		505.012	=	1	:	0	:	25.012
3		757.518	=	1	:	4	:	37.518
4		1010.024	=	2	:	0	:	50.024
5		1262.530	=	2	:	5	:	2.530
6		1515.036	=	3	:	1	:	15.036
7		1767.542	=	3	:	5	:	27.542
8		2020.048	=	4	:	1	:	40.048
9		2272.554	=	4	:	5	:	52.554
1728 (1 cub. foot)		———		909	:	0	:	10.368

Table for converting the Ounce Measure used by Dr. Priestley to Cubical Inches.

Ounce measures.	French Cubical Inches.	English Cubical Inches.
1	1.567	1.898
2	3.134	3.796
3	4.701	5.694
4	6.268	7.592
5	7.835	9.490
6	9.402	11.388
7	10.969	13.286
8	12.536	15.184
9	14.103	17.082
10	15.670	18.980
20	31.340	37.960
30	47.010	56.940
40	62.680	75.920
50	78.350	94.900
60	94.020	113.880
70	109.690	132.860
80	125.360	151.840
90	141.030	170.820
100	156.700	189.800
1000	1567.000	1898.000

Correspondence between English and Foreign Weights and Measures.

NEW FRENCH.

'To employ, as the fundamental unity of all measures, a type 'taken from nature itself, a type as unchangeable as the globe on 'which we dwell,—to propose a metrical system, of which all the 'parts are intimately connected together, and of which the mul- 'tiples and subdivisions follow a natural progression, which is simple, 'easy to comprehend:—this is most assuredly a beautiful, great, and 'sublime idea, worthy of the enlightened age in which we live.'

Such were the ideas which influenced the French National Institute, when they chose, as the base of the whole metrical system, the fourth part of the terrestial meridian between the equator and the north pole. They adopted the ten millionth part of this arc for the unity of measure, which they denominated *meter*, and applied it both to superficial and solid measures, taking for the unity of the former, *are*, the square of the decuple, and for that of the latter, *litre*, the cube of the tenth part of the metre. They chose for the unity of weight, *gramme*, the quantity of distilled water which the same cube contains when reduced to a constant state presented by nature itself;

and, lastly, they decided, that the multiples and submultiples of each kind of measure, whether of weight, capacity, or length, should be always taken in the decimal progression, as being the most simple, the most natural, and the most easy for calculation, according to the system of numeration which all Europe has employed for centuries, and they used the prefixes, *deca*, *hecto*, *kilo*, and *myria*, taken from the Greek numerals, to express the multiplication of the integer by 10, 100, 1000, and 10000 respectively, and *deci*, *centi*, *milli*, taken from the Latin numerals, to express its division.

By a careful measurement of the arc between Dunkirk and Mountjoy, they found the length of the metre to be equal to 443.296 lines of the toise of Peru. The cubic decimetre of distilled water, taken at its maximum of density and weight *in vacuo*, that is, the unity of weight, was found to be 18827.15 grains of the pile of Charlemagne.

The *metre* at 32° = 39.371 English inches at 62°.
The square metre = 1550.075641 English square inches.
The square decimetre = 15.50075 English square inches.
100 *ares* or square decametres = 2 English acres nearly.

Cub. feet. cub. inch.
The cubic metre = 61028.028 English cubic inches = 355 48.028.
The cubic decimetre, or *litre* = 61.028 English cubic inches.
Equal to the bulk of a killogramme of water.

Troy gr.
The gramme or weight of a cubic centimetre of water = 15.44402.

MEASURES OF LENGTH.

The Metre being at 32°, and the Foot at 62°.

		English Inches.		Mil.	Fur.	Yards.	Feet.	Inch.
Millimetre	=	.03937						
Centimetre	=	.39371						
Decimetre	=	3.93710						
Metre	=	39.37100						
Decametre	=	393.71000	=	0	0	10	2	9.7
Hecatometre	=	3937.10000	=	0	0	109	1	1
Kilometre	=	39371.00000	=	0	4	213	1	10.2
Myriametre	=	393710.00000	=	6	1	156	0	6

Metre.		Eng. feet.		Inches.
1	=	3	:	3.371
2	=	6	:	6.742
3	=	9	:	10.113
4	=	13	:	1.484
5	=	16	:	4.855
6	=	19	:	8.226
7	=	22	:	11.597
8	=	26	:	2.968
9	=	29	:	6.339

Decimetre.		Eng. inches.
1	=	3.9731
2	=	7.8742
3	=	11.8113
4	=	15.7484
5	=	19.6855
6	=	23.6226
7	=	27.5597
8	=	31.4968
9	=	35.4339

MEASURES OF CAPACITY.

		Cubic Inches.		ENGLISH. Tons.	Hogs.	Wine. gal.	Pints.
Millilitre	=	.06103					
Centilitre	=	.61028					
Decilitre	=	6.10280					
Litre	=	61.02800	=	0	0	0.	2.1133
Decalitre	=	610.28000	=	0	0	2.	5.1352
Hecatolitre	=	6102.80000	=	0	0	26.419	
Kilolitre	=	61028.00000	=	1	0	12.19	
Myrialitre	=	610280.00000	=	10	1	58.9	

Litre.		Eng. cub. inch.		Ale pints.		Wine pints.		Oz. troy of water.
1	=	61.028	=	1.7313	=	2.11353	=	31.104
2	=	122.056	=	3.4626	=	4.22706	=	64.208
3	=	183.084	=	5.1939	=	6.34059	=	96.312
4	=	244.112	=	6.9252	=	8.45412	=	128.416
5	=	305.140	=	8.6565	=	10.56765	=	160.520
6	=	366.168	=	10.3878	=	12.68118	=	192.624
7	=	427.196	=	12.1191	=	14.79471	=	224.728
8	=	488.224	=	13.8504	=	16.90824	=	256.832
9	=	549.252	=	15.5817	=	19.02177	=	288.936

MEASURES OF WEIGHT.

		English grains.		AVOIRDUPOIS. Pounds.	Oun.	Dram.
Milligramme	=	.0154				
Centigramme	=	.1544				
Decigramme	=	1.5444				
Gramme	=	15.4440				
Decagramme	=	154.4402	=	0	0	5.65
Hecatogramme	=	1544.4023	=	0	3	8.5
Kilogramme	=	15444.0234	=	2	3	5
Myriagramme	=	154440.2344	=	22	1	2

Gram.	Troy. grs.	Deca-gram.	Troy dram.	Troy grs.	Hecto-gram.	Troy oz.	Avoird. oz.
1. =	15.444	1. =	2 :	34.44	1. =	3.2175	= 3.5279
2. =	30,888	2. =	5 :	8.88	2. =	6.4350	= 7.0558
3. =	46.332	3. =	7 :	43.32	3. =	9.6525	= 10.5837
4. =	61.776	4. =	10 :	17.76	4. =	12.8700	= 14.1116
5. =	77.220	5. =	12 :	52.20	5. =	16.0875	= 17.6395
6. =	92.664	6. =	15 :	26.64	6. =	19.3050	= 21.1674
7. =	108.108	7. =	18 :	1.08	7. =	22.5295	= 24.6953
8. =	123.552	8. =	20 :	35.52	8. =	25.7400	= 28.2232
9. =	138.996	9. =	23 :	9.96	9. =	28.9575	= 31.7511

The decimal progression of all the French weights and measures renders it only necessary to change the decimal point in order to convert one into the equivalent of any other of the same species and numerically the same, but of a different denomination. Thus as 9 litres are equal to 15.5817 ale pints, 9 hectolitres will be equal to 1558.17 ale pints; and so of the rest.

Weights and Measures used in France before the Revolution.

DIVISION OF FRENCH WEIGHTS.

	Pound.	Ounces.	Gros.	Deniers.	Grains.	Troy grs.
Poids de Marc	1 =	16 =	128 =	384 =	9216 =	7561
Apothecary	1 =	12 =	96 =	288 =	6912 =	5670.5
Marc	1 =	8 =	84 =	142 =	4808 =	3780.5
		1 =	8 =	24 =	576 =	472.6
			1 =	3 =	72 =	59.1
				1 =	24 =	19.7
					1 =	0.8

	Troy grains.	
The French pound =	7561	= 1.31268 lb. troy.
ounce =	472.5625	= 0.984504 oz. troy.
gros =	59.0703125	= 0.984504 dram.
grain =	0.820421	

The English troy pound of 12 ounces	= 7021	Paris grains.
The troy ounce - - - -	= 585.0833	
The dram of 60 grains - -	= 73.1351	
The penny-weight or denier, of 24 grains - - -	29.2544	
The scruple of 20 grains - -	= 4.3784	
The grain - - - -	= 1.2189	
The avoirdupois pound of 16 ounces, or 7000 troy grains,	= 8538.	Paris grains.
The ounce - - - - -	= 533.6250	

To reduce Paris grains to English grains, divide by English grains to Paris grains, multiply by	1.2189
Paris ounces to English troy ounces, divide by English troy ounces to Paris ounces, multiply by	1.015734
Pound (Poids de Marc) to troy pound, multiplyby Troy pound to pound Poids de Marc, divide by	1.31268

Table showing the Comparison between English and French Weights (Poids de Marc.)

English Grs.		French Grs.	English Grs.		French Grs.
1	=	1.2189	9	=	10.9704
2	=	2.4378	10	=	12.1890
3	=	3.6568	20	=	24.378
4	=	4.8757	30	=	36.568
5	=	6.0947	40	=	48.757
6	=	7.3136	50	=	60.947
7	=	8.5325	60	=	73.136

French Grs.		Troy Grs.	French Grs.		Troy Grs.
1.	=	0.820421	10.	=	8.20421
2.	=	1.640842	20.	=	16.40842
3.	=	2.461263	30.	=	24.61263
4.	=	3.281684	40.	=	32.81684
5.	=	4.102105	50.	=	41.02105
6.	=	4.922526	60.	=	49.22526
7.	=	5.742947	70.	=	57.42947
8.	=	6.563368	72.	=	59.070312
9.	=	7.383789			

Gros.		Drams.		Grs.	Gros.		Drams.		Grs.
1	=	0	:	59.07	5	=	4	:	55.35
2	=	1	:	58.14	6	=	5	:	54.42
3	=	2	:	57.21	7	=	6	:	53.49
4	=	3	:	56.28					

Fr. oz.		Troy oz.		Drs.		Grs.	Fr. oz.		Troy oz.		Drs.		Grs.
1.	=	0	:	7	:	52.56	9.	=	8	:	6	:	53.04
2.	=	1	:	7	:	45.12	10.	=	9	:	6	:	45.60
3.	=	2	:	7	:	37.68	11.	=	10	:	6	:	38.16
4.	=	3	:	7	:	30.24	12.	=	11	:	6	:	30.72
5.	=	4	:	7	:	22.80	13.	=	12	:	6	:	23.28
6.	=	5	:	7	:	15.36	14.	=	13	:	6	:	15.84
7.	=	6	:	7	:	7.92	15.	=	14	:	6	:	8.40
8.	=	7	:	7	:	0.48							

Fr. pounds.		Tr. oz.		dr.		Grs.	Fr. pounds.		Tr. oz.		dr.		Grs.
1.	=	15	:	6	:	1	6.	=	94	:	4	:	6
2.	=	31	:	4	:	2	7.	=	110	:	2	:	7
3.	=	47	:	2	:	3	8.	=	126	:	0	:	8
4.	=	63	:	0	:	4	9.	=	141	:	6	:	9
5.	=	78	:	6	:	5							

LONG MEASURE.

		French Inches. feet.	inches.	lines.		English Inches.
The French ell, *Aune,*	=	3	7	10.5	=	46.69
The half toise	=	3			=	38.355
		English Foot.				
The foot	=	1.0654167			=	12.785
The inch					=	1.0654
The line					=	0.0888
		French Foot.				French Inches.
The English foot	=	0.9386			=	11.2632
The inch					=	0.9386
The line					=	00.7823

To reduce French feet or inches to English feet or inches, multiply by 1. 0654167, or divide by 0.9386.

To reduce English long measure to French, multiply by 0.9386, or divide by 1.0654167.

Tables expressing the value of French feet and inches in English Measure.

French feet.		English inches.	Fr. feet or in.		Eng. feet or in.
1.	=	12.785	1	=	1.0654+
2.	=	25.570	2	=	2.1308
3.	=	38.355	3	=	3.1962
4.	=	51.140	4	=	4.2616
5.	=	63.925	5	=	5.3270
6.	=	76.710	6	=	6.3925
7.	=	89.495	7	=	7.4579
8.	=	102.280	8	=	8.5233
9.	=	115.065	9	=	9.5887
10.	=	127.850	10	=	10.6541
			11	=	11.7195
			12	=	12.7850

SQUARE MEASURE.

The French square foot or inch = 1.13510 English.
The English square foot or inch = .88126 French.

To reduce French square measure to English, multiply by 1.13510, or divide by 0.88126.

To reduce English square measure to French, multiply by 0.88126, or divide by 1.13510.

CUBE MEASURE.

The French cubic foot or inch, = 1.209367 English.
The English cubic foot or inch, = 0.8263784 French.

To reduce French cube measure to English, multiply by 1.209367, or divide by 0.8268784.

To reduce English cube measure to French, multiply by 0.8268784, or divide by 1.209367.

When one French cubic inch weighs 1 grain French, or contains 1 grain of any substance; one English cubic inch weighs or contains 0.67839 English grains.

To reduce the weight or contents of French cube measure in French grains, to the weight or contents of English cube measure in Troy grains, multiply by 0.67839.

French cube foot or inch.		Eng. cube foot or inch.	French cube foot or inch.		Eng. cube foot or inch.
1	=	1.2093+	6	=	7.2562
2	=	2.4187	7	=	8.4655
3	=	3.6181	8	=	9.6749
4	=	4.8374	9	=	10.8842
5	=	6.0468	10	=	12.0936

MEASURES OF CAPACITY FROM BAUME.

	Pint.		chop.		demisetier.		poisson.		demipoisson.		oz.
Pinte	1	=	2	=	4	=	8	=	16	=	32
Chopine			1	=	2	=	4	=	8	=	16
Demisetier					1	=	2	=	4	=	8
Poisson							1	=	2	=	4
Demipoisson									1	=	2
Once										=	1

The legal pint in common use in Paris seems to have been different from that now taken from Baumé, which perhaps is peculiar to apothecaries. Their relations are the following:

		Fr. cub. in.		Eng. cub. in.		Eng. wine pint.		Tr. pound.		Litres.
Common pinte	=	48	=	58.05	=	2.01	=	2.54	=	0.95
Baumé's pinte	=	49.52	=	59.89	=	2.07	=	2.62	=	0.98

Table showing the relative value of the old and new French weights and measures in round numbers, (Parmentier.)

Kilogramme	=	2 livres, Poid de Marc
Demikilogramme	=	1 livre
Gramme	=	18 grains
Demigramme	=	9 grains
2 Grammes	=	½ gros
4 Grammes	=	1 gros
8 Grammes	=	2 gros
32 Grammes	=	1 once
Decigramme	=	2 grains
Demidecigramme	=	1 grain
3 Decigramme	=	6 grains
12 Decigramme	=	24 grains
1 Litre	=	1 pinte
Demilitre	=	1 chopine
Quart de Litre	=	demisetier

GERMAN.

COLOGNE WEIGHT.

Marc.	Oz.	Loth.	Drs.	Pwts.	Hellers.	As.	Eschen.	Grs.	St. parts.
1 =	8 =	16 =	64 =	256 =	512 =	1792 =	4352 =	6144 =	65536
	1 =	2 =	8 =	32 =	64 =	224 =	544 =	768 =	8192
		1 =	4 =	16 =	32 =	112 =	272 =	384 =	4096
			1 =	4 =	8 =	28 =	68 =	96 =	1024
				1 =	2 =	7 =	17 =	24 =	256

NUREMBERG, OR APOTHECARIES WEIGHT.

Pound.		Ounces.		Drachms.		Scruples.		Grains.		Troy grs.
1	=	12	=	96	=	288	=	5760	=	5388
		1	=	8	=	24	=	480	=	460.5
				1	=	3	=	60	=	57.5
						1	=	20	=	19.2
								1	=	0.96

Table showing the Comparison between Grammes and Troy, French, and Nuremberg Apothecary Grains.

Gramme.		Troy.		Poids de Marc.		Nuremberg.
1	=	15.444	=	18.883	=	16.128
2	=	30.888	=	37.766	=	32.256
3	=	46.332	=	56.648	=	48.384
4	=	61.776	=	75.530	=	64.512
5	=	77.220	=	94.413	=	80.641
6	=	92.664	=	113.296	=	96.769
7	=	108.108	=	132.179	=	112.897
8	=	123.552	=	151.062	=	129.026
9	=	138.996	=	169.944	=	145.154
10	=	154.440	=	188.827	=	161.282

Swedish Weights and Measures, used by Bergman and Scheele.

The Swedish pound, which is divided like the English apothecary, or troy pound, weighs 6556 grains troy.

The kanne of pure water, according to Bergman, weighs 42250 Swedish grains; and occupies 100 Swedish cubical inches. Hence the kanne of pure water weighs 48083.719444 English troy grains, or is equal to189.9413 English cubic inches; and the Swedish longitudinal inch is equal to 1.238435 English longitudinal inches.

From these data, the following rules are deduced:

1. To reduce Swedish longitudinal inches to English, multiply by 1,2384, or divide by 0.80747.

2. To reduce Swedish to English cubical inches, multiply by 1.9, or divide by 0.5265.

3. To reduce the Swedish pound, ounce, drachm, scruple, or grain, to the corresponding English troy denomination, multiply by 1.1382, or divide by .8786.

4. To reduce the Swedish kannes to English wine-pints, multiply by .1520207, or divide by 6.57804.

5. The lod, a weight sometimes used by Bergman, is the 32d part of the Swedish pound; therefore, to reduce it to the English troy pound, multiply by .03557, or divide by 28.1156.

Relation of the Pound Weight in different Countries of Europe to each other; in French Grains.

Warsaw	15288	Dantzic	8791
Vienna	10688	Madrid	8656
Amsterdam	9258	Frankfort	8650
Geneva	9234	Marseilles	8054
Paris	9216	Stockholm	8000
Lisbon	9212	London	7140
Strasburgh	9015	German apothecary	6733
Copenhagen	8876	Florence and Rome	6386
Berlin	8816	Naples	6218
Manheim	8804.5	Genoa	6180
Hamburgh	8799.5	Milan	5400
Cologne	8797.5	Venice	5040

TABLES OF SPECIFIC GRAVITIES.

ACIDS.

Acetic		1.0626	L.
	T.	1.080	
Acetous	T.	1.007 to 1.0095	
Arsenous, glassy	B.	5.000	
Arsenous, common	B.	3.706	
	Du.	1.8731	
Benzoic	H.	0.667	
Boracic, scales	K.	1.479	
Boracic, fused	H.	1.803	
Formic	T.	1.102 to 1.113	
		0.9942	L.
Citric	Du.	1.0345	
Laccic	P.	1.025	
Fluoric		1.5000	L.
Molybdic	T.	3.460	
Muriatic, liquid		1.1940	L.
Nitric, liquid	R.	1.583	
	K.	1.5543	
	Du.	1.504	
		1.5800	L.
common		1.2715	L.
Oxalic, liquid	B.	1.0593	
Oxymuriatic, liquid	Ber.	1.003	
Phosphoric	Du.	1.5575	
dry	B.	2.687	
glass	H.	2.8516	
liquid	T.	1.417	
Saclactic, liquid	M.	1.0015	
Sulphuric		2.125	L.
	T.	2.000	
common	T.	1.85	
		1.8409	L.
Sulphurous, liquid	T.	1.0513	
Sulphuretted muriatic		1.623	T.
Tartaric	H.	1.5962	

Actinolite, asbestous		2.584 to 2.916	T.
common		3.000 to 3.310	T.
glassy		2.95 to 3.903	
Adamantine spar	Kl.	3.981	
Adhesive slate	Kl.	2.080	
Adularia	S.	2.500 to 2.600	
	T.	2.559	
	M.	2.561	
Ætites	T.	2.574	
Alalite		3.2374	

Alcohol, see table of specific gravity of - -			
Alcohol of sulphur -	T.	1.3	
Agate, oriental - -	L.	2.5901	
onyx - -	L.	2.6375	
Aloes, hepatic - -	L.	1.3586	
socotorine -	L.	1.3795	
Alabaster antique - -	L.	2.7141	
	Hy.	2.7302	
Acajou, gum - -	L.	1.4456	
Alumine - - -	K.	2.000	
	H.	0.8200	
Amber, yellow transparent	L.	1.0780	
opaque -	Du.	1.0855	
red - -	Du.	1.0834	
green - -	Du.	1.0829	
Ambergris - -	L.	0.9263	
	Du.	0.7800	
	G.	0.844 to	0.849
Amethyst, common -	T. J.	2.750	
oriental - -	Hy.	2.651	
Amianth - - -	T.	0.9888 to	2.3134
Ammonia, liquid	T.	0.900	
	L.	0.8970	
	Du.	0.9054	
Ammonium - - -	—	.3	T.
Ammoniac-gum - -		1.2071	L.
Amphigene - -	Kl.	2.455 to	2.490
Analcime - - - -	T.	2. +	
Anatase - -		3.8571	T.
Annatto - - -		0.5956	L.
Anime, oriental - -		1.0284	L.
occidental - -		1.0426	L.
Alouchi-gum - -		1.0604	L.
Arcanson - - -		1.0857	L.
Aqua marine, oriental		3.5489	L.
occidental		2.7227	L.
Assafœtida - - -		1.3275	L.
Asphaltum, cohesive -		1.450 2.060	Du.
compact -		1.070 1.165	Du.
Andaluzite - - -		3.165	Haw.
Andreolite - - -	T.	2.333 to	2.361
Anhydrite - - -		2.940	Kl.
Anthracite - -	T.	1.415 to	1.800
Antophyllite - -		3.156	T.
Apatite - - -	T.	2.824	3.2
Apophyllite - - -	T.	2.491	
Arctizite - - -		3.6063	Dan.
Arendate vel acanticone		3.4529 to	3.46 T.
Argentine - - -		2.740	T.
Argil, see alumine -			
Arragonite - - -		2.9465	Haw.
Argillite - - -	T.	2.67 to	2.88
Asbestus, common -	T.	2.547 to	2.995
elastic -	B.	0.903 to	0.680
amianthus -	T.	0.9888 to	2.3134

Asparagus stone	J.	3.098		
Augite	W.	3.471		
	R.	3.777		
		3.2265		Haw.
		3.4771		
Aurum graphicum	T.	5.723		
paradoxicum	Kl.	5.73	to 6.115	
Automolite	T.	4.261		
Axinite	Haw.	3.213	to 3.300	
	K.	3.295		
	Ger.	3.250		
Azure stone	Bl.	2.771		
	Haw.	2.767	2.945	
	K.	2.896		
Barytes	Four.	4.000		
	H.	2.374		
Baroselenite	T.	4.4	to 4.5	
Basalt	B.	3.000		
	Br.	2.864		
	K.	2.979		
Beryl, precious		2.650 to 2.759		W.
		2.683 to 2.722		Br.
schorlous	Kl.	3.530		
	Haw.	3.514		
Beryl, schorlous		3.503 to 3.530		Buc.
Bildstein	Kl.	2.785 to 2.815		Kl.
Baras, gum	L.	1.0441		
Benzoin	L.	1.0924		
	T.	1.092		
Bdellium	L.	1.3717		
	Du.	1.1377		
Borax	T.	1.740		
Bassora, gum	L.	1.4346		
Bitumen Judea	Du.	1.104		
Bitter spar	J.	2.480		
Blood, human	Hal.	1.0527		
bullocks	Four.	1.056		
Bole		1.400		K.
		2.000		
Bones, teeth, adult		2.2727		Fox.
children		2.0833		
Boracite	T.	2.566		
Brass	Wat.	8.441		
	Br.	7.824		
Bronzite	T.	3.200		
Butter	Du.	0.9423		
of Caiva	Du.	0.8916		
of Cacao	L.	0.8916		

Calculi, biliary, first species	0.803	Gren.
second -	0.900	Bos.
	1.061	T.
urinary - -	1.213	Four.
	1.976	
No. 1. - -	1.431	War.
2. - -	1.326	Ph. Tr.
both calculi - -	1.415	Vol. 51.
Camphor - - -	0.9887	Br.
	0.996	Shaw.
Caoutchouc - - -	0.9335	Br.
mineral -	0.9053	Hat.
	1.233	
	0.930	Lam.
	0.9021	Jor.
Caranna, gum resin - -	1.124	Br.
Carnelian - - -	2.6137	L.
Cast iron - - -	7.2 to	T.
	7.6	
Cat's eye - - -	2.625	Kl.
	2.600	
Catechu, Bombay -	1.398	L.
Bengal - -	1.28	D.
	1.4573	Du.
Celestine, - - - -	3.500	T.
compact - -	3.596	
fibrous - -	3.830	Kl.

Ceylanite - - -	3.7647	Haw.
	3.7931	
Chabasie - - - - -	2.7176	T.
Calcedony - - -	2.600	K.
	2.655	
	2.586	Br.
	2.615	Bl.
	2.6375	L.
	2.6640	Hy.
Chalk - - - - -	2 315	K.
	2.657	Wat.
	2.252	Mus.
black - - - -	2.144	T.
	2.77	
Spanish - - -	2.7902	L.
Briançon - - -	2.7274	L.
Charcoal - - -	0.441	Hy.
Chert - - - - -	2.699	T.
	2.708	
Chriolite - - -	2.949	Haw.
	2.957	Kar.
Chrysoberyll - - -	3.600	W.
	3.720	
	3.710	Kl.
	3.7961	Haw.
Chrysolite - - -	3.340	W.
	3.410	
	3.428	Haw.
	2.6923	L.

Chrysolite - - -	2.7821	L.
Chrysoprase - -	2.479	T.
	3.250	J.
Cimolite - -	2.000	T.
Clinkstone - -	2.575	Kl.
Coal, black, pitch - -	1.308	Wied.
slate -	1.250	
	1.370	K.
	1.259	
	1.28125	
	1.3730	Ri.
	1.32132	
	1.3820	
cannel - -	1.232	K.
	1.237	Wat.
	1.270	Lam.
	1.275	Bl.
Coal, glance, slaty - -	1.530	Kl.
	1.800	Haw.
	1.415	T.
	1.300	Lam.
	1.526	K.
graphite, scaly -	1.987	K.
	2.267	
	2.1500	Br.
	2.456	
	2.0891	Haw.
	2.2456	
Coccolite - - -	3.316	Dan.

Coccolite - - -	3.3739	Haw.
Copaiva - - - -	0.950	Schon.
oil of - - -	0.900	
Colophony - - - -	1.0441	Hy.
Copal, opaque - -	1.1398	L.
transparent - -	1.0452	L.
Madagascar -	1.0600	L.
Chinese - - -	1.0628	L.
Cachibou - - -	1.0640	Du.
Corundum - - -	3.710	Kl.
	4.180	Gre.
Cruor of blood - -	1.245	Jur.
Cube spar - - - -	2.964	Haw.
	2.850	Kl.
Cyanite - - - -	3.517	Saus.
	3.622	
Clay-slate - - -	2.67 to 2.88	T.
Datholite - - -	2.980	Kl.
Dead sea, water of - -	1.211	Mar.
Delphinite - - -	3.4529	T.
	3.46	
Diallage - - - -	3.000	T.
Diamond - - - -	3.500	T.
white oriental	3.5212	L.
rose coloured oriental	3.5310	L.
Diaspore - - -	3.4324	T.
Diopside - - - -	3.2374	T.

Dipyre - - -	2.630	Haw.
Disthene - - -	3.517	Saus.
	3.622	Her.
Dolomite - - -	2.835	Kl.
Elemi - - - -	1.0182	L.
	1.0682	Du.
Emerald, Peruvian -	2.7755	Haw.
	2.600	W.
	2.775	Br.
	2.7227	Haw.
Emery - - - -	4.000	T.
Epsom salt - -	1.66	H.
Æther, acetic - - -	0.866	T.
	0.864	L.
muriatic - -	0.7298	L.
	0.7296	Du.
	0.874	Th.
	0.845	Geh.
nitric - - -	0.9088	L.
sulphuric - -	0.717	Saus.
	0.7396	Du.
	0.7394	L.
	0.6320	Low.
Euclase - - -	3.0625	Haw.
Euphorbium - - -	1.1244	L.
Fat, beef - - -	0.9232	L.
veal - - - -	0.9342	L.
Fat, mutton - -	0.9235	L.
hogs - - -	0.9368	L.
	0.9568	Hy.
lard - - -	0.9478	L.
tallow - - -	0.9433	L.
Felspar adularia - -	2.500 to 2.600	S.
	2.561	Mor.
	2.559	T.
labrador - -	2.67 to 2.69	T.
	2.607 to 2.704	Br.
common - -	2.272 to 2.594	J.
	2.4378 to 2.7045	Haw.
hollow spar -	2.9444	J.
Figure stone - - -	2.785 to 2.815	Kl.
Flint - - - -	2.594	Bl.
	2.58 to 2.63	T.
Flint slate - - -	2.880 to 2.415	T.
Fluor spar - - -	3.0943 to 3.1911	T.
Galipot - - -	1.0819	L.

Galbanum - - -	1.2120	L.
Guaiacum - -	1.2289	Du.
resin of - -	1.2289	L.
Gamboge - - -	1.2216	L.
Gum Arabic - - -	1.4523	L.
tragacanth - -	1.3161	L.
cherry tree -	1.4817	L.
Glass, bottle - -	2.7325	L.
green - -	2.6423	L.
white French crystal	2.8922	L.
Leith crystal	3.1890	L.
St. Gobin, mirror	2.4882	L.
Flint - - -	3.3293	L.
English - -	3.3203	Hy.
of borax - -	2.6070	L.
Glass gall - -	2.8548	L.
Gadolimite - - -	4.0497	Haw.
Garnet, Bohemian - -	4.1888	Br.
dodecahedral - -	4.0627	L.
Syrian - - -	4.000	L.
volcanic of 24 sides .	2.4684	L.
precious - -	4.230	W.
	4.085	Kl.
	4.352	Kar.
common . - -	3.757	W.
	3.754	
	3.668	Kar.
Girasol - - - -	4.000	L.
Granitelle - - -	3.0626	L.
Glacies Mariæ - - - -	2.9342	Bl.
	2.79	Br.
	2.6546	T.
Glauberite - - -	2.73	T.
Glauber salt - - -	1.380	Wat.
	2.446	Wal.
Glucine - - - -	2.976	Ek.
Granatite - - -	3.2861	Haw.
Granite, red Egyptian - -	2.6541	L.
beautiful red -	2.7609	L.
of Girardmas - -	2.7163	L.
Graphite - - -	1.987	K.
	2.267	
	2.1500	Br.
	2.456	
	2.0891	Haw.
	2.2456	
Green sand of Peru - -	3.570	Lam.
Gypsum, compact - -	1.300	J.
	2.3	T.
foliated - - -	2.274	T.
	2.310	
Heliotrope - - -	2.633	Bl.
	2.620	K.
	2.700	
Hornblende, common - -	3.600	K.
	3.830	
labrador -	3.3857	J.

Hornblende, basaltic	3.250	Haw.
	3.333	K.
	3.150	Re.
	3.220	
Horn stone	2.699	T.
	2.708	
Humours of eye		
of the sheep, aqueous	1.0090	Ch.
of the sheep, vitreous	1.0090	Ch.
of the sheep, crystalline	1.1000	Ch.
of the ox, aqueous and vitreous	1.0088	Ch.
of the ox, crystalline	1.0765	Ch.
of man, aqueous and vitreous	1.0053	Ch.
of man, crystalline	1.0790	Ch.
of the ox, 6 grs. of the center of crystalline	1.194	Ch.
Hyalite	2.110	K.
Hyacinth common	3.6873	L.
Hone, white razor	2.8763	L.
black and white	3.1311	L.
Honey	1.4500	Du.
Hypociste	1.5263	Du.
Jade, white	2.9502	L.
green	2.9660	L.
common	2.966	Saus.
	3.071	
Jalap, resin of	1.2185	L.
Jasper	2.3 to 2.7	T.
brown	2.6911	L.
grey	2.7640	L.
red	2.6612	L.
violet	2.7111	L.
yellow	2.7101	L.
brown Egyptian	2 600	J.
	2.564	
Jasponyx	2.8160	L.
Ice	0.92	
Iceland crystal	2.7151	L.
Ivory	1.825	Hy.
Jargon of Ceylon	4.4161	L.
Ivy gum	1.2948	L.
Indigo	0.7690	L.
Juice (inspissated) of acacia	1.5153	L.
areca	1.4573	L.
liquorice	1.7228	L.
St. John's wort	1.5263	L.
Idocrase	3.575	W.
of Vesuvius	3.420	Kl.
of Siberia	3 365	Kl.
	3.390	
	3.407	Haw.
Iserine	4.5	T.
Kaolin	2.23	T.
	2.4	
Klebschiefer	2.080	Kl.

Klinkstone - - - - -	2.575	Kl.
Labdanum - - -	1.1862	L.
in tortis - -	2.4933	
Lac - - - - -	1.1390	L.
Lapis obsidianus - - -	2.3480	L.
ollaris Dauphiny -	2.7687	L.
Sweden - -	2.8531	L.
lazuli - - -	2.771	Bl.
	2.896	K.
	2.767	Haw.
	2.945	
Lepidolite - - -	2.816	Kl.
	2.854	Haw.
Leucite - - - - -	2.468	Br.
	2 464	K.
	2.461	Kar.
	2.455	Kl.
	2.490	
Lime stone, common compact	2.600	J.
	2.700	
foliated granular	2.700	J.
	2.800	
	2.84	T.
calc spar	2.693	T.
	2.718	
Lime - - - - -	2.3908	K.
	2.37	Mus.
	1.5233	H.
Magnesia - - - - -	2.3298	K.
	0.346	H.
Marl indurated - -	1.6	T.
	2.877	
Mastic - - - - -	1.0742	L.
Marble, green compact -	2.7417	L.
red compact - -	2.7242	L.
white Carara -	2.7168	L.
Parian - -	2.8376	L.
Milk asses' - - -	1.0355	L.
cow's - - - - -	1.0324	L.
ewe's - - -	1.0409	L.
goat's - - - - -	1.0341	L.
mare's - - -	1 0346	L.
woman's - - -	1.0203	L.
Meerschaum - - -	1.600	Kl.
Melanite - - - - -	3.691	Kar.
	3.800	W.
Mellite - - - - -	1.666	J.
	1.5858	
Menachanite - - -	4.427	Gr.
Menilite - - -	2.185	Kl.
Mesotype - - - - -	2.0833	Haw.

METALS

Antimony - - -	Kl.	6.720
	L.	6.7021

Antimony - - -	Du.	6.712
	D.	6.800
sulphuret - -	Du.	4.368
	L.	4.0643
glass of - -	L.	4.9464
grey ore of - -	K.	4.368
foliated	K.	4.368
radiated	B.	4.200
	G.	4.229
	K.	4.440
	Br.	4.1327 to 4.5165
red ore of - -	Kl.	4.090
	Lam.	3.750
Antimonial silver - -	Haw.	9.4406
Arsenic - - - -	B.	8.310
	Brandt.	8.308
native - - -	K.	5.67
	Br.	5.7249
		5.7633
bloom - - -	Kl.	2.640
	Selb.	2.536
native oxyd - -	K.	3.7
pyrites common -	G.	5.753
	Br.	6.5223
	Lam.	5.600
	Stutz.	4.791
	T.	5.405
orpiment red	Br.	3.3384
	Mus.	3.223

Arsenic realgar - -	B.	3.225
yellow -	Mus.	3.313
	B.	3.315
	G.	3.521
	K.	3.048 to 3.435
Bismuth - - - -	9.822	L.
native - -	9.0202	Br.
	9.570	K.
sulphuret - -	6.131	K.
	6.4672	Br.
ochre - -	4.3711	Br.
alloy with gold -	18.038	Hat.
Cerium cerite - -	4.660	Kl.
	4.988	Cr.
	4.489 to 4.619	H. B.
Chrome - - - -	5.90	Ri.
chromat of iron -	4.0326	T.
of lead -	6.0269	Br.
	5.75	
Cobalt - - - -	7.7	B.
	7.645	Hat.
	8.8119	L.
glance - - -	6.4509	Haw.
grey ore - -	5.309	K.
	5.571	
	5.503	G.

Cobalt, grey ore - -	5.511	Haw.
	7.7207	
black ore - -	2.019	G.
indurated -	2.425	
Columbium - - -		
columbite - -	5.918	Hat.
Copper - - - -	8.830	Lew.
	8.895	Hat.
	9.3243	B.
	9.000	Cr.
not hammered -	7.7880	L.
wire drawn - -	8.8785	L.
native - - -	7.6	K.
	8.5844	Haw.
	7.728	G.
sulphuret, com. -	4.129	K.
	5.452	
	4.8648	Haw.
ore variegated -	4.956	K.
	4.983	
	5.467	Wied.
pyrites - -	4 315	K.
	4.080	
	4.160	G.
	4.344	Br.
ore white - -	4.500	Lam.
grey ore - - -	4.8648	Haw.
	4.594	Wied.
Copper, grey ore -	4.4460	Bour.
	4.560	
red ore foliated -	3.950	Wied.
radiated azure -	3.6082	Br.
	3.231	Wied.
	3.400	Bind.
malachite fibrous -	3.5718	Br.
compact -	3.653	K.
	3.6412	Br.
	3.500	Mus.
	3.994	
emerald -	2.850	Lam.
	3.300	Haw.
mica - -	2.5488	J.
lenticular ore -	2.8819	Bour.
oliven ore foliat. -	4.2809	Bour.
fibrous	4.2809	Bour.
phosphuret of - -	7.1220	D.
alloys of, viz. -		
brass not hammered	8.3958	L.
wire drawn -	8.5441	L.
common -	7.8240	L.
Gold, pure, hammered - J.	19.258 to	19.640
	19.3617	L.
	19.3	T.
not hammered - -	19.2581	L.
	19.277	D.
sterling 22 carats hammered	17.5894	L.
not hammered	17.4863	L.

Gold French coin 21$\frac{22}{32}$ carats	17.6474	L.
not coined -	17.4022	L.
20 carats not hammered	19.7090	L.
hammered -	15.7746	L.
native N. Carolina -	16.4175	Coxe.
Iridium, ore of - - -	19.5	Wol.
Iron - - - -	7.6 to 7.8	K.
bar - - - -	7.788	Br.
	7.700	Hat.
	7.817	Sw.
cast - - - -	7.2070	L.
native - - -	7.8	T.
pyrites, common - -	4.830	Hat.
radiated -	4.698 } 4.775 }	Hat.
	4.729	Wied.
magnetic -	4.518	Hat.
magnetic ironstone, common	4.200 } 4.939 }	K.
iron sand -	4.600	K.
Iron glance, common -	5.0158	G.
	4.670 } 5.0116 }	Br.
	4.793 } 5.210 }	K.
Iron mica - -	4.500 } 5.070 }	K.
Iron stone, ochery red -	2.952	

Iron, compact - - -	3.423 } 3.760 }	K.
	3.5731	Br.
	3.863	Wied.
red hematites - -	4.740	G.
	5.005	K.
	4.8983	Br.
	4.840	Wied.
brown iron stone compact	3.5027 } 3.4771 }	Br.
	3.551 } 3.753 }	K.
	3.073	Wied.
brown hemat. - -	3.789	G.
	3.951	K.
	4.029	Wied.
sparry iron stone -	3.784	G.
	3.640 } 3.810 }	K.
	3.672	Br.
black iron stone compact	4.076	Wied.
yenite - - -	3.82 } 4.06 }	T.
clay iron stone (red chalk)	3.931	Bl.
	3.1391	Br.
lenticular - -	2.673	K.
common - -	2.936	K.
	3.471 } 3.205 }	Ro.

Iron clay, common -	3.357	Ro.
kidney form -	2.574	Wied.
pisiform - -	5.207	Mol.
bog iron ore, swamp -	2.944	K.
	3.00	Kl.
carbonat of - -	3.333	T.
phosphat of - -	2.539	Cad.
and manganese	3.956	T.
arseniat of - -	3.00	Bour.
and copper	3.400	Bour.
chromat of - -	4.0326	T.
phosphuret of -	6.700	D.
steel - - -	7.8331	L.
Lead - - - -	11.3500	F.
molten - - -	11.3523	L.
milled - - -	11.407	T.
wire - - -	11.317	Mus.
hammered - -	11.2187	
sulphuret, common -	7.220	Mus.
	7.290	G.
	7.5873	Br.
	5.500	Lam.
	6.565	Wat.
	7.786	
	7.448	K.
	6.140	V.
	6.820	
	7.100	
	7.300	
Lead, sulphuret of -	7.600	V.
blue ore of - -	5.461	G.
bournonite - -	5.5765	J.
brown ore of - -	6.974	Weid.
	6.600	Kl.
	6.909	Hau.
white ore of - -	6.480	Kl.
(carbonat)	7.2357	Ch.
	6.071	Hau.
	6.5586	
green ore of - -	6.560	Kl.
(phosphat)	6.270	
	6.9411	Hau.
red ore of - -	5.750	Bind.
(chromat)	6.0269	Br.
murio carbonat of -	6.0651	Bind.
yellow ore of - -	5.092	J.
(molybdat)	5.486	Mac.
	5.706	Hat.
sulphat of - -	6.300	Kl.
arseniat of - -	7.2612	T.
reniform ore of -	3.920	Bind.
Manganese, - -	6.850	B.
grey ore of, radiated	3.530	Mus.
	4.325	
	4.143	Ha.
	4.2491	Br.
	4.7563	
	4.181	Rin.

Manganese, grey ore of, foliated	3.742	Ha.
black ore (wad.)	2.000	Dol.
	3.000	
red ore (carbonat)	3.233	K.
peroxyd of -	4.000	D.
Mercury, fluid - -	13.545	Du.
	13.508	Br. Cau.
	13.575	F.
	13.613	Bid.
solid - -	14.465	Bid.
	14.391	Sch.
	15 612	Du.
native - -	13.6	T.
	13.581	Hau.
native amalgam	10.+	T.
sulphuret (cinnabar)	7.786	K.
dark red	6.9022	Br.
	10.2185	Br.
	10,000	Du.
hepatic ore of, compact	7.937	G.
	7.100	Kl.
	7.186	K.
	7 352	
Molybdena - - -	7.400	Hie.
	8 611	Bu.
	8.600	Du.
sulphuret -	4.569	Kar.
	4.7385	Br.
	4.048	K.

Molybdena, sulphuret -	64.67	Sc.
	8.38	D.
	8.82	D.
Nickel - - - -	8.279	Ri.
hammered - -	8 666	
molten - - -	7.8070	L.
copper nickel -	7 560	G.
	6.6081	Br.
forged - -	6.6486	
Palladium - - -	11.3	Wol.
	11.871	
Platina - - -	23.000	K.
	21 3	D.
pure hammered -	24.000	Chab.
	20.980	J.
native - -	22 0690	L.
treated with m. acid	15.6017	L.
Rhodium - - -	16.7521	L.
	11.000	T.
Silver, pure unhammered	10.40	D.
	10.4743	Br. Hat.
	10.481	F.
hammered -	10.3946	T.
rolled - -	10.4177	T.
hammered - -	10.4812	T.
	10.500	Mus.
	10.980	Lew.
	10.5107	L.
Paris std. not hammered	10.1752	L.

Silver, std. Paris, hammered	10.3765	L.
French coin -	10.4077	L.
native, common -	10.000	G.
	10.333	Se.
auriferous	10.6+	T.
antimonial ore of -	9.4406	Hau.
	10.000	Se.
corneous ore of	4.804	G.
(muriat) - -	4.7488	Br.
	4.748	Hau.
sulphuret, common	7.215	G.
(vitrous ore) -	7.200	Lam.
	6.9099	Br.
antimonial - -		
(brittle S. ore) -	7.208	G.
red S. ore dark -	5.608	G.
	5.684	
	5.5637	Br.
light red -	5.443	G.
	5.5886	Br.
	5.592	V.
Tellurium - - -	6.115	Kl.
	5.730	K.
native - -	5.723	Mul.
(aurum paradoxicum)	6.115	Kl.
graphic ore -	5.723	Mul.
	4.107	Jac.
yellow ore -	10.678	Mul.
black ore - -	8.919	Mul.
Tellurium, black ore -	6.157	Jac.
Tin, pure melted - -	7.2914	L.
hardened -	7.2994	L.
of Malacca, not hardened	7.2963	L.
hardened	7.3065	
pyrites (Sulphuret) -	4.350	Kl.
	4.785	Lam.
tin stone - -	6.300	G.
	6.989	
	6.9009	Br.
	6.9348	
	5.845	Kl.
	6.970	
wood tin - -	6.450	Kl.
	6.738	Hum.
	5.800	Brun.
Titanium, red oxyd of -	4.2	T.
menachanite -	4.427	Gr.
	4.270	Lamp.
octahedrite -	3.8571	Hau.
	4.180	Kl.
	4.246	Lam.
	4.1025	Hau.
	4.2499	V.
nigrine - -	4.445	Kl.
	4.543	Lamp.
	4.673	Low.
	3.700	V.
iserine - -	4.5	J.

Titanium, rutilite - -	3.510	Kl.
	3.480	Sc.
Tungsten - - -	17.6	E.
	17.33	Al. Ai.
	17.3	D.
wolfram -	6.835	E.
	7.130	G.
	7.1195	Br.
	5.705	Gm.
	7.3333	Hau.
	7.006	K.
	6.955	Hat.
tungstat of lime	4.355	Ley.
	5.800	K.
	6.028	
	6.0665	Br.
	6.000	G.
	6.015	Kl.
	5.570	
Uranium - - -	8.100	Kl.
	9.000	Bu.
pitch ore - -	6.3785	M.
	6.5304	Hau.
	7.500	Kl.
uran mica -	3.1212	Cham.
uran ochre, indurated	3.1500	Lam.
	3.2438	Hau.
Zinc - - - -	6.861	Lew.
	7.1	Br.
Zinc, (hammered) - -	7.1908	Br.
	6.953	Wat.
	7.028	
	7.065	Hat.
sulphuret - -	4.044	G.
blend yellow	4.048	
	4.067	K.
brown B. foliated	3.770	G.
	4.048	
	3.963	K.
black B. -	3.967	G.
	3.930	
	4.1665	Br.
	5.398	V. M.
calamine - -	3.5236	Br.
	4.1000	Lam.
	3.434	T.
carbonat of - -	4.334	Sm.
hydrous carbonat of	3.584	Sm.
Meteoric stones - -	3.352	Bour.
	4.281	
Mica, black - - -	2.9004	L.
	2.934	Bl.
	2.79	Br.
	2.6546	T.
green - - -	3.1212	Cham.
Micarell - - -	2.980	K.
Mineral tallow - - -	0.770	K.

Mineral pitch, slaggy -	1.07 1.165	T.
elastic -	0.9053 1.233	T.
Minium - - - -	8.940	Mus.
Muriacite - - -	2.850 2.964	Kl.
Muricalcite - - -	2.480	T.
Mussite - - -	3.2374	T.
Myrrh - - - -	1.3600	L.
Moubain gum - -	1.4206	L.
Nepheline - - -	3.2741	T.
	3.2474	Hau.
Nephrite, common -	2.966 3.071	Saus.
Novaculite - - -	2.722	J.
Onyx pebble - -	2.6644	L.
Ophites - - - -	2.9722	L.
Olibanum - - -	1.1732	L.
Opoponax - - -	1.6226	L.
Opium - - -	1.3366	L.
Opal - - - -	2.114	Bl.
precious - -	2.144	K.
common - - -	1.958 2.015	Kl.
semi O. - -	2.540	Kl.
wood O. - - -	2.600	J.

OILS.

Oil of Almonds, sweet -	0.9170	L.
Beech mast - -	0.9176	L.
Cinnamon - -	1.0439	L.
Cloves - - -	1.0363	L.
Lavender - -	0.8938	L.
Linseed - -	0.9403	L.
Olives - -	0.9153	L.
Poppy seed - -	0.9288	L.
Turpentine - -	0.8697	L.
Whale - -	0.9233	L.
Mint - - -	0.8982	Du.
Sage - -	0.9016	Du.
Thyme - - -	0.9023	Du.
Rosemary - -	0.9057	Du.
Calamint - -	0.9116	Du.
Scurvy grass -	0.9427	Du.
Wormwood - -	0.9073	Du.
Tansey - -	0.9949	Du.
Chamomile - -	0.8943	Du.
Savine - -	0.9294	Du.
Fennel - - -	0.9294	Du.
seed -	1.0083	Du.
Coriander seed -	0.8655	Du.
Caraway seed -	0.9049	Du.
Dill seed - -	0.9128	Du.
Aniseed - -	0.9867	Du.
Juniper - - -	0.8577	Du.
Amber - -	0.8867	Du.

Oil of Orange flowers	0.8798	Du.
Hyssop	0.8892	Du.
Filberts	0.916	Du.
Walnut	0.9227	Du.
Hempseed	0.9258	Du.
Rape seed	0.9193	Du.
Ben	0.9119	Du.
Codfish	0 9233	Du.
Obsidian	2.348	J.
	2.432	Hum.
Ochre red	2.952	T.
Oliven ore, foliated	4.2809	T.
fibrous	4.281	T.
Olivine	3.225	W.
	3.265	Kl.
Orpiment red	3.3384	Br.
yellow	3.048	K.
	3.521	Gel.
Paranthine	3.68	Dan.
	3.70	
Pearl stone	2.340	Kl.
Peat, hard	1.3290	L.
Pebble of Rennes	2.6538	L.
Pharmacolite	2.64	Kl.
	2.536	
Phosphorite	2.814	T.
Pierre de Volvic	2.3205	L.

Phosphorus	1.7140	L.
Pinite	2.980	K.
Pitch, mineral slaggy	1.07	T.
	1.165	
elastic	0.9053	T.
	1.233	
ore	6.3785	Kl.
	7.5+	
stone	2.314	Bl.
	1.645	Kl.
black	2.0499	L.
blackish	2.3191	L.
red	2.6695	L.
yellow	1.0860	L.
Porcelain, Seves	2.1457	L.
Limoges	2.3410	L.
China	2.3847	L.
Plumbago, scaly	1.987	K.
	2.267	
Porcelain earth	2.23	T.
	2.4	
Porphyry, red	2.7651	L.
of Dauphiny	2.7033	L.
Prase	2.5805	L.
Pumice stone	0.9145	L.
Potash	1.7085	H.
	4.6215	K.
Potassium	0.6	D.
Prehnite, Cape	2.6969	Hau.

Phrenite, Cape - -	2.942	Br.
	2.9423	K.
of France -	2.6097	Hau.
Pyromachus - - -	2.58	T.
	2.63	
	2.594	Bl.
	2.581	
Pyrophsalite - - -	3.451	T.
Pyrope - - -	3.941	W.
	3.718	Kl.
Quartz amethyst, common	2.750	J.
rock crystal - -	2.650	Br.
crystal, Madagascar	2.6530	L.
Brazil	2.6526	L.
Europe	2.6548	L.
	2.605	Kar.
	2.888	
common - -	2.6404	J.
	2.6546	
Prase - - -	2.5805	L.
crystallized -	2.6546	L.
amorphous - -	2.6471	L.
Reddle - - - -	3.931	Bl.
	3.1391	Br.
Rosin, white - - -	1.0819	H.
yellow - - -	1.0727	L.
Rhomb spar - -	2.480	J.
Ruby - - - -	3.700	W.

Ruby - - -	3.645	Hau.
	3.570	Kl.
oriental - -	4.2833	L.
Brazil - - -	3.5311	L.
Balass - -	3.6458	L.
Spinell - - -	3.7600	L.
Ruthile - - -	4.18	Kl.
	4.2499	V.
Rutilite - - -	3.510	T.

SALTS.

Acetat of alumine - -	1.245	H.
Barytes -	1.828	H.
Copper - -	1.779	Wen.
Iron - -	1.368	H.
Lead - -	2.345	H.
Lime - -	1.005	H.
Magnesia - -	1.378	H.
Soda - -	2.1	H.
Arseniat of copper, various	2.881	Bour.
	2.548	
	4.280	
Iron - -	3.	Bour.
Borat of Magnesia -	2.566	T.
Mercury - -	2,266	H.
Soda - -	1.740	K.
	1.720	Wal.
	1.757	Wat.

Carbonat of ammonia -	0.966	H.
	1.824	K.
	1.5026	Mus.
	1.450	V.
Barytes, native	4.331	T.
artificial	3.763	T.
Iron - -	3.333	T.
Lead -	7.2357	Bour.
Lime - -	2.7	T.
Magnesia -	0.2941	H.
Potash - -	2.012	H.
	2.749	Mus.
sub- of Soda -	1.3591	H.
	1.421	K.
Strontian -	3.66	T.
Chromat of Lead - -	6.	T.
Columbat of Iron -	5.918	Hat.
Fluat of Alumine and Soda	2.950	T.
Lime - -	3.15	T.
Molybdat of Lead - -	5.706	Hat.
Muriat of Ammonia -	1.450	Wat.
	1.453	Wal.
	1.420	K.
Barytes - -	2.8257	H.
oxy- of Copper -	1.6775	H.
of Lead - -	1.8226	H.
Lime - -	1.76	H.
Magnesia - -	1.601	H.
Mercury corrosive	5.1398	H.

Muriat of mercury, corrosive	4.142	Wat.
mild -	7.1758	H.
Potash hyperoxy-	1.836	K.
	1.989	H.
Soda - -	2.125	F.
	2.120	K.
	2.143	Wat.
	2.200	H.
Strontian -	1.14402	H.
Tin - - -	2.2932	H.
Zinc - -	1.577	H.
Nitrat of Alumine - -	1.645	H.
Ammonia -	1.5785	H.
Barytes - -	2.9149	H.
Copper -	2.174	H.
Lead - -	4.068	H.
Lime - -	1.6207	H.
Magnesia - -	1.736	H.
Potash - -	1.933	Wat.
	1.9369	H.
	1.900	Wal.
	2.150	F.
Soda - -	2.0964	H.
Zinc - -	2.096	H.
Oxalat of ammonia, solution of	1.0186	T.
Phosphat of Ammonia -	1.8051	H.
Barytes -	1.2867	H.
Copper - -	1.4158	H.
Iron - -	2.539	Cad.

Phosphat of Iron - -	2.6	T.	Sulphat of zinc -	2.3953	Mus.
Magnesia -	1.5489	H.		1.933	Wat.
Mercury -	4.9835	H.		1.912	H.
Potash - -	2.8516	H.		1.712	N.
Soda -	1.333	H.	Sulphite of potash -	1.586	V.
and Ammonia	1.509	H.	Tartrat of potash and soda	1.757	Wat.
Prussiat of Mercury -	2.7612	H.	super- of potash -	1.5567	H.
Soda and Iron cryst.	1.458	T.		1.953	H.
Sulphat of alumine (Alum)	1.7109	H.		1.8745	Mus.
	1.719	Wal.			
	1.757	Wat.	Sagapenum - - -	1.2008	L.
	1.738	F.	Sahlite - - -	3.2368	Dan.
	1.714	N.		3.2307	Hau.
	1.726	Mus.	Saliva - - - -	1.0167	Hal.
Copper -	2.230	Wat.		1. 80	
	2.1943	H.	Sandarach - - -	1.0920	L.
Iron - -	1.812	Wat.	Sappare - - - -	3.517	Saus.
	1.880	Wal.		3.622	Her.
	1.8399	H.	Sapphyr - - -	4.000	Hat and
calcined -	2.636	Wat.		4.083	Grev.
Lead - -	1.8742	H.		3.980	W.
Magnesia -	1.6603	H.		4.180	
Mercury -	6.444	Wat.		3.994	Hau.
Potash - -	2.298	Wal.		4.283	
	2.636	Wat.		3.907	Bour.
	2.4073	H.		4.161	
Soda - -	2.246	Wal.	oriental - -	3.9941	L.
	1.380	Wat.	white -	3.9911	L.
	1.4457	H.	Brazil - -	3.1307	L.

Sapphyr of Puy - -	4.0769	L.
Sarcocoll - - -	1.2684	L.
Saussurite - - -	3.200	Saus.
	3.389	
Scammony, Aleppo -	1.2354	L.
Smyrna -	1.2743	L.
Scapolite - - -	3.68	Dan.
	3.70	
	2.7404	T.
Schiefer spar - - -	2.740	T.
Sea froth - - -	1.600	Kl.
salt - - - - -	2.125	F.
	2.120	K.
	2.143	Wat.
solution of -	1.098	Wat.
Selenite - - - - -	2.322	T.
Semiopal - - -	2.540	Kl.
Sardonyx - - -	2.6025	L.
Serpentine, common -	2.574	T.
	2.709	
green - -	2.8960	L.
Dauphiny -	2.9983	L.
black	2.9339	L.
opaque green Ital.	2.4295	L.
Serum of blood - -	1.0287	Jur.
Schorl, common - -	3.092	Br.
	3.150	Ger.
	3.212	K.
	3.054	T.

Tourmaline, green -	3.086	W. Br.
	3.0863	Hau.
	3.3626	
blue T.	3.155	W.
	3.130	Br.
black prismatic hexahedral	3.3852	L.
sparry -	3.3852	L.
amorphous -	2.9225	L.
Schorlite - - -	3.503	Bu.
	3.530	
Sidero-calcite - - -	2.837	T.
Silica - - - - -	2.66	K.
Slate, common schistus -	2.6718	L.
for roofs - -	2.8535	L.
adhesive - - -	2.080	Kl.
drawing - -	2.144	T.
	2.77	
polishing { before imbibing	0.590	T.
polishing { water	0.606	
after -	1.909	T.
	1.911	
whet - - -	2.722	T.
Slate, clay - - -	2.6	K.
	2.68	
Slate spar - - -	2.740	T.
Smaragdite - -	3.	T.
Soda - - - - -	1.336	H.
Sodium - - -	0.9348	D.
Sommite - - -	3.2741	T.

Sommite - - -	3.2474	Hau.
Spar, pyram. calcar. -	2.7302	L.
heavy - - -	4.4300	L.
	4 4	T.
	4.5	
strontites - -	3.7260	L.
	3 6500	
fluor, white - -	3.1555	L.
red - -	3.1911	L.
green - -	3.1817	L.
blue - -	3.1688	L.
violet - -	3.1757	L.
Sanguis draconis - -	1.2045	L.
Storax - - - - -	1.1098	L.
Specular iron ore, common	5.0116	Br.
	5.218	K.
micaceous	3.50	K.
	5.07	
Spelter, see zinc - -		
Spermaceti - - -	0.9433	L.
Spinell - - -	3.570	Kl.
	3.700	W.
Spodumene - - -	3.1923	Hau.
	3 218	Dan.
Staurolite - - -	2.333	Hau.
	2.361	K.
Staurolithe - - -	3.2861	Hau.
Steatite - - -	2.614	Bl.
Steel - - -	7.78	T.
	7.84	
Stilbite - - -	2.500	Hau.
Stone ware, viz.		
East-India china -	2 385	Br.
	2.346	Wat.
Limoges porcelain -	2.341	Br.
Bristol stone ware -	2.340	Wat.
Flint ware - - -	2.188	Wat.
Sevres porcelain -	2.146	Br.
Yellow ware - -	1.988	Wat.
Strontian, carbonat -	3.40	K.
	3.675	Kl.
	3.644	K.
sulphat compact	3.830	Kl.
	3.5	T.
	3.596	
fibrous - -	3.83	T.
Sugar, white - -	1.6060	Du.
Sulphur, native - -	2.0332	L.
roll - -	1.9907	L.
Stone, paving - - -	2.4158	L.
Portland - -	2.533	Hy.
Grind- - - -	2.1429	L.
Cutlers- - -	2 1113	L.
Fontainbleau - -	2.5616	L.
Scythe, Auvergne	2.5638	L.
Lorrain -	2.5298	L.
Mill- - - -	2.4835	L.

Stone, various building	1.3864 2.3902	L.
Swinestone	2.712	T.
Tacamahac	1.0463	L.
Talc		
Venetian or common	2.7 2.8	T.
Muscovy	2.7917	L.
Topaz, occidental	3.464 3.564	T.
oriental	4.0106	L.
pistachio	4.0615	L.
Brazil	3.5365	L.
Saxon	3.5640	L.
white	3.5535	L.
Touch stone	2.4153	L.
Turpentine, liquid	0.9910	L.
Tourmaline	3.0704	Hau.
	3.155	W.
Triphane	3.1923	Hau.
	3.218	Dan.
Tripoli	2.080 2.529	T.
Urine, human	1.0106	L.
	1.005 1.033	C.

Vermillion	4.2299	L.
Vesuvian	3.0382 3.409	Hau.
Vinegar, red	1.025	Du.
white	1.014	Du.
distilled	1.010	Du.
Volcanite	3.2265	Hau.
	3.4771	W.
Wacke	2.535 2.893	T.
Water, distilled	1.000	
Wavellite, soft	2.22	Gr.
compact	2.253	Gr.
Wax, yellow	0.9648	L.
white	0.9686	L.
Shoemakers	0.8970	Du.
of Tallow tree	0.8970	L.
Whey, Cows	1.0193	L.
Wernerite	3.6063	T.
Whet slate	2.722	T.
Witherite	4.3 4.338	T.

WOODS.

Alder	0.8000	L.
Aloe	1.177	Mus.
Ash	0.8450	L.
Apple	0.7930	L.

Beech - - - -	0.8520	L.	Poplar - - -	0.3830	L.
Brazil red - - -	1 031	Mus.	white Spanish - -	0.52[illegible]4	L.
Cork - - - -	0.2400	L.	Pear - - - - -	0.6610	L.
Cherry - - -	0.7150	L.	Plumb - - - -	0.7850	L.
Cypress, Spanish - -	0 6440	L.	Pomegranate - -	1.3540	L.
Cedar - - - -	0.613	Mus.	Quince - - - -	0 7050	L.
American -	0 5608	L.	Red Sanders - -	1.1280	Du.
Box - - - -	1 031	Mus.	Sassafras - - -	0.4820	Du.
Dutch - - -	1 3280	L.	Walnut - - -	0 6710	L.
French - - -	0.9120	L.	Willow - - - -	0.6940	L.
Ebony - - -	1.2090	H.	Yew, Dutch - - -	0.7880	L.
Elm, trunk - - -	0.6710	L.	Spanish - -	0.8070	L.
Fir, male - - -	0.5500	L.			
female - - -	0 4980	L.	Yanolite - - -	3 213	Hau.
Filbert - - -	0.6000	L.		3.3[illegible]0	
Cinchona - - -	0.7840	Du.	Yttria - - - - -	4.842	Ek.
Linden - - -	0.6010	L.			
Logwood - - -	0.9130	Du.	Zeolite, radiated - -	2.035	B.
	0 913	Mus.		2.488	
Lignum vitæ - -	1.3330	L.		2.0833	Hau.
Maple - - - -	0.7550	L.	foliated - -	2.500	Hau.
Madder - - -	0.7650	Du.	red scintillant -	2.4868	L.
Mahogany - - -	1.0630	Du.	white do - -	2.0739	L.
Medlar - - -	0.9440	L.	crystallized - -	2.0833	L.
Mulberry, Spanish - -	0.8970	L.	Zircon - - -	4.615	Kl.
Oak 60 years old - -	1.1700	L.		4 700	W.
Olive - - - -	0.9270	L.	Zoisite - - -	3.315	Kl.
Orange - - - -	0.7050	L.			

Names of Authors cited in the Tables of Specific Gravities.

Ai.	Aiken.	Ger.	Gerhard.	Mor.	Morell.
Al.	Allen	Gm.	Gmelin.	Mol.	Mollinghof.
B.	Bergman.	Gren.	Gren.	Mul.	Muller.
Bl.	Blumenbach.	Geh.	Gehlen.	Mac.	Macquart.
Bid.	Biddle.	H.	Hassenfratz.	Mus.	Muschenbroek.
Bos.	Bostock.	Hat.	Hatchett.	N.	Newton.
Br.	Brisson.	Hy.	Henry.	Ri.	Richter.
Bour	Bournon.	Hie.	Hielm.	Ro.	Rotheram.
Bind.	Bindheim.	Hum.	Humboldt.	Re.	Reuss.
Bu	Bucholz.	Hal.	Haller.	Rin.	Rinman.
Brun.	Brunnich.	Her.	Herman.	Sm.	Smithson.
C.	Cruickshank.	H. B.	Hisinger and	Sch.	Schultz.
Cr.	Cronstadt.		Berzelius.	St.	Stutz.
Cad.	Cadet	Hau.	Hauy *	Sh.	Shaw.
Ch.	Chenevix.	J.	Jameison.	Saus	Saussure.
Cav.	Cavendish.	Jur.	Jurin.	Sw.	Swedenburgh.
Chab.	Chabanau.	Jor.	Jordan.	Se.	Selb.
Cham.	Champeaux.	Jac	Jacquin.	Sc.	Schumacher.
D.	Davy.	K.	Kirwan.	T.	Thomson.
Du.	Duncan.	Kar.	Karsten.	V.	Vauquelin.
Dan.	Dandrada.	Kl.	Klaproth.	V. M.	Von Muller.
Dol.	Dolomieu.	L.	Lavoisier.	W.	Werner.
E.	Elhuyart.	Lew.	Lewis.	Wal	Wallerius.
Ek.	Ekeburgh.	Low.	Lowitz.	Wat.	Watson.
F.	Fahrenheit.	Lam.	Lametherie.	Wol.	Wollaston.
Four.	Fourcroy.	Lamp.	Lampadius.	War.	Warner.
G.	Gellert.	Ley.	Leysser.	Weid.	Weidenman.
Gr.	Gregor.	M.	Morveau.	Wen.	Wenzel.
Grev.	Greville.				

* In some of the impressions this name has been erroneously abbreviated "Haw," instead of Hau.

Table of Specific Gravities indicated in the different Pharmacopœias.

	Dublin.	London.	Edinburgh.
Sulphuric ether - - -	765		
Nitrous ether - - -	900		
Spirit of nitrous ether - -	850		
Alcohol - - -	815	815	
Rectified spirit (alcohol) - -	840	835	835
Proof-spirit - - -	930	930	935
Acetic acid - - - -	1070		
Distilled vinegar - -	1006		
Oxymuriatic acid - - -	1003		
Muriatic acid - - -	1170	1160	1170
diluted - -	1080		
Nitrous acid - - -	1500	1500	1550
diluted - - -	1280		
Sulphuric acid - - -	1845	1850	1850
diluted - -	1090		
Solution of potass - -	1100	1050	
ammonia - -	936	960	
carbonat of ammonia	1095		
carbonat of soda, saturated	1220		
oxymuriat of potass -	1087		
sulphuret of potass -	1120		
Tincture of muriat of iron (red) -	1050		

SPECIFIC GRAVITY OF GASES.

	Weights of 100 cubic inches in Troy grains.	Specific gravity.	Authority.
Hydrogen, - -	2.23	0.07321	Biot and Arrago.
Phosphureted hydrogen,	13.265	0.4347	Sir H. Davy.
Ditto, - - -	25.98	0.8518	Dalton and Henry.
Arseniated hydrogen,	16.13	0.529	Tromsdorf.
Carbureted hydrogen,		0.538	Berthollet.
Ditto from stagnant water,	20.66	0.666	Dalton.
Ammonia, - -	18.18	0.596	Allen and Pepys.
Steam, - - -		0.622	Gay Lussac.
Hydrophosphoric, -	26.53	0.870	Sir H. Davy.
Carbonic oxyd, - -	30.19	0.967	Cruickshank.
Azote, - - -	29.55	0.9691	Biot and Arrago.
Olefiant, - - -	29.72	0.974	Thomson.
Air, - - -	30.50	1.000	Sir G. Schuckburgh.
Percarbureted hydrogen,		1.000	T. Saussure.
Nitrous gas, - -	32.	1.049	Sir H. Davy.
Ditto, - - -	31.684	1.0388	Berard.
Oxygen, - - -	33.82	1.1088	Allen and Pepys.
Ditto, - - -		1.10359	Biot and Arrago.
Sulphureted hydrogen,	35.89	1.177	Sir H. Davy.
Ditto, - - -		1.1912	Gay Lussac and Thenard.
Muriatic acid, - -	38.97	1.278	Sir H. Davy and Biot.
Carbonic acid, - -	47.26	1.5495	Allen and Pepys.
Ditto, - - - -	46.31	1.518	Saussure.
Nitrous oxyd, - -	49.227	1.614	Sir H. Davy.
Vapour of alcohol, -	65.	2.100	Dalton.
Ditto, - - -		1.5	Gay Lussac.
Nitrous acid, - -		2.10999	Gay Lussac.
Sulphurous acid, -	66.89	2.193	Sir H. Davy.
Ditto, - - - -		2.2553	Gay Lussac and Thenard.
Muriatic ether, -		2.219	Thenard.
Vapour of sulphuric ether,	70.	2.250	Dalton.
Ditto, - - -		2.396	Gay Lussac.
Fluoboracic, - -	72.31	2.370	John Davy
Euchlorine, - -	74.	2.409	
Hyperoxymuriatic acid,		2.41744	John Davy.
Carbureted sulphur, vapour,		2.670	Gay Lussac.
Nitric acid, - - -	76.	2.425	Sir H. Davy.
Chlorine, - -	76.50	2.5082	Sir H. Davy.
Silicated fluoric, - -	91.19	2.990	John Davy.
Chloride of carbonic oxyd,	111.91	3.669	John Davy.
Hydriodic, - - -		4.4288	
Iodine in vapour, -	117.71		
Water, - - -	252.506		Fletcher.

SOLUTIONS OF SALTS at 42° FAHRENHEIT.	Saturated.	WATSON. In 12 waters.
Lime	1.001	
Arsenious acid	1.005	
Sub-borat of soda	1.010	
Muriat of mercury	1.037	
Alum	1.033	
Sulphat of soda	1.052	1.029
potass	1.054	
Muriat of soda	1.198	1.059
Arseniat of potass	1.184	
Muriat of ammonia	1.072	1.026
Carbonat of ditto	1.077	
Oxalat of ammonia (Thomson)	1.0186	
Nitrat of potass	1.095	1.050
Tartrat of potass and soda	1.114	
Sulphat of copper	1.150	1.052
iron	1.157	1.043
magnesia	1.218	
zinc	1.386	1.045
Subcarbonat of potass	1.534	

Table for reducing the Degrees of Baumé's Hydrometer to the Common Standard.

BAUMÉ'S HYDROMETER FOR LIQUIDS LIGHTER THAN WATER.

Temperature 55° Fahrenheit, or 10° Reaumur.

Deg.	Sp.Gr.	Deg.	Sp.Gr.	Deg.	Sp.Gr.	Deg.	Sp.Gr.
10	1.000	18	.942	26	.892	34	.847
11	.990	19	.935	27	.886	35	.842
12	.982	20	.928	28	.880	36	.837
13	.977	21	.922	29	.874	37	.832
14	.970	22	.915	30	.867	38	.827
15	.963	23	.909	31	.871	39	.822
16	.955	24	.903	32	.856	40	.817
17	.949	25	.897	33	.852		

LIQUIDS HEAVIER THAN WATER.

Deg.	Sp.Gr.	Deg.	Sp.Gr.	Deg.	Sp.Gr.	Deg.	Sp.Gr.
0	1.000	21	1.170	42	1.414	63	1.779
3	1.020	24	1.200	45	1.455	66	1.848
6	1.040	27	1.230	48	1.500	69	1.920
9	1.064	30	1.261	51	1.547	72	2.000
12	1.089	33	1.295	54	1.594		
15	1.114	36	1.333	57	1.659		
18	1.140	39	1.373	60	1.717		

Comparative Weights of Gaseous Fluids.

	100 CUBIC INCHES.		SPECIFIC GRAVITY.		
	French, in French grains.	English, in Troy grains.	Water.	Standard. Air.	
Water	37419.8		1000.	813.5	Lavoisier.
Ditto		25242.2	1000.	814.3	Schuckburgh.
Atmospheric air	46.		1.2293	1.	Lavoisier.
Ditto		31.	1.2279	1.	S. Kirwan.
Oxygen	51.		1.365	1.11	Lavoisier.
Ditto		34.	1.35	1.09	Kirwan.
Ditto		35.09	1.39	1.13	Davy.
Nitrogen	44.44		1.19	0.965	Lavoisier.
Ditto		30.535	2.11	0.985	Kirwan.
Ditto		30.45	1.20	0.98	Davy.
Ammonia		18.16	0.715	0.586	Kirwan.
Ditto		18.	0.713	0.58	Davy.
Hydrogen	3.5		0.0935	0.076	Lavoisier.
Ditto		2.613	0.1031	0.084	Kirwan.
Hydrocarbonous oxyd					
from camphor		21.	0.83	0.677	Cruickshank.
from stagnant water		20.66		0.666	Dalton.
from coal		20.2		0.650	Dalton.
from ether		20.	0.78	0.645	Cr.
from alcohol		16.	0.632	0.516	Cr.
from water over charcoal		14.5	0.573	0.467	Cr.
Olefiant gas		28.18		0.905	Deiman.
Vapour of alcohol		51.5*		2.100	Dalton.
ether		62.1†		2.250	Dalton.
Carbonic oxyd		30.	1.185	0.965	Cr.
Carbonic acid		46.5	1.84	1.5	Kirwan.
		45.5	1.802	1.47	Davy.
Nitrous oxyd		50.1	1.985	1.615	Ditto.
Nitric oxyd		37.	1.465	1.193	Kirwan.
Ditto		34.3	1.36	1.105	Davy.
Nitric acid		76.	3.	2.425	Ditto.
Sulphureted hydrogen		34.286	1.36	1.205	Kirwan.
ditto		38.17		1.231	Thenard.
Sulphurous acid		70.215	2.75	2.24	Ditto.
Muriatic acid	66.		1.765	1.43	Brisson.
Ditto		59.8		1.929	Kirwan.

HEAT.

Correspondence between different Thermometers.

Fahrenheit's thermometer is universally used in Great Britain, and for the most part throughout the United States. In it the range between the freezing and boiling points of water is divided into 180 degrees; and as the greatest possible degree of cold was supposed to be that produced by mixing snow and muriat of soda, it was made the zero, hence the freezing point became 32°, and the boiling point 212°.‡

* Of temperature 190° Fahr. and force 30 inches of mercury.

† Of temperature 100° Fahr. and force = 30 inches of mercury.

‡ The freezing point would appear to be the most natural commencement of the scale of Zero: and here we find both Reaumur's and the Centigrade Thermometer coincide In fact, this is a very incorrect mode of determining the Zero, as a reference to the table of freezing mixture will show. Equal parts of snow and muriat of soda, sink the mercury to 0, whilst two of snow and one of

The Centigrade thermometer places the zero at the freezing point, and divides the range between it and the boiling point into 100°. This has long been used in Sweden under the title of Celsius's thermometer.

Reaumur's thermometer, which was formerly used in France, divides the space between the freezing and boiling of water into 80°, and places the zero at the freezing point.

Wedgewood's pyrometer is only intended to measure very high temperatures. Its zero corresponds with 1077° of Fahrenheit's, and each degree of Wedgewood is equal to 130 of Fahrenheit.

De Lisle's thermometer is used in Russia. The graduation begins at the boiling point, and increases towards the freezing point. The boiling point is marked 0, and the freezing point 150.

Therefore $180° \text{ F} = 100° \text{ C} = 80° \text{ R} = 150° \text{ D} = \frac{18}{13}\text{W}$, or $= \frac{180}{62.5}\text{ W}$.

Formulæ.

1, To reduce centigrade degrees to those of Fahrenheit, multiply by 9 and divide by 5, and to the quotient add 32, that is, $\frac{C \times 9}{5} + 32 = F$.

2, To reduce Fahrenheit's degrees to centigrade, $\frac{F - 32 \times 5}{9} = C$.

3, To reduce Reaumur's to Fahrenheit's, $\frac{R \times 9}{4} + 32 = F$.

4, To convert Fahrenheit to Reaumur, $\frac{F - 32 \times 4}{9} = R$.

5, To reduce De Lisle's degrees under the boiling point, we have $212 - \frac{D \times 6}{5} = F$. To reduce those above the boiling point, $212 + \frac{D \times 6}{5} = F$.

6, And, inversely, to reduce Fahrenheit's degrees to De Lisle's, under the boiling point $\frac{1060 - F \times 5}{6} = - D$; above the boiling point $\frac{F \times 5 - 1060}{6} = + D$.

7, To reduce Wedgewood's degrees to those of Fahrenheit, $W \times 130 + 1077 = F$; or according to Guyton Morveau, $\frac{F - 517.579}{62.5} = W$.

8, Inversely, to reduce Fahrenheit to Wedgewood, $\frac{F - 1077}{130} = W$.

the salt, carry it 5° lower. The present range of 180° between the freezing and boiling points, is a very convenient one for the regular division of the scale; and it will also facilitate the reduction of the various scales to each other. I have several times adapted this scale to thermometer tubes, and cannot but wish it was in general use. I shall take the liberty to call it the American Thermometer.

Table of the Effects of Heat.

1. Freezing points of Liquids.

Reau.	*Cent.*	*Fahr.*	*Amer*	
		—90		Greatest artificial cold observed
—44	—66	—55	—87	Strongest Nitric acid freezes (Cavendish)
—35	—43	—46	—78	Ether and liquid ammonia
—32	—39	—39	—7	Mercury
—30	—37	—36	—68	Sulphuric acid (Thomson)
—23	—30	—22	—54	Acetous acid
—19	—24	—11	—43	2 Alcohol, 1 water
—17	—14	—7	—39	Brandy; Snow 3 parts with salt 2
—14	—17	+1	—33	Strongest sulphuric acid (Cavendish)
—7	—9	16	—16	Oil of turpentine (Margueron)
—5	—6	20	—12	Strong wines
—4	—5	23	—9	Fluoric acid
				Oils, bergamot and cinnamon
—3	—4	25	—7	Human blood
—2	—2.5	28	—4	Vinegar
—1	-12.5	30	—2	Milk
0	0	32	0	Oxymuriatic acid
0	0	32	0	Water freezes
+2	+2.5	36	+4	Olive oil
6	7	45	13	Sulphuric acid, specific gravity 1.78 (Keir)
14	17	64	32	Oil of aniseseeds, 50 (Thomson)

2. Melting points of Solids.

Reau.	*Cent.*	*Fahr.*	*Amer*	
4	5	40	8	Equal parts sulphur and phosphorus
22	28	82	50	Adipocire of muscle
29	36	97	65	Lard (Nicholson)
30	37	99	67	Phosphorus (Pelletier)
32	40	104	72	Resin of bile
34	42	109	77	Myrtle wax (Cadet)
36	45	112	80	Spermaceti (Bostock)
42	53	127	95	Tallow (Nicholson) 92 (Thomson)
49	61	142	110	Bees' wax
50	63	145	113	Ambergris (La Grange)
55	79	155	123	Bleached wax (Nicholson)
75	94	200		Sodium perfectly fluid
80	100	212	180	Bismuth 5 parts, tin 3, lead 2, 210 (Dalton)
	107			Iodine (Gay Lussac)
89	111	234	202	Sulphur (Hope) 212 (Fourcroy) 185 (Kirwan)
90	116	235	203	Adipocire of biliary calculi (Fourcroy)
112	140	283	251	Tin and bismuth, equal parts
120	150	303	271	Camphor
134	168	334	302	Tin 3, lead 2; or tin 2, bismuth 1
182	227	442	410	Tin (Crichton) 413 (Irvine)
190	238	460	428	Tin 1, lead 4
197	248	476	444	Bismuth (Irvine)
214	267	512		Tin (Guyton Morveau)

Reau	*Cent.*	*Fahr.*	*Amer.*		*Wedg.*
258	325	612	580	Lead (Crichton) 594 (Irvine) 540 (Newton)	
297	371	700	668	Zinc	
945	432	809	777	Antimony	
1678	2100	3807	3775	Brass	21
2024	2530	4587	4555	Copper	27
2082	2602	4717	4685	Silver	28
2313	2780	5237	5205	Gold	32
7475	9850	17977	17945	Cobalt, cast iron	130
9131	11414	20577	20545	Nickel	150
9325	11680	21097	21065	Soft nails	154
9602	12001	21637	21605	Iron	158
9708	12136	21877	21845	Manganese	160
10280	12857	23177	23145	Platina, Tungsten, Molybdena, Uranium, Titanium, &c.	170+

3. Solids and Liquids Volatized.

29	36	98	66	Ether
48	60	140	108	Liquid ammonia
50	63	145	113	Camphor (Venturi)
61	77	170	138	Sulphur (Kirwan)
64	80	176	144	Alcohol 174 (Black)
80	100	212	180	Water and essential oils
83	104	219	187	Phosphorus (Pelletier)
88	110	230	198	Muriat of lime (Dalton)
93	116	242	210	Nitrous acid
96	120	248	216	Nitric acid
112	140	283	251	White oxyd of arsenic
226	282	540	508	Arsenic
232	290	554	522	Phosphorus in close vessels
239	299	570	538	Sulphur
248	310	590	558	Sulphuric acid (Dalton) 546 (Black)
252	315	600	568	Linseed oil, Sulphur (Davy)
279	350	660	628	Mercury (Dalton) 644 (Secondat) 600 (Black)

4. Miscellaneous effects of Heat.

—54	—68	—90	—122	Greatest cold produced by Mr. Walker.
—36	—44	—50	—82	Natural cold observed at Hudson's bay.
—24	—30	—23	—55	Observed on the surface of the snow at Glasgow, 1780
—20	—25	—14	—46	At Glasgow, 1780
—14	—18	0	—32	Equal parts, snow and salt
+5	+6	+43	+11	Phosphorus burns slowly
12	15	59	27	Vinous fermentation begins
15	18	66	34	to 135, Animal putrefaction

Reau	*Cent.*	*Fahr*	*Amer*		*Wedg.*
19	24	75	43	to 80, Summer heat in Britain	
20	25	77	45	Vinous fermentation rapid, acetous begins	
21	26	80	48	Phosphorus burns in oxygen, 104 (Gottling)	
25	31	88	56	Acetification ceases, phosphorus ductile	
28	35	96	64	to 100, Animal temperature	
33	41	107	75	Feverish heat	
40	50	122	90	Phosphorus burns vividly (Fourcroy) 148 (Thomson)	
44	54	130	98	Ammonia disengaged from water	
59	74	165	133	Albumen coagulates 156 (Black)	
120	150	303	271	Sulphur burns slowly	
		600		Boracium burns	
269	335	635	603	Lowest heat of ignition of iron in the dark	
315	384	750	718	Iron bright in the dark	
341	427	800	768	Hydrogen burns, 1000 (Thomson)	
342	428	802	770	Charcoal burns (Thomson)	
380	475	884	752	Iron red in twilight	
448	560	1050	1018	Iron red hot in a common fire	
462	577	1077	1045	Iron red in daylight	1
564	705	1300	1268	Azotic gas burns	+2
737	986	1807	1775	Enamel colours burned	6
1451	1814	2897	2865	Diamond burns (M'Kenzie) 5000 (Morveau)	14
2313	2780	5237	5205	Settling heat of plate glass	29
2880	3580	6507	6475	Delft ware fired	40
3750	4680	8480	8448	Working heat of plate glass	57
4450	5610	10177	10145	Flint glass furnace	70
5370	6770	12257	12225	Cream-coloured ware fired	86
5800	7330	13297	13265	Worcester china vitrified	94
6270	7850	14337	14305	Stone ware fired	102
6520	8150	14727	14695	Chelsea china fired	105
6925	8650	15637	15605	Derby china fired	112
7025	8770	15897	15865	Flint glass furnace greatest heat	114
7100	8880	16007	15975	Bow china vitrified	121
7460	9320	16807	16775	Plate glass greatest heat	124
7650	9600	17327	17295	Smith's forge	125
9131	11414	20577	20545	Hessian crucible fused	150
11106	13900	25127	25095	Greatest heat observed.	185
				Extremity of Wedgewood	240

Table of High Degrees of Heat, according to the correction of Wedgwood's scale by Guyton Morveau.

Reaum.	*Cent.*	*Fahr.*	*Amer.*		*Wedg.*
215.9	269 9	517.76	485.76	Red heat in day light	0
252.4	315.6	599.6	567.6	Linseed oil boils	
257 8	322.2	612.	580.	Lead melts	
271 4	339.3	642.75	610.75	Mercury boils	2
299.2	374.	705.25	673.25	Zinc melts	3

Reaum	*Cent.*	*Fahr.*	*Amer.*		*Wedg.*
382.6	478.2	892.74	860.74	Enamels melt	6
410.2	512.9	955.23	923.23	Antimony melts	7
438.1	547.6	1017.73	985.73	Copper 1 and tin 3 melt	8
465.8	582.3	1080.23	948.23	Silver 1 and tin 1 melt	9
521.8	651.8	1205.22	1183.22	Copper and tin, equal parts, melt	11
632.6	790.7	1455.21	1423.21	Copper 3 and tin 1 melt	15
799.2	998.9	1836.17	1804.17	Brass melts	21
827.	1033.7	1892.67	1860.67	Silver melts	22
965.9	1207.3	2205. 5	2173.15	Copper melts	27
1104.8	1380.9	2517.63	2485.63	Gold melts	32
2715.8	3394.7	6196.40	6164.40	Iron, sweating heat	90
2854.7	3568.3	6508.88	6476.88	Iron, welding heat	95
3549.1	4436.3	8071.28	8039.28	Porcelain of China softens	120
3688.	4609.9	8383.76	8351.76	Smith's forge	125
3826.9	4783.5	8696.24	8664.24	Cast iron melts	130
4243.6	5651.5	9633.68	9601.68	Porcelain melts	155
4382.4	5825.1	10517.12	10475.12	Manganese melts	160
4821.3	5998.7	10829.60	10797.60	Heat of Macquer's furnace	165
4938.0	6172.3	11142.08	11110.08	Furnace with three blasts	170
5076.9	6345.9	11454.56	11422.56	Soft iron melts	175
*	*	*	*	Nickel melts	*
				Platinum melts	

TABLES.

Frigorific Mixtures, selected from Mr. Walker's Publication, 1808, *communicated by the Author.*

Frigorific Mixtures, *without Ice.*

Mixtures.	Thermometer sinks.	Degr. of cold produced
Muriat of ammonia 5 parts Nitrat of potash 5 Water - - 16	From + 50° to + 10°	40
Sulphat of soda 3 parts Diluted nitric acid 2	From + 50 to — 3	53
Sulphat of soda 6 parts Nitrat of ammonia 5 Diluted nitric acid 4	From + 50 to — 14	64
Phosphat of soda 9 parts Nitrat of ammonia 6 Diluted nitric acid 4	From + 50 to — 21	71

N. B. If the materials are mixed at a *warmer* temperature than that expressed in the table, the effect will be proportionally *greater;* thus, if the most powerful of these mixtures be made when the air is + 85°, it will sink the thermometer to + 2°.

Frigorific Mixtures, *with Ice.*

Mixtures.	Thermometer sinks.	Degr. of cold produced.
Snow, or pounded ice, 2 parts Muriat of soda, - 1	*From any Temperature,* to -- 5°	*
Snow, or pounded ice, 12 parts Muriat of soda - - 5 Nitrat of ammonia 5	to — 25	*
Snow - - - - - 3 Diluted sulphuric acid 2	From + 32 to — 23	55
Snow - - - - - - 2 parts Cryst. muriat of lime 3	From + 32 to — 50	82

N. B. The reason for the *omissions* in the last column of this table is, the thermometer sinking in these mixtures to the degree mentioned in the preceding column, *and never lower,* whatever may be the temperature of the materials at mixing.

Combinations of Frigorific Mixtures.

Mixtures.	Thermometer sinks.	Degr. of cold produced.
Snow - - - - 3 parts Diluted nitric acid 2	From 0 to — 46	46
Snow - - - - - - 8 parts Diluted sulphuric acid 3 Diluted nitric acid 3	From —10 to —56	46
Snow - - - - - - 2 parts Muriat of lime - 3	From —15 to —68	53
Snow - - - - - - 8 parts Diluted sulphuric acid 10	From —68 to —91	23

N. B. The materials in the first column are to be cooled, previously to mixing, to the temperature required, by mixtures taken from either of the preceding tables.

TABLES OF SIMPLE AFFINITY.

OXYGEN.
Carbon,
Manganese,
Zinc,
Iron,
Tin,
Antimony,
Hydrogen,
Phosphorus,
Sulphur,
Arsenic,
Nitrogen,
Nickel,
Cobalt,
Copper,
Bismuth.
Caloric ?
Mercury,
Silver,
Arsenious acid,
Nitric oxyd,
Gold,
Platinum,
Carbonic oxyd,
Muriatic acid,
White oxyd of maganese,
White oxyd of lead.

OXYGEN. *
Titanium,
Manganese,
Zinc,
Iron,
Tin,
Uranium,
Molybdenum,
Tungsten,
Cobalt,
Antimony,
Nickel,
Arsenic,
Chromum,
Bismuth,
Lead,
Copper,
Tellurium,
Platinum,
Mercury,
Silver,
Gold.

CARBON.
Oxygen,
Iron,
Hydrogen.

NITROGEN.
Oxygen,
Sulphur ?
Phosphorus,
Hydrogen.

HYDROGEN.
Chlorine,
Oxygen,
Iodine,
Sulphur,
Carbon,
Phosphorus,
Nitrogen.

SULPHUR. PHOSPHORUS ?
Potass,
Soda,
Iron,
Copper,
Tin,
Lead,
Silver,
Bismuth,
Antimony,
Mercury,
Arsenic,
Molybdenum.

POTASS, SODA, & AMMONIA.
Acids. Sulphuric,
Nitric,
Muriatic,
Phosphoric,
Fluoric,
Oxalic,
Tartaric,
Arsenic,
Succinic,
Citric,
Lactic,
Benzoic,
Sulphurous,
Acetic,
Mucic,
Acids Boracic,
Nitrous,
Carbonic,
Prussic,
Oil,
Water,
Sulphur.

BARYTA.
Acids. Sulphuric,
Oxalic,
Succinic,
Fluoric,
Phosphoric,
Mucic,
Nitric,
Muriatic,
Suberic,
Citric,
Tartaric,
Arsenic,
Lactic,
Benzoic,
Acetic,
Boracic,
Sulphurous,
Nitrous,
Carbonic,
Prussic,
Sulphur,
Phosphorus,
Water,
Fixed oil.

STRONTIA.
Acids. Sulphuric,
Phosphoric,
Oxalic,
Tartaric,
Fluoric,
Nitric,
Muriatic,
Succinic,
Acetic,
Arsenic,
Boracic,
Carbonic.
Water.

LIME.
Acids. Oxalic,
Sulphuric,
Acids. Tartaric
Succinic,
Phosphoric,
Mucic,
Nitric,
Muriatic,
Suberic,
Fluoric,
Arsenic,
Lactic,
Citric,
Malic,
Benzoic,
Acetic,
Boracic,
Sulphurous,
Nitrous,
Carbonic,
Prussic,
Sulphur,
Phosphorus,
Water,
Fixed oil.

MAGNESIA.
Acids Oxalic,
Phosphoric,
Sulphuric,
Fluoric,
Arsenic,
Mucic,
Succinic,
Nitric,
Muriatic,
Tartaric,
Citric,
Malic?
Lactic,
Benzoic,
Acetic,
Boracic,
Sulphurous,
Nitrous,
Carbonic,
Prussic,
Sulphur.

ALUMINA.
Acids Sulphuric,
Nitric,
Muriatic,
Oxalic,

* Vauquelin's table of the affinity of the metals for oxygen, according to the difficulty with which their oxyds are decomposed by heat.

Tables of Simple Affinity,—continued.

Acids. Arsenic,
Fluoric,
Tartaric,
Succinic,
Mucic,
Citric,
Phosphoric,
Lactic,
Benzoic,
Acetic,
Boracic,
Sulphurous,
Nitrous,
Carbonic,
Prussic.

SILICA.
Acid. Fluoric,
Potass.

OXYD OF PLATINUM.
OXYD OF GOLD [*]
Acids Gallic,
Muriatic,
Nitric,
Sulphuric,
Arsenic,
Fluoric,
Tartaric,
Phosphoric,
Oxalic,
Citric,
Acetic,
Succinic,
Prussic,
Carbonic,
Ammonia.

OXYD OF SILVER.
Acids. Gallic,
Muriatic,
Oxalic,
Sulphuric,
Mucic
Phosphoric,
Sulphurous,
Nitric,
Arsenic,
Fluoric,
Tartaric,
Citric,
Lactic,
Succinic,
Acetic,
Prussic,

Acids. Carbonic,
Ammonia.

OXYD OF MERCURY
Acids. Gallic,
Muriatic,
Oxalic,
Succinic,
Arsenic,
Phosphoric,
Sulphuric,
Mucic,
Tartaric,
Citric,
Malic,
Sulphurous,
Nitric,
Fluoric,
Acetic,
Benzoic,
Boracic,
Prussic,
Carbonic.

OXYD OF LEAD
Acids Gallic,
Sulphuric,
Mucic,
Oxalic,
Arsenic,
Tartaric,
Phosphoric,
Muriatic,
Sulphurous,
Suberic,
Nitric,
Fluoric.
Citric,
Malic,
Succinic,
Lactic,
Acetic,
Benzoic,
Boracic,
Prussic,
Carbonic,
Fixed oils,
Ammonia.

OXYD OF COPPER.
Acids. Gallic,
Oxalic,
Tartaric,
Muriatic,
Sulphuric,

Acids Mucic,
Nitric,
Arsenic,
Phosphoric,
Succinic,
Fluoric,
Citric,
Lactic,
Acetic,
Boracic,
Prussic,
Carbonic,
Fixed alkalies,
Ammonia,
Fixed oils.

OXYD OF ARSENIC
Acids Gallic,
Muriatic,
Oxalic,
Sulphuric,
Nitric,
Tartaric,
Phosphoric,
Fluoric,
Succinic,
Citric,
Acetic,
Prussic,
Fixed alkalies,
Ammonia,
Fixed oils,
Water.

OXYD OF IRON.
Acids. Gallic,
Oxalic,
Tartaric,
Camphoric,
Sulphuric,
Mucic,
Muriatic,
Nitric
Phosphoric,
Arsenic,
Fluoric,
Succinic,
Citric,
Lactic,
Acetic,
Boracic,
Prussic,
Carbonic

OXYD OF TIN [†].
Acids. Gallic,
Muriatic,
Sulphuric,
Oxalic,
Tartaric,
Arsenic,
Phosphoric,
Nitric,
Succinic,
Fluoric,
Mucic,
Citric,
Lactic,
Acetic,
Boracic,
Prussic,
Ammonia.

OXYD OF ZINC.
Acids. Gallic,
Oxalic,
Sulphuric,
Muriatic,
Mucic,
Nitric,
Tartaric,
Phosphoric,
Citric,
Succinic,
Fluoric,
Arsenic,
Lactic,
Acetic,
Boracic,
Prussic,
Carbonic,
Fixed alkalies,
Ammonia.

OXYD OF ANTIMONY
Acids. Gallic,
Muriatic,
Benzoic,
Oxalic,
Sulphuric,
Nitric,
Tartaric,
Mucic,
Phosphoric,
Citric,
Succinic,
Fluoric,
Arsenic,
Lactic,

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[*] Omitting the oxalic, citric, succinic, and carbonic, and adding sulphureted hydrogen after ammonia.

[†] Bergman places the tartaric before the muriatic.

Tables of Simple Affinity,—continued.

Acids. Acetic,
Boracic,
Prussic,
Fixed alkalies,
Ammonia.

SULPHURIC ACID
PRUSSIC*.
Baryta,
Strontia,
Potass,
Soda,
Lime,
Magnesia,
Ammonia,
Glucina,
Gadolina,
Alumina,
Zirconia,
Metallic oxyds.

SULPHUROUS ACID.
SUCCINIC †.
Baryta,
Lime,
Potass,
Soda,
Strontia,
Magnesia,
Ammonia,
Glucina,
Alumina,
Zirconia,
Metallic oxyds.

PHOSPHORIC ACID.
CARBONIC ‡.
Baryta,
Strontia,
Lime,
Potass,
Soda,
Ammonia,
Magnesia,
Glucina,
Alumina,
Zirconia,
Metallic oxyds,
Silica

PHOSPHOROUS ACID §.
Lime,
Baryta,
Strontia,
Potass,
Soda,
Ammonia,
Glucina,
Alumina,
Zirconia,
Metallic oxyds.

NITRIC ACID.
MURIATIC ||.
Baryta,
Potass,
Soda,
Strontia,
Lime,
Magnesia,
Ammonia,
Glucina,
Alumina,
Zirconia,
Metallic oxyds.

FLUORIC ACID
BORACIC ¶.
ARSENIC * *.
TUNGSTIC.
Lime,
Baryta,
Strontia,
Magnesia,
Potass,
Soda,
Ammonia,
Glucina,
Alumina,
Zirconia,
Silica.

ACETIC ACID.
LACTIC. SUBERIC.
Baryta,
Potass,
Soda,
Strontia,
Lime,
Ammonia,
Magnesia,
Metallic oxyds,
Glucina,
Alumina,
Zirconia.

OXALIC ACID.
TARTARIC.
CITRIC † †.
Lime,
Baryta,
Strontia,
Magnesia,
Potass,
Soda,
Ammonia,
Alumina,
Metallic oxyds,
Water,
Alcohol.

BENZOIC ACID
White oxyd of arsenic,
Potass,
Soda,
Ammonia,
Baryta,
Lime,
Magnesia,
Alumina.

CAMPHORIC ACID.
Lime,
Potass,
Soda,
Baryta,
Ammonia,
Alumina,
Magnesia,

FIXED OILS.
Lime,
Baryta,
Potass,
Soda,
Magnesia,
Oxyd of mercury,
Other metallic oxyds,
Alumina.

ALCOHOL.
Water,
Ether,
Volatile oil,
Alkaline sulphurets.

SULPHURETED HYDROGEN.
Baryta,
Potass,
Soda,
Lime,
Ammonia,
Magnesia,
Zirconia

* With the omission of all after ammonia.

† Ammonia should come before magnesia; and strontia, glucina, and zirconia should be omitted.

‡ Magnesia should stand above ammonia, and alumina and silica should be omitted.

§ Ammonia should stand above magnesia.

|| Silica should be omitted, and, instead of it, water and alcohol be inserted.

¶ Except silica.

* * With the omission of strontia, metallic oxyds, glucina, and zirconia.

† † Zirconia after alumina.

Relative attractions at the lowest temperature of Visible Ignition, by Sir H. Davy.

OXYGEN.	CHLORINE.	SULPHUR.	PHOSPHORUS.
Potassium	Potassium	Potassium	Potassium
Sodium	Sodium	*Sodium*	*Sodium*
Barium	Zinc	Iron	Platinum
Boron	Iron	Copper	Zinc
Carbon	Lead	Palladium	Antimony
Manganesum	Silver	Lead	Sulphur
Zinc	Antimony	*Silver*	
Iron	Bismuth		
Tin	Phosphorus		
Phosphorus	Copper		
Antimony	Sulphur		
Bismuth	Mercury		
Lead	Platinum,		
Sulphur	Gold		
Arsenic			
Tungstenum			
Azote			
Palladium			
Mercury			
Silver			
Gold			
Platinum			

Cases of Mutual Decomposition.

1. FROM SIMPLE AFFINITY.

Sulphat of potass -	with	Muriat of baryta
soda -	—	Nitrat of potass
ammonia -	—	Muriat of potass
magnesia -	—	Carbonat of potass
Supersulphat of alumina -	—	Muriat of lime
Nitrat of potass - -	—	baryta
ammonia -	—	Phosphat of soda
Muriat of baryta - -	—	All the sulphats and nitrats
soda - -	—	Carbonat of potass
lime - -	—	Sub-borat of Soda
ammonia - -	—	Carbonat of potass
Phosphat of soda - -	—	Muriat of ammonia
Sub-borat of soda - -	—	Carbonat of potass
Nitrat of silver - -	—	Muriat of soda
Acetat of lead - - -	—	Citrat of potass
Sulphat of mercury -	—	Muriat of soda
Soap of potass - -	—	soda
soda - -	—	Sulphat of lime

2. FROM COMPOUND AFFINITY.

Sulphat of baryta	with	Carbonat of potass
baryta	—	soda
potass	—	Muriat of lime
soda	—	Ditto
Muriat of baryta	—	Phosphat of soda
Ditto	—	Sub-borat of soda
Ditto	—	Carbonat of potass
Ditto	—	soda
Ditto	—	ammonia
Muriat of lime	—	ammonia
Phosphat of soda	—	lime
Acetat of lead	—	Sulphat of zinc
Ditto	—	Nitrat of mercury.

Cases of Disposing Affinity.

The formation of water by the action of the sulphuric acid on the compound oxyds.

The oxydation of metals by water, in consequence of the presence of an acid.

*Table of Incompatible Salts.**

SALTS	INCOMPATIBLE WITH
1. Fixed alkaline sulphats	Nitrats of lime and magnesia Muriats of lime and magnesia
2. Sulphat of lime	Alkalies Carbonat of magnesia Muriat of barytes
3. Alum	Alkalies Muriat of barytes Nitrat, muriat, carbonat of lime Carbonat of magnesia
4. Sulphat of magnesia	Alkalies Muriat of barytes Nitrat and muriat of lime
5. Sulphat of iron	Alkalies Muriat of barytes Earthy carbonats
6. Muriat of barytes	Sulphats Alkaline carbonats Earthy carbonats
7. Muriat of lime	Sulphats, except of lime Alkaline carbonats Carbonat of magnesia

* That is, salts which cannot exist together in solution, without mutual decomposition.

SALTS	INCOMPATIBLE WITH
8. Muriat of magnesia	Alkaline carbonats Alkaline sulphats
9. Nitrat of lime	Alkaline carbonats Carbonats of magnesia and alumina Sulphats, except of lime.

Quantity of real Acid taken up by mere Alkalies and Earths, (Kirwan.)

100 *Parts.*	*Sulphuric.*	*Nitric*	*Muriatic.*	*Carbonic Acid.*
Potash	82,48	84,96	56,3	105, almost.
Soda	127,68	135,71	73,41	66, 8.
Ammonia	383,8	247,82	171,	Variable.
Baryt.	50,	56,	31,8	282.
Strontia	72,41	85,56	46,	43,2.
Lime	143,	179,5	84,488	81,81.
Magnesia	172,64	210,	111,35	200, Fourcroy.
Alumine	150,9			335, nearly, Bergmann.

Quantity of Alkalies and Earths taken up by 100 parts of real Sulphuric, Nitric, Muriatic, and Carbonic Acids, Saturated, (Kirwan.)

100 *Parts.*	*Potash.*	*Soda.*	*Ammonia*	*Baryt.*	*Strontia.*	*Lime.*	*Mag.*
Sulphuric.	121,48	78,32	26,05	200,	138,	70,	57,92
Nitrous.	117,7	73,3	40,35	178,12	116,86	55 7	47.64
Muriatic.	177,6	136,2	58,48	314,46	216,21	118,3	898,
Carbonic.	95,1	149,6		354.5	231.+	122.	50.

Table of the respective quantities of Acid and Base required to neutralize each other, calculated by Fischer from Richter's Experiments.

BASES.		ACIDS.	
Alumine - - -	525	Fluoric - - -	427
Magnesia - - -	615	Carbonic - - -	577
Ammonia - - -	672	Sebacic - - -	706
Lime - - -	793	Muriatic - - -	712
Soda - - - -	859	Oxalic - - -	755
Strontites - - -	1329	Phosphoric - - -	979
Potash - - - -	1605	Formic - - -	988
Barytes - - -	2222	Sulphuric - - -	1000
		Succinic - - -	1209
		Nitric - - - -	1405
		Acetic - - -	1480
		Citric - - - -	1563
		Tartaric - - -	1694

Table, showing the Maximum Quantity of Oxygen taken up by different Substances.

SIMPLE COMBUSTIBLES.

100 Hydrogen unite with - - - -	597.7 Oxygen.
100 Carbon - - - - - - -	257.
100 Azote - - - - - - - -	236.
100 Muriatic acid - - - - - -	194.
100 Phosphorus - - - - -	154.
100 Sulphur - - - - - - -	71.3

METALS.

100 Chrome combine with - - -	200. Oxygen.
100 Iron - - - - - - - -	92.3
100 Manganese - - - - - -	66.
100 Arsenic - - - - - - -	53.
100 Tin - - - - - - -	38.8
100 Antimony - - - - - - -	30.
100 Zinc 100 Copper 100 Lead 100 Tungsten } - - - - -	25.
100 Mercury - - - - - - -	17.6
100 Platina - - - - - - -	15.
100 Silver - - - - - - - -	12.8
100 Bismuth - - - - - - -	12.
100 Gold - - - - - - - -	10.

Table of the Specific Heats of equal Weights of some Bodies compared with Water.

	Crawford.	Dalton's hypothesis.	De La Roche and Berard.
Water - - -	1.000	1.000	1.000
Atmospheric air - -	1.790	1.759	0.2669
Hydrogen gas - -	21.400	9.382	3.2936
Carbonic acid gas - -	1.045	0.491	0.2210
Oxygen gas - -	4.749	1.333	0.2361
Azotic gas - - -	0.793	1.866	0.2754
Nitrous oxyd - - - -		0.549	0.2369
Nitrous gas - - - -		0.777	
Olefiant gas - - - -		1.555	0.4207
Carbonic oxyd gas - - -		0.777	0.2884
Steam - - - - -		1.166	0.8470
Ammoniacal gas - - -		1.555	
Carbureted hydrogen - - -		1.333	
Nitric acid gas - - -		0.491	
Sulphureted hydrogen - - -		0.583	
Muriatic acid gas - - -		0.424	
Ether vapour - - - -		0.848	
Alcohol vapour - - -		0.586	

Kirwan's Table, showing the Composition of Salts.

COMPONENT PARTS.

SALTS.	BASIS.	ACID.	WATER.	STATE.
Carbonat of potash	41.	43.	16. - - - - -	Crystallized.
Pearl-ash - -	60.	30.	6. - - - - -	Dry.
Carbonat of soda -	21.58	14.42	64. - - - - -	Fully crystallized.
ditto -	59.86	40.05	- - - - -	Desiccated.
barytes	78.	22.	- - - - - -	Natural or ignited.
strontian	69.5	30.	- - - - -	Natural or ignited.
lime -	55.	45.	- - - - - -	Natural if pure, or artificial ignited.
magnesia	25.	50.	25. - - - - -	Crystallized.
common ditto	45.	34.	21. - - - - - -	Dried at 80°.
Sulphat of potash -	54 8	45.2	- - - - -	Dry.
soda -	8 48	23.52	58. - - - - -	Fully crystallized.
ditto -	44.	56.	- - - - -	Desiccated at 700°.
ammonia	14.24	54.66	31.1 - - - - -	
barytes -	66.66	33.33	- - - - -	Natural and pure, artificial ignited
strontian	58.	42.	- - - - - -	Natural and pure, artificial ignited.
lime -	32.	46.	22. - - - - -	Dried at 66°.
ditto -	35.23	50.39	14.38 - - - - -	Dried at 170°.
ditto -	88.81	5 .84	5.35 - - - - -	Ignited.
ditto -	41.	59.	- - - - - -	Incandescent.
magnesia	17.	29.35	53.65 - - - - -	Fully crystallized.
ditto -	36 68	63.32	- - - - - -	Desiccated.
Alum - - -	12. ignited	17 66	51. of crystals + 19.24 in the earth	Crystallized.
Ditto - - -	63.75	36.25	- - - - - - -	Desiccated at 700°.

Table, showing the Composition of Salts,—Continued.

COMPONENT PARTS.

SALTS.	BASIS.	ACID.	WATER.	STATE.
Nitrat of potash	51.8	44.	4.2 of Composition	Dried at 70°.
soda	40 58	53.21	6.21 of Composition	Dried at 400°.
ditto	42.34	57 55		Ignited.
ammonia	23.	57.	20.	
barytes	57.	32.	11.	Crystallized.
strontian	36.21	31.07	32.72	Crystallized.
lime	32.	57 44	10.56	Well dried, that is, in air.
Magnesia	22.	46.	22.	Crystallized.
Muriat of potash	64.	36.		Dried at 80°.
soda	53.	47. aqueous, 38.88 real		Dried at 80°.
ammonia				Crystallized.
ditto	25.	42.75	32.25	Sublimed.
barytes	64.	20.	16.	Crystallized.
ditto	76 2	23.8		Desiccated.
strontian	40.	18.	42.	Crystallized.
ditto	69.	31.		Desiccated.
lime	50.	42.	8.	Red hot.
magnesia	31.07	34.59	34.34	Sensibly dry.

Colour of the Precipitates thrown down from Metallic Solutions by various Re-agents. Henry.

Metals.	*Prussiated Alkalies.*	*Tincture of Galls.*	*Water impregnated with Sulphureted Hydrogen.*	*Hydrosulphurets.*
Antimony	White	A white oxyd from dilution	Orange	Orange
Arsenic	White	Little change	Yellow	Yellow
Bismuth	White	Orange	Black	Black
Cerium		Yellowish		Brown, becoming deep green
Chrome	Green	Brown		Green
Cobalt	Brownish-yellow	Yellowish-white	Not precipitated	Black
Columbium	Olive	Orange		Chocolate
Copper	Bright reddish brown	Brownish	Black	Black
Gold	Yellowish-white	Solution turned green, precipitate brown of reduced gold	Yellow	Yellow
Iridium	No precip. colour discharged	None; colour discharged		
Iron { 1, green salts	White changing to blue	No precipitate	Not precipitated	Black
Iron { 2, red salts	Deep blue	Black		
Lead	White	White	Black	Black
Manganese	Yellowish-white	No precipitate	Not precipitated	White
Mercury	White changing to yellow	Orange-yellow	Black	Brownish-black
Molybdena	Brown	Deep-brown	Brown	
Nickel	Green	Greyish-white	Not precipitated	Black
Osmium		Purple, changing to vivid blue		
Palladium	Olive* deep orange†		Dark-brown	Dark-brown
Platina	No precipit.; but an orange one by prussiat of mercury	Dark-green becoming paler	Precipitated in a metallic state	
Rhodium	No precipitate			No precipitate
Silver	White	Yellowish-brown	Black	Black
Tantalium				
Tellurium	No precipitate	Yellow		Blackish
Tin	White	No precipitate	Brown	Black
Titanium	Grass-green with some brown	Reddish-brown	Not precipitated	Grass-green
Tungsten				
Uranium	Brownish-red	Chocolate		Brownish-yellow
Zinc	White	No precipitate	Yellow	White

* Chenevix. † Wollaston.

Table of the Solubility of Saline and other Substances, in 100 parts of Water, at the temperature of 60° *and* 212°

	60°	212°
ACIDS.		
Sulphuric	unlimited	unlimited
Nitric	do	do
Acetic	do	do
Prussic	do	do
Phosphoric, Tartaric, Malic, Lactic, Laccic } very soluble		
Arsenic	150	
Arsenious acid	1.25	6.
Citric	133	200
Oxalic	50	100
Gallic	8.3	66
Boracic	2.8	8
Mucic	0.84	1.25
Succinic	{ 4 1.04	50
Suberic	0.69	50
Camphoric	1.04	8.3
Benzoic	0.208	4.17
Molybdic		0.1
Chromic, unknown		
Tungstic, insoluble		
SALIFIABLE BASES.		
Potass	50	more
Soda, somewhat less than potass		
Baryta	5	50
crystallized	57	unlimited
Strontia	0.6	
crystallized	1.9	50
Lime	0.2	
SALTS.		
Sulphat of potass	6.25	20
Supersulphat of potass	50	100+
Sulphat of soda	37.4	125
ammonia	50	100
magnesia	100	133
alumina, very soluble, proportion unknown		
Supersulphat of alumina and potass / ammonia } alum	5	133
Nitrat of baryta	8.	25
potass	14.25	100+
soda	33	100
Nitrat of strontia	100	200
lime	400	any quantity

	Temperature at 60°	212°
Nitrat of ammonia	50	200
magnesia	100	100+
Muriat of baryta	20	
potass	33	
soda	35.42	36.16
strontia	150	any quantity
lime	200	
ammonia	33	100
magnesia	100	
Oxymuriat of potass	6	40
Phosphat of potass, very soluble		
soda	25	50
ammonia	25	25+
magnesia	6.6	
Sub-borat of soda	8.4	50.
Carbonat of potass	25	83 3
soda	50	100+
magnesia	2	
ammonia	50+	100
Acetat of potass	100	
soda	35	
ammonia, very soluble		
magnesia, ditto		
strontia		40.8
Supertartrat of potass	1.67	3.3
Tartrat of potass	25	
and soda	25	
Oxalat of potass	33	
ammonia	4.5	
Super-oxalat of potass		10
Citrat of potass, very soluble		
Prussiat of potass and iron		
Nitrat of silver, very soluble		
Muriat of mercury (corrosive sublimate)	5	50
Sulphat of copper	25	50
Acetat of copper, very soluble		
Sulphat of iron	50	133
Muriat of iron, very soluble		
Tartrat of iron and potass		
Acetat of mercury		
Sulphat of zinc	44	44+
Acetat of zinc, very soluble		
lead (Ed. Pharm.) Bostock	27	
as it exists in Goulard's extract, more sol.		
Tartrat of antimony and potass, Duncan	6.6	83
Alkaline soaps, very soluble		
Sugar	100	any quantity
Gum, very soluble		
Starch,	0	very soluble

	Temperature at 60°	
Jelly - - - - -	sparingly	abundantly
Gelatine - - - -	soluble	more so
Urea, very soluble		
Cinchonin		

Salts not soluble in 100 times their weight of Water.

Sulphats of baryta, strontia, and lime, and subsulphat of mercury.
Phosphats of baryta, strontia, lime, magnesia, and mercury.
Fluat of lime.
Carbonats of baryta, strontia, and lime.
Muriats of lead and silver, and submuriat of mercury (Calomel).
Subacetat of copper.

Solubility of Saline and other Substances in 100 parts of Alcohol, at the temperature of 176°

All the acids, except the sulphuric, nitric, and oxymuriatic, which decompose it, and the phosphoric and metallic acids.
Potass, soda, and ammonia, very soluble.
Red sulphat of iron.

Muriat of iron - - - - -	100
lime - - - - -	100
Nitrat of ammonia - - - - -	89.2
Muriat of mercury - - - -	88.3
Camphor - - - - - -	75.
Nitrat of silver - - - - - -	41.7
Refined sugar - - - - -	24.6
Muriat of ammonia - - - - -	7.1
Arseniat of potass - - - - -	3.75
Nitrat of potass - - - - - -	2.9
Arseniat of soda - - - - -	1.7

Muriat of soda (Mr. Chenevix.) Alkaline soaps. Magnesian do. Extractive. Tannin. Volatile oils. Adipocire. Resins. Urea. Cinchonin.

Substances insoluble in Alcohol.

Earths.
Phosphoric and metallic acids.
Almost all the sulphats and carbonats.
The nitrats of lead and mercury.
The muriats of lead, silver and soda.
The sub-borat of soda.
The tartrat of soda and potass, and the supertartrat of potass.
Fixed oils, wax, and starch.
Gum, caoutchouc, suber, lignin, gelatin, albumen, and fibrin.

Table of the Solubility of Fats in 100 *parts of alcohol and sulphuric ether. By P. F. G. Boullay.*

	Alcohol, sp. gr. 0.828. 48 Fahr.	74 boiling.	Ether. 48 Fahr.
Hogs lard	1.04	1.74	25
Mutton suet	0.69	1.39	10
Spermaceti	1.39	8.33	20

Table of the Solubility of Fixed Fluid Oils in 100 *parts of Alcohol and Acetic ether at* 55° *Fahr. By L. A. Planche.*

	Alcohol sp. gr. 0.28.	Acetic Ether.
Castor oil	every proportion.	800 and upwards.
Poppy seed oil, a year old	0.8	
Linseed oil	0.6	50.
Walnut oil	0.6	50.
Poppy seed oil, new	0.4	33.
Beech mast oil	0.4	40.
Olive oil	0.3	20.
Oil of sweet almonds	0.3	25.
Oil of bitter almonds	0.3	
Nut oil	0.3	14.

Proportion of Oil and Suet in various Fats according to Braconnot.

	Oil.	Suet.
Melted butter, summer	60	40
winter	35	65
Hogs lard	62	38
Beef marrow	24	76
Mutton marrow	74	26
Goose grease	72	32
Turkey grease	74	26
Olive oil	72	28
Oil of almonds	76	24
colsa	54	46

Table of the Absorption of Gases by 100 *Parts of Water at* 60° *F.*

	Volume.	
Nitric acid	361000.	
Muriatic acid	51500.	Thomson.
Ammonia	47500.	Davy.
———	78000.	Thomson.
Sulphurous acid	12109.	Fourcroy.
———	3300.	Thomson.
———	1440.	Priestley.

	Volume.	
Carbonic acid - - - -	108.	Henry.
Sulphureted hydrogen - -	108.	Henry.
Nitrous oxyd - - - -	86.	Henry.
Olefiant gas - - - -	12.5	Dalton.
Nitric oxyd - - - -	5.	Henry.
Oxygen - - - -	3.7	Henry.
Phosphureted hydrogen - -	2.14	Henry.
Carbonic oxyd - - -	2.01	Henry.
Hydrogen - - - -	1.61	Henry.
Nitrogen - - - -	1.53	Henry.
Carbureted hydrogen - - -	1.40	Henry.

Table of Efflorescent Salts (Cadet de Vaux.)

288 grains of	in days	lost grains
Sulphat of soda - - - - -	61	203
Phosphat of soda - - - -	39	91
Carbonat of soda - - - - -	51	86

Table of Deliquescent Salts (Cadet de Vaux.)

288 grains of	in days	absorbed
Acetat of potass - - - -	146	700
Muriat of lime - - - - -	124	684
——— manganese - - -	105	629
Nitrat of manganese - - - -	89	527
——— zinc - - - - - -	124	495
——— lime - - - - - -	147	448
Muriat of magnesia - - - -	139	441
Nitrat of copper - - - - -	128	397
Muriat of antimony - - - -	124	388
——— alumina - - - -	149	342
Nitrat of alumina - - - -	147	300
Muriat of zinc - - - - -	76	294
Nitrat of soda - - - - -	137	257
——— magnesia - - - -	73	207
Acetat of alumina - - - -	104	202
Supersulphat of alumina - - -	121	202
Muriat of bismuth - - - -	114	174
Superphosphat of lime - - - -	93	165
Muriat of copper - - - -	119	148

Table of some Galvanic Circles, composed of two perfect Conductors, and one Imperfect Conductor, (Davy)

More oxygenizable substances.		Less oxygenizable substances.		Oxygenizing fluids.
	Zinc		with gold, charcoal, silver, copper, tin, iron, mercury.	Solutions of nitric acid in water, of muriatic acid, sulphuric acid, &c. Water, holding in solution oxygen, atmospheric air.
	Iron		—— gold, charcoal, silver, copper, tin.	
	Tin		—— gold, silver, charcoal.	
	Lead		—— gold, silver.	
	Copper		—— gold, silver.	Solution of nitrats of silver, and mercury. Nitric acid, acetous acid.
	Silver		—— gold.	Nitric acid.

Galvanic Circles, composed of two Imperfect Conductors, and one Perfect Conductor.

Perfect Conductors.	Imperfect Conductors.	Imperfect Conductors.
Charcoal Copper Silver Lead Tin Iron Zinc	Solutions of hydroguretted alkaline sulphurets, capable of acting on the first three metals, but not on the last three.	Solutions of nitrous acid, oxygenized muriatic acid, &c. Capable of acting on all the metals.

Electrical System of Bodies, by Ritter.

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INSULATORS.	CONDUCTORS.
Sulphur	Water
Sealing-wax	Oxyd of manganese
Black silk	Graphite
White silk	Metallic sulphurets
Paper	Charcoal
Wood	Silver
Wool	Copper
Glass	Iron
Tourmalin	Lead
Diamond	Zinc

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Table of the Weight of the Ultimate Particles or Atoms of Bodies, and of the constitution of compound bodies, according to M. Dalton's theory of definite proportions; drawn up by Dr. T. Thomson.

	Weight of an atom.
Oxygen	1.000
Hydrogen	0.132
Carbon	0.751
Azote	1.803
Phosphorus	2.618
Sulphur	2.000
Boron	0.733
Chlorine	4.498
Iodine	11.160
Potassium	5.000
Sodium	5.882
Barytum	8.731
Strontium	5.900
Calcium	2.620
Magnesium	1.577
Ammonium	1.149
Gold	24.968
Platinum	12.161
Silver	13.714
Mercury	25.000
Palladium	14.204
Copper	8.000
Iron	7.143
Nickel	7.305
Tin	14.705
Lead	12.987
Zinc	4.095
Bismuth	8.994
Antimony	11.249
Tellurium	4.027
Arsenic	6.000
Cobalt	7.326
Manganese	7.115
Uranium	12.000
Molybdenum	6.013
Tungsten	12.121
Cerium	11.487
Chromium	4.720
Titanium	18.010
Rhodium	14.903

	Number of atoms.		Weight of an integrant particle.
Water, composed of	1 *o*	+ 1 *h*	1.132
Carbonic oxyd	1 *o*	1 *c*	1.751
Carbonic acid	2 *o*	1 *c*	2.751
Nitrous oxyd	1 *o*	1 *a*	2.803

	Number of atoms.		Weight of an integrant particle.
Nitrous gas	2 *o* +	1 *a*	3.803
Nitrous acid	3 *o*	1 *a*	4.803
Nitric acid	5 *o*	1 *a*	6.803
Phosphorous acid	2 *o*	1 *p*	4.618
Phosphoric acid	3 *o*	1 *p*	5.618
Sulphurous acid	2 *o*	1 *s*	4.000
Sulphuric acid	3 *o*	1 *s*	5.000
Oxalic acid	3 *o*	2 *c* + 1 *h*	4.634
Potash	1 *p*	1 *o*	6.000
Peroxyd of potash	1 *p*	3 *o*	8.000
Soda	1 *s*	2 *o*	7.882
Peroxyd of soda	1 *s*	3 *o*	8.882
Barytes	1 *b*	1 *o*	9.731
Strontia	1 *st*	1 *o*	6.900
Lime	1 *l*	1 *o*	3.620
Magnesia	1 *m*	1 *o*	2.577
Alumina	-	-	2.136
Glucina	-	-	3.600
Yttria	-	-	8.400
Zirconia	-	-	5.656
Silica	-	-	4.066
Protoxyd of gold	1 *g* +	1 *o*	25.968
Peroxyd of gold	1 *g*	3 *o*	27.968
Protoxyd of platinum	1 *p*	1 *o*	13.161
Peroxyd of platinum	1 *p*	2 *o*	14.161
Oxyd of silver	1 *s*	1 *o*	14.714
Protoxyd of mercury	1 *m*	1 *o*	26.000
Peroxyd of mercury	1 *m*	2 *o*	27.000
Protoxyd of palladium	1 *p*	1 *o*	15.204
Peroxyd of palladium	1 *p*	2 *o*	16.204
Protoxyd of copper	1 *c*	1 *o*	9.000
Peroxyd of copper	1 *c*	2 *o*	10.000
Deutoxyd of iron	1 *i*	2 *o*	9.143
Peroxyd of iron	1 *i*	3 *o*	10.143
Deutoxyd of nickel	1 *n*	2 *o*	9.305
Peroxyd of nickel	1 *n*	3 *o*	10.305
Deutoxyd of tin	1 *t*	2 *o*	16.705
Tritoxyd of tin	1 *t*	3 *o*	17.705
Peroxyd of tin	1 *t*	4 *o*	18.705
Protoxyd of lead	1 *l*	1 *o*	13.987
Red oxyd of lead	2 *l*	3 *o*	28.974
Deutoxyd of lead	1 *l*	2 *o*	14.987
Oxyd of zinc	1 *z*	1 *o*	5.095
Oxyd of bismuth	1 *b*	1 *o*	9.994
Tritoxyd of antimony	1 *a*	3 *o*	14.249
White oxyd of antimony	1 *a*	4 *o*	15.249
Antimonic acid	1 *a*	6 *o*?	17.249
Oxyd of tellurium	1 *t*	1 *o*	5.027
Deutoxyd of arsenic	1 *a*	2 *o*	8.000

	Number of atoms.		Weight of an integrant particle.
Arsenic acid	1 *a* +	3 *o*	9.000
Deutoxyd of cobalt	1 *c*	2 *o*	9.326
Peroxyd of cobalt	1 *c*	3 *o*	10.326
Protoxyd of manganese	1 *m*	1 *o*	8.115
Deutoxyd of manganese	1 *m*	2 *o*	9.115
Tritoxyd of manganese	1 *m*	3 *o*	10.115
Peroxyd of manganese	1 *m*	4 *o*	11.115
Protoxyd of uranium	1 *u*	1 *o*	13.000
Peroxyd of uranium	1 *u*	3 *o*	15.000
Deutoxyd of molybdenum	1 *m*	2 *o*	8.013
Peroxyd of molybdenum	1 *m*	3 *o*	9.013
Deutoxyd of tungsten	1 *t*	2 *o*	14.121
Peroxyd of tungsten	1 *t*	3 *o*	15.121
Deutoxyd of cerium	1 *c*	2 *o*	13.487
Peroxyd of cerium	1 *c*	3 *o*	14.487
Green oxyd of chromium	1 *c*	*e o*	6.720
Brown oxyd of chromium	1 *c*	3 *o*	7.720
Chromic acid	1 *c*	4 *o*	8.720
Protoxyd of titanium	1 *t*	1 *o*	19.010
Peroxyd of titanium	1 *t*	2 *o*	20.010
Protoxyd of rhodium	1 *rh*	1 *o*	15.903
Deutoxyd of rhodium	1 *rh*	2 *o*	16.903
Peroxyd of rhodium	1 *rh*	3 *o*	17.903
Olefiant gas	1 *h*	1 *c*	0.883
Carbureted hydrogen	2 *h*	1 *c*	1.015
Ammonia	1 *h*	1 *a*	1.935
Hydrophosphorous gas	4 *h*	1 *p*	3.146
Phosphureted hydrogen	3 *h*	1 *p*	3.014?
Sulphureted hydrogen	1 *h*	1 *s*	2.132
Chloride of oxygen	1 *ch*	1 *o*	5.498
Muriatic acid	1 *ch*	2 *h*	4.762
Chloride of sulphur	1 *ch*	1 *o*	6.498
Prochloride of phosphorus	1 *ch*	1 *p*	6.241
Perchloride of phosphorus	2 *ch*	1 *p*	10.996
Chloride of azote	4 *ch*	1 *a*	19.705
Chloride of potassium	1 *ch*	1 *p*	9.498
Chloride of sodium	2 *ch*	1 *s*	14.878
Chloride of ammonium	1 *ch*	1 *am*	5.647
Chloride of barytium	1 *ch*	1 *b*	13.229
Chloride of strontium	1 *ch*	1 *str*	10.398
Chloride of calcium	1 *ch*	1 *c*	7.118
Chloride of magnesium	1 *ch*	1 *m*	6.075
Chloride of silver	1 *ch*	1 *s*	18.212
Prochloride of mercury	1 *ch*	1 *m*	29.498
Perchloride of mercury	2 *ch*	1 *m*	34.996
Prochloride of copper	1 *ch*	1 *c*	12.498
Perchloride of copper	2 *ch*	1 *c*	16.996
Prochloride of iron	2 *ch*	1 *i*	16.139
Perchloride of iron	4 *ch*	1 *i*	25.135

	Number of atoms.		Weight of an integrant particle.
Prochloride of tin - - -	2 *ch* +	1 *t*	23.701
Perchloride of tin - -	4 *ch*	1 *t*	32.697
Chloride of lead - - -	2 *ch*	1 *l*	21.983
Chloride of zinc - -	1 *ch*	1 *z*	8.593
Chloride of bismuth - -	1 *ch*	1 *b*	13.493
Chloride of antimony -	2 *ch*	1 *a*	20.245
Chloride of arsenic - -	2 *ch*	1 *a*	14.996
Chloride of manganese -	2 *ch*	1 *m*	16.111
Chloride of carbonic oxyd -	1 *ch*	1 *c. ox*	6.249
Sulphuret of carbon - -	1 *c*	2 *s*	2.751
Phosphuret of sulphur -	1 *p*	1 *s*	4.618
Sulphuret of gold - -	1 *g*	3 *s*	30.968
Sulphuret of platinum -	1 *p*	2 *s*	16.161
Sulphuret of silver - -	1 *s*	1 *s*	15.714
Prosulphuret of mercury - -	1 *m*	1 *s*	27.000
Persulphuret of mercury or cinnabar	1 *m*	2 *s*	29.000
Sulphuret of copper - -	1 *c*	1 *s*	10.000
Magnetic pyrites - -	1 *i*	2 *s*	11.143
Cubic pyrites - -	1 *i*	4 *s*	15.143
Sulphuret of nickel -	1 *n*	1 *s*	9.305
Prosulphuret of tin - -	1 *t*	1 *s*	16.705
Persulphuret of tin or mosaic gold	1 *t*	2 *s*	18.705
Sulphuret of lead - -	1 *l*	1 *s*	14.987
Persulphuret of lead - -	1 *l*	2 *s*	16.987
Sulphuret of zinc - -	1 *z*	1 *s*	6.095
Sulphuret of bismuth - -	1 *b*	1 *s*	10.994
Sulphuret of antimony -	1 *a*	2 *s*	15.249
Sulphuret of tellurium - -	1 *t*	2 *s*	8.027
Sulphuret of arsenic or realgar	1 *a*	1 *s*	8.000
Orpiment - - -	1 *a*	2 *s*	10.000
Sulphuret of cobalt - -	1 *c*	1 *s*?	9.326?
Sulphuret of manganese -	1 *m*	1 *s*	9.115
Sulphuret of molybdenum -	1 *m*	2 *s*	10.013
Sulphuret of potassium -	1 *p*	1 *s*	7.000
Sulphuret of potash -	1 *p*	1 *s*	8.000
Sulphuret of sodium -	1 *s*	2 *s*	9.882
Carburet of phosphorus -	1 *c*	1 *p*	3.369?
Hydrat of potash - -	1 *p*	1 *w*	7.132
Hydrat of soda - - -	1 *s*	1 *w*	9.014
Hydrat of lime - -	1 *l*	1 *w*	4.752
Hydrat of barytes - -	1 *b*	1 *w*	10.863
Hydrat of strontian - -	1 *st*	1 *w*	8.032
Hydrat of magnesia - -	2 *m*	1 *w*	6.286
Hydrat of alumina - -	1 *a*	1 *w*	3.268
Hydrat of glucina - -	1 *g*	1 *w*	4.732
Hydrat of yttria - -	1 *y*	3 *w*	11.796
Hydrat of zirconia - -	1 *z*	1 *w*	6.788

	Number of atoms.		Weight of an integrant particle.
Hydrat of silica - -	1 *si* +	1 *w*	5.198
Hydrosulphuric acid, or acid of 1.85	1 *s*	1 *w*	6.132
2d hydrat of sulphuric acid, or acid of 1.780	1 *s*	2 *w*	7.264
3d hydrat of sulphuric acid, or acid of 1.65	1 *s*	3 *w*	8.396
Hydronitric acid, or acid of 1.620	2 *n*	1 *w*	14.738
2d hydrat of nitric acid, or acid of 1.54	1 *n*	1 *w*	7.935
3d hydrat of nitric acid, or acid of 1.42	1 *n*	2 *w*	9.067
4th hydrat of nitric acid, or acid of 1.350	1 *n*	3 *w*	10.199
Hydrophosphorous acid -	2 *p*	1 *w*	5.750
Hydrat of boracic acid - -	1 *b*	3 *w*	9.106
Hydrat of peroxyd of copper	1 *c*	1 *w*	11.132
Hydrat of black oxyd of iron -	1 *i*	1 *w*	10.275
Hydrat of red oxyd of iron -	1 *i*	1 *w*	11.275
Hydrat of deutoxyd of tin -	1 *t*	1 *w*	17.837
Hydrat of peroxyd of tin -	1 *t*	1 *w*	18.969
Hydrat of deutoxyd of nickel -	1 *n*	2 *w*	11.569
Hydrat of deutoxyd of cobalt	1 *c*	1 *w*	10.458
Hydrat of protoxyd of manganese	1 *m*	1 *w*	9.245
Hydrat of oxyd of arsenic -	1 *a*	1 *w*	9.132
Sulphat of potash - -	1 *s*	1 *p*	11.000
Supersulphat of potash -	2 *s*	1 *p*	16.000
Sulphat of soda - -	1 *s*	2 *so*	20.764
Sulphat of ammonia - -	1 *s*	2 *a*	8.870
Sulphat of magnesia -	1 *s*	1 *m*	7.577
Sulphat of lime - -	1 *s*	1 *l*	8.620
Sulphat of barytes - -	1 *s*	1 *b*	14.731
Sulphat of strontian - -	1 *s*	1 *str*	11.900
Sulphat of alumiua - -	1 *s*	1 *a*	7.136
Subsulphat of alumina -	1 *s*	2 *a*	9.272
Sulphat of yttria - -	1 *s*	2 *y*	13.400
Sulphat of glucina - -	1 *s*	1 *g*	8.600
Sulphat of zirconia - -	1 *s*	1 *z*	10.656
Alum - - -	6 *s*	5 *al* + 1 *p*	46.680
Sulphat of potash and ammonia	2 *s*	1 *p* 2 *a*	19.870
Sulphat of potash and magnesia	3 *s*	1 *p* 2 *m*	26.154
Sulphat of soda and ammonia -	5 *s*	2 *so* 8 *a*	56.244
Sulphat of soda and magnesia	4 *s*	2 *so* 3 *m*	43.495
Sulphat of magnesia and ammonia	3 *s*	2 *m* 2 *a*	24.024
Supersulphat of copper -	2 *s*	1 *c*	20.000
Sulphat of copper - -	1 *s*	1 *c*	15.000
Subsulphat of copper -	1 *s*	2 *c*	25.000
Supersulphat of iron - -	2 *s*	1 *i*	19.143
Sulphat of iron - -	1 *s*	1 *i*	14.143
Subsulphat of iron - -	2 *s*	3 *i*	37.429

	Number of atoms.		Weight of an integrant particle.
Persupersulphat of iron -	3 *s* +	1 *i*	25.143
Sulphat of lead - - -	1 *s*	1 *l*	18.987
Sulphat of zinc - -	1 *s*	1 *z*	10.095
Sulphat of mercury - -	1 *s*	1 *m*	31.000
Persulphat of mercury -	1 *s*	1 *m*	32.000
Sulphat of silver - -	1 *s*	1 *si*	19.714
Sulphat of bismuth - -	1 *s*	1 *b*	14.994
Sulphat of nickel - -	1 *s*	1 *n*	14.305
Sulphat of cobalt - -	2 *s*	1 *c*	19.326
Sulphat of manganese - -	2 *s*	1 *m*	19.115
Sulphat of uranium -	1 *s*	1 *u*	20.000
Persulphat of platinum - -	2 *s*	1 *p*	24.161
Nitrat of potash - -	1 *n*	1 *p*	12.803
Nitrat of soda - - -	2 *n*	1 *s*	21.488
Nitrat of ammonia - -	1 *n*	1 *a*	8.868
Nitrat of magnesia - -	1 *n*	1 *m*	9.380
Nitrat of lime - -	1 *n*	1 *l*	10.423
Nitrat of barytes - -	1 *n*	1 *b*	16.534
Nitrat of strontian - -	1 *n*	1 *str*	13.703
Nitrat of ammonia and magnesia	4 *n*	3 *m* + 1 *a*	35.878
Nitrat of copper - -	2 *n*	1 *c*	23.606
Subnitrat of copper - -	1 *n*	2 *c*	26.803
Nitrat of iron - - -	2 *n*	1 *i*	22.749
Pernitrat of iron - -	3 *n*	1 *i*	30.552
Nitrat of zinc - - -	1 *n*	1 *z*	11.942
Nitrat of lead - -	1 *n*	1 *l*	20.790
1st Subnitrat of lead - -	1 *n*	2 *l*	34.777
2d Subnitrat of lead -	1 *n*	3 *l*	48.764
3d Subnitrat of lead - -	1 *n*	6 *l*	90.725
Nitrat of nickel - -	3 *n*	1 *nick*	29.714
Subnitrat of nickel - -	1 *n*	7 *nick*	71.938
Nitrat of silver - -	1 *n*	1 *s*	21.517
Nitrat of mercury - -	1 *n*	1 *m*	32.803
Pernitrat of mercury -	1 *n*	2 *m*	60.803
Subnitrat of platinum - -	1 *n*	4 *pl*	63.447
Nitrat of bismuth - -	1 *n*	1 *b*	16.797
Nitrat of uranium - -	1 *n*	1 *u*	21.803
Bicarbonat of potass -	2 *c*	1 *p*	11.502
Carbonat of potash - -	1 *c*	1 *p*	8.751
Carbonat of soda - -	3 *c*	1 *s*	16.135
Subcarbonat of soda - -	2 *c*	1 *s*	13.384
Bicarbonat of ammonia -	2 *c*	1 *a*	7.437
Carbonat of ammonia - -	1 *c*	1 *a*	4.686
Subcarbonat of ammonia -	1 *c*	2 *a*	6.621
Carbonat of lime - -	1 *c*	1 *l*	6.371
Carbonat of barytes -	1 *c*	1 *b*	12.482
Carbonat of strontian - -	1 *c*	1 *str*	9.651
Bicarbonat of magnesia -	2 *c*	1 *m*	8.079
Carbonat of magnesia - -	1 *c*	1 *m*	5.328

	Number of atoms.		Weight of an integrant particle.
Carbonat of yttria - -	1 *c* +	1 *y*	11.151
Carbonat of zirconia - -	1 *c*	1 *z*	1.407
Carbonat of glucina - -	1 *c*	1 *gl?*	6.351?
Carbonat of silver - -	1 *c*	1 *s*	16.369
Percarbonat of mercury -	1 *c*	2 *m*	56.751
Percarbonat of copper - -	1 *c*	1 *c*	12.751
Carbonat of iron - -	2 *c*	1 *i*	14.645
Carbonat of lead - -	2 *c*	1 *l*	17.489
Carbonat of nickel - -	2 *c*	1 *n*	14.807
Carbonat of zinc - - -	1 *c*	1 *z*	7.890
Carbonat of manganese -	2 *c*	1 *m*	13.617
Carbonat of cerium - -	2 *c*	1 *ce*	18.996
Percarbonat of cerium -	3 *c*	1 *ce*	21.747
Oxalat of potash - -	1 *ox*	1 *p*	10.634
Binoxalat of potash - -	2 *ox*	1 *p*	15.268
Quadroxalat of potash - -	4 *ox*	1 *p*	24.536
Oxalat of soda - -	2 *ox*	1 *s*	17.150
Superoxalat of soda - -	3 *ox*	1 *s*	21.784
Oxalat of ammonia - -	1 *ox*	1 *a*	6.783
Binoxalat of ammonia - -	2 *ox*	1 *a*	11.417
Oxalat of magnesia - -	1 *ox*	1 *m*	7.211
Oxalat of lime - - -	1 *ox*	1 *l*	8.254
Binoxalat of lime - -	2 *ox*	1 *l*	12.888
Oxalat of barytes - -	1 *ox*	1 *b*	14.365
Oxalat of strontian - -	1 *ox*	1 *st*	11.534
Oxalat of alumina - -	1 *ox*	1 *al*	6.770
Oxalat of yttria - -	1 *ox*	1 *y*	13.034
Oxalat of glucina - -	1 *oz*	1 *gl*	14.467
Oxalat of zirconia - -	1 *ox*	1 *z*	10.290
Oxalat of copper - -	2 *ox*	1 *c*	19.268
Oxalat of potash and copper -	2 *ox*	1 *p*+1 *c*	29.902
Oxalat of soda and copper -	3 *ox*	1 *s* 1 *c*	32 410
Oxalat of ammonia and copper	2 *ox*	1 *a* 1 *c*	26.051
Oxalat of iron - - -	2 *ox*	1 *i*	18.383
Peroxalat of iron - -	3 *ox*	1 *i*	23.017
Oxalat of nickel - -	2 *ox*	1 *n*	18.573
Oxalat of cobalt - -	2 *ox*	1 *c*	18.594
Oxalat of lead - - -	2 *ox*	1 *l*	37.242
Oxalat of zinc - -	1 *ox*	1 *z*	9.661
Oxalat of mercury - -	1 *ox*	1 *m*	30.634
Oxalat of silver - -	1 *ox*	1 *s*	19.348
Oxalat of bismuth - -	1 *ox*	1 *b*	14.628
Oxalat of manganese -	2 *ox*	1 *m*	17.101
Oxalat of uranium - -	1 *ox*	1 *u*	19.634
Oxalat of cerium - -	2 *ox*	1 *c*	23.115
Oxalat of platinum - -	1 *ox*	1 *p*	17.795

Table of Chemical Equivalents by Dr. Wollaston.

Hydrogen -	1.32				
Carbon - -	7.54				
Oxygen - -	10.				
Water - -	11.32	=	10 *ox.*	+ 1.32	*hyd.*
Phosphorus -	17.40				
Azote - -	17.54				
Sulphur - -	20.				
Ammonia -	21.5	=	17.54 *az.*	+ 3.96	*hyd.*
Magnesia -	24.6	=	10 *ox.*	+ 14.6	*mag.*
Calcium -	25.46				
Carbonic acid -	27.54	=	20 *ox.*	+ 7.54	*carb.*
Sodium -	29.1				
Muriatic acid, (dry)	34.1				
Iron - -	34.5				
Lime - -	35.46	=	10 *ox.*	+ 25.46	*calc.*
Phosphoric acid	37.4	=	20 *ox.*	+ 17.4	*phos.*
Nitrous gas -	37.54	=	20 *ox.*	+ 17.54	*az.*
Soda - -	39.1	=	10 *ox.*	+ 29.1	*sod.*
Copper -	40.				
Zinc - -	41.				
Chlorine -	44.1	=	10 *ox.*	+ 34.1	*mur. acid.*
Green oxyd of iron	44.5	=	10 *ox.*	+ 34.5	*ir.*
Muriatic gas -	45.42	=	44.1 *chl.*	+ 1.32	*hyd.*
Oxalic acid -	47.0				
Subcarbonat of ammonia - -	49.0	=	27.5 *acid.*	+ 21.5	*am.*
Potassium -	49.1				
Red oxyd of iron	49.5	=	15 *ox.*	+ 34.5	*iron.*
Sulphuric acid (dry)	50.	=	30 *ox.*	+ 20	*sulph.*
Black oxyd of copper	50.	=	10 *ox.*	+ 40	*copper*
Oxyd of zinc -	51.	=	10 *ox.*	+ 41	*zinc*
Potash -	59.1	=	10 *ox.*	+ 49.1	*pot.*
Sulphuric acid sp.gr. 1.85; - -	61.32	=	50 *sul. ac.*	+ 11.32	*wat.*
Carbonat of lime	63.	=	27.54 *carb. ac.*	+ 35.46	*lime*
Subcarbonat of soda	66.6	=	27.5 *carb. ac.*	+ 39.1	*soda*
Muriat of ammonia	66.9	=	34.1 *acid*	+ 21.5 *am.* +	11.32 *wat.*
Nitric acid (dry)	67.54	=	50. *ox.*	+ 17.54	*az.*
Strontia - -	69.				
Muriat of lime	69.6	=	34.1 *acid*	+ 35.5	*lime*
Muriat of soda -	73.2	=	34.1 *acid*	+ 39.1	*soda*
Sulphat of magnesia	74.6	=	50. *acid*	+ 24.6	*magn.*
Bicarbonat of ammonia - -	76.5	=	27.5 *carb. ac.*	+ 49.	*subcarb.*
Sulphat of lime	85.5	=	50. *acid*	+ 35.5	*lime*
Subcarbonat of potash - -	86.	=	27.5 *acid*	+ 59.1	*potash*

Sulphat of soda	89.1	= 50.	*acid*	+ 39.1		*soda*
Liquid nitric acid sp. gr. 1.50; -	90.2	= 67.54	*nit. ac.*	+ 22.64		*wat.*
Muriat of potash	93.2	= 34.1	*acid*	+ 59.1		*potash*
Barytes -	97.					
Nitrat of lime -	103.	= 67.5	*acid*	+ 35.5		*lime*
Bicarbonat of soda	105.5	= 27.5	*ac.*	+ 66.6 *car. soda*	+ 11.3	*wat.*
Nitrat of soda -	106.6	= 67.5	*acid*	+ 39.1		*soda*
Selenite -	108.1	= 85.5	*s. of lime*	+ 22.4		*water*
Sulphat of potash	109.1	= 50.	*acid*	+ 59.1		*potash*
Sulphat of strontia	119.0	= 50.	*acid*	+ 69.		*stront.*
Carbonat of barytes	124.5	= 27.5	*acid*	+ 97.		*barytes*
Bicarbonat of potash - -	125.5	= 27.5	*acid*	+ 86. *sub. pot.*	+ 11.3	*wat.*
Mercury -	125.5					
Nitrat of potash	126.6	= 67.54	*acid*	+ 59.1		*potash*
Lead - -	129.5					
Muriat of barytes	131.	= 34.	*acid*	+ 97.		*barytes*
Silver - -	135.					
Red oxyd of mercury - -	135.5	= 10.	*ox.*	+ 125.5		*merc.*
Litharge	139.5	= 10.	*ox.*	+ 129.5		*lead*
Oxyd of silver -	145.	= 10.	*ox.*	+ 135.		*silver*
Sulphat of barytes	147.	= 50.	*acid*	+ 97		*barytes*
Binoxalat of potash	153.0	= 94.	*acid*	+ 59		*potash*
Hyperoxymuriat of potash -	153.2	= 93.2	*mur. pot.*	+ 60		*ox.*
Cryst. muriat of barytes - -	153.6	= 131.	*mur. bar.*	+ 22.6		*wat.*
Sulphat of magnesia -	153.9	= 74.6	*sul. mag.*	+ 79.3		*water*
Sulphat of copper	156.6	= 50.	*acid*	+ 50 *cop.*	+ 56.6	*water*
Nitrat of barytes	164.5	= 67.5	*acid*	+ 97		*barytes*
Carbonat of lead	167.	= 27.5	*acid*	+ 139.5		*lead*
Corrosive sublimat	170.1	= 34.1	*acid*	+ 10 *ox.*	+ 125.5	*merc.*
Muriat of lead	173.6	= 34.1	*acid*	+ 139.5		*lead*
Sulphat of iron	173.8	= 50.	*acid*	+ 34.5 *iron*	+ 79.3	*water*
Phosphat of lead	176.9	= 37.4	*acid*	+ 139.5		*lead*
Muriat of silver	179.1	= 34.1	*acid*	+ 145.		*silver*
Sulphat of zinc	180.2	= 50.	*acid*	+ 51 *zinc*	+ 79.3	*water*
Oxalat of lead	186.5	= 47.	*acid*	+ 139.5		*lead*
Sulphat of lead	189.5	= 50.	*acid*	+ 139.5		*lead*
Sulphat of soda	202.3	= 50.	*acid*	+ 39.1 *soda*	+ 113.2	*wat.*
Nitrat of lead	207.0	= 67.5	*acid*	+ 139.5		*lead*
Protoxyd of mercury -	261.	= 10.	*ox.*	+ 251.		*merc.*
Calomel -	296.1	= 34.	*acid*	+ 10 *ox.*	+ 251	*merc.*

Composition of some Organic Bodies, according to Berzelius.

	Oxyg.	Hydr.	Carb.	Oxyg.	Hydr.	Carb.	Capacity of saturation.
Benzoic acid	1 *o* +	3 *h* +	5 *c*	20.02	5.27	74.71	6.69
Gallic acid	1 *o*	2 *h*	2 *c*	38.02	5.02	56.96	12.34
Tannin from galls	2 *o*	3 *h*	3 *c*	45.00	4.45	50.55	3.718
Succinic acid	3 *o*	4 *h*	4 *c*	47.923	4.218	47.859	15.9743
Acetic acid	3 *o*	6 *h*	4 *c*	46.934	6.195	46.871	15.63
Sugar of milk	4 *o*	8 *h*	5 *c*	48.348	6.385	45.267	
Sugar	10 *o*	21 *h*	12 *c*	49.083	6.802	44.115	9.98
Potatoe starch	6 *o*	13 *h*	7 *c*	49.583	7.090	43.327	
Gum Arabic	12 *o*	24 *h*	13 *c*	51.456	6.792	41.752	
Citric acid	1 *o*	1 *h*	1 *c*	55.096	3.634	41.270	13.585
Tartaric acid	5 *o*	5 *h*	4 *c*	59.200	3.912	36.888	11.976
Saclactic acid	4 *o*	5 *h*	3 *c*	60.818	5.018	34.164	7.66
Oxalic acid*	6 *o*	1 *h*	4 *c*	66.534	0.244	33.222	22.

* Oxalic acid 3 *o* + 1 *h* + 2 *c* 64.739 2.848 32.413 Dr. Thomson.

Composition of some Organic Bodies, according to Gay Lussac and Thenard.

	Carbon.	Oxygen.	Hydrogen.	Nitrogen.
Wax	81.79	5.54	12.67	
Olive oil	77.21	9.43	13.36	
Copal	76.81	10.61	12.58	
Rosin	75.94	13.34	10.72	
Oak wood	52.53	41.78	5.69	
Beech wood	51.45	42.73	5.82	
Fecula	43.55	49.68	6.77	
Sugar	42.47	50.63	6.90	
Gum Arabic	44.23	50.84	6.93	
Sugar of milk	38.825	53.834	7.341	
Acetic acid	50.22	44.15	5.63	
Citric acid	33.81	59.86	6.33	
Tartaric acid	24.05	69.32	6.53	
Mucous acid	33.69	62.67	3.62	
Oxalic acid	26.57	70.69	2.74	
Gelatin	47.881	27.207	7.914	16.998
Albumen	52.883	23.872	7.540	15.705
Fibrin	53.360	19.865	7.021	19.934
Cheese	59.781	11.409	7.429	21.381

EXPLANATION OF THE PLATES.

PLATE I.

Fig. 1. Represents an improved mill for grinding colours, &c. (from the Transactions of the Society of Arts, &c. for 1814.)

a. A mortar of marble or hard stone.

b. A muller or grinder, nearly in the form of a pear, in the upper part of which an iron axis is firmly fixed, which axis, at the parts *c c* turns in grooves or slits, cut in two pieces of oak projecting horizontally from a wall, and when the axis is at work, are secured in the grooves by iron pins, *d d*.

e. The handle, which forms a part of the axis, and by which the grinder is worked.

f. The wall in which the oak pieces *c c* are fixed.

g. A weight, to be occasionally added to the upper part of the handle if more power is wanted.

e g h. The muller or grinder, with its axis separate from the other machinery: its bottom should be made to fit the mortar.

h. A groove cut through the stone.*

Fig. 2. 3. 4. Mortars and pestles of metal, marble, and earthen ware.

Fig. 5. A levigating stone and muller.

a. The table of polished porphyry or other siliceous stone.

b. The muller of the same substance.

Fig. 6. A compound sieve.

a. The lid.

c. The body containing the sieve.

b. The receiver.

Fig. 7. A funnel.

Fig. 8. A hooked glass rod. Several of which may be hung round the edge of the funnel, to prevent the filtering substances from adhering too closely to its sides.

* On grinding any substance in a dry state in this mill, the muller being placed in the mortar and secured in the oak pieces by the pins, the substance to be ground is thrown above the muller into the mortar; on turning the handle of the axis, the substance falls into the groove cut through the muller, and is from thence drawn under the action of the muller, and propelled to its outer edge within the mortar, from whence the coarser particles again fall into the groove of the muller, and are again ground under it; and this operation is continued till the whole is ground to an impalpable powder. A wood cover in two halves, with a hole for the axis, is usually placed upon the mortar, during the operation, to prevent loss to the substance, or bad effect to the operator.

Plate. 1.

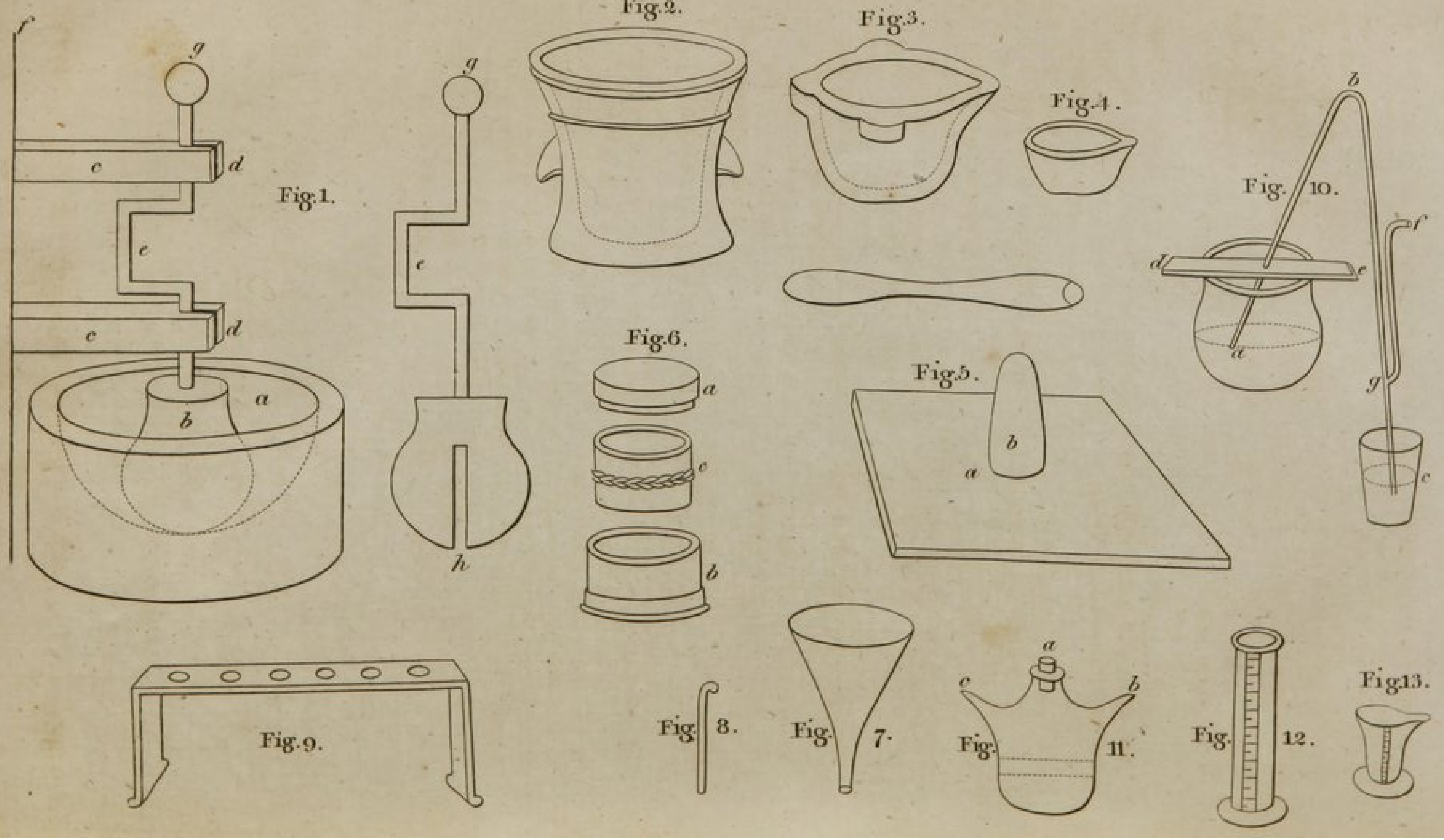
Fig. 1.
f
g
c
d
e
a
b
h
Fig. 2.
Fig. 3.
Fig. 4.
Fig. 5.
Fig. 6.
Fig. 7.
Fig. 8.
Fig. 9.
Fig. 10.
Fig. 11.
Fig. 12.
Fig. 13.

Plate. 2.

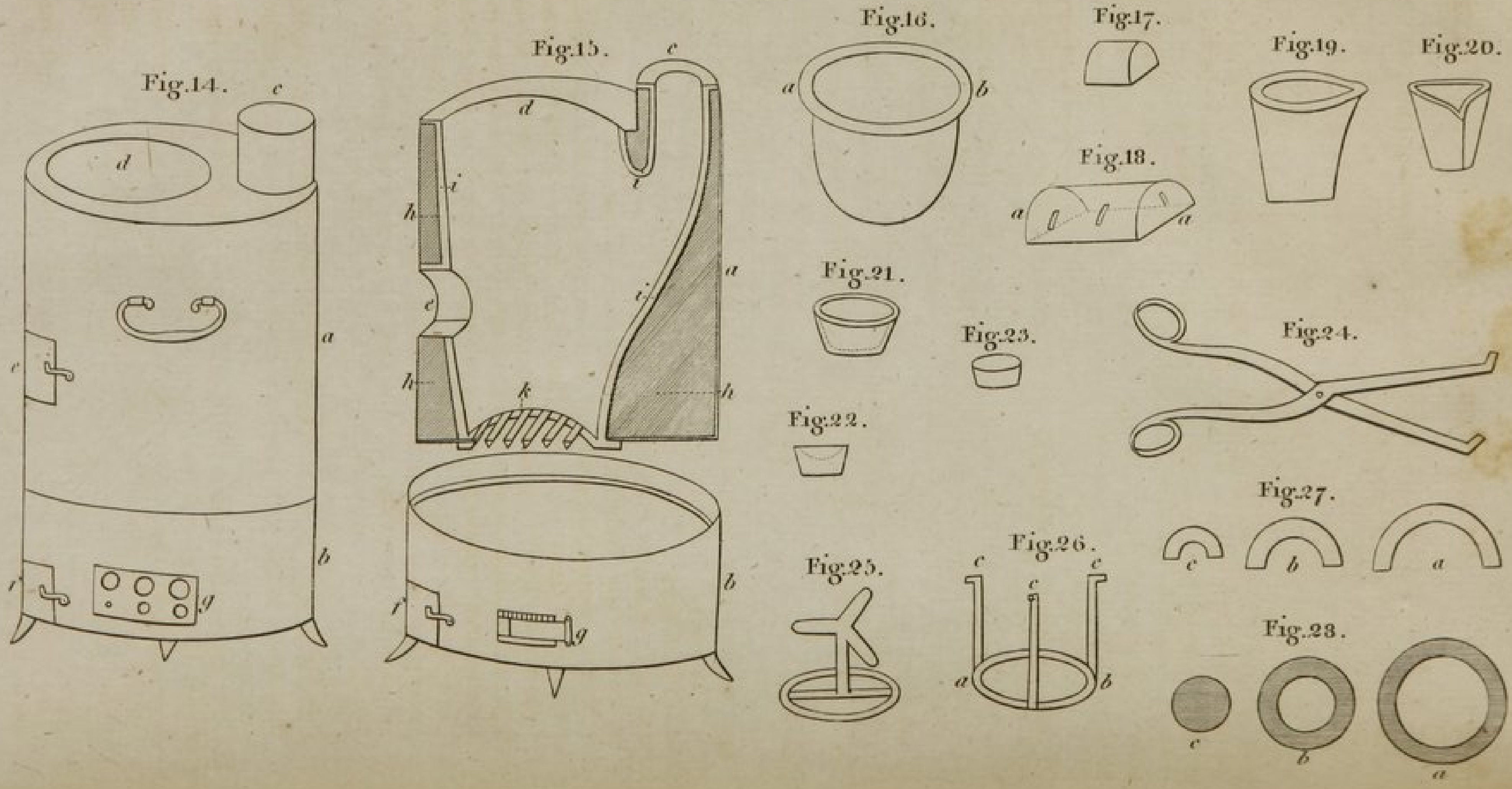
Fig. 14.
Fig. 15.
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Fig. 19.
Fig. 20.
Fig. 21.
Fig. 22.
Fig. 23.
Fig. 24.
Fig. 25.
Fig. 26.
Fig. 27.
Fig. 28.

Fig. 9. A board perforated with holes for supporting funnels.

Fig. 10. A compound syphon.

a, *b*, *c*. The syphon.

f, *g*. The mouth-piece.

d, *e*. A board for supporting it.

When we insert the upper orifice *a* into any liquid, and close the lower orifice *c* with the finger, by sucking through *f*, the fluid will rise from *a* to *b* and proceed to *g* towards *f*. As soon as it has passed *g*, the finger is to be removed, and the fluid will immediately flow through *c*, and continue flowing as long as any remains above the orifice *a*. It is absolutely necessary that the point *g* where the mouth-piece joins the syphon, be lower than *a*.

Fig. 11. A separatory. The fluids to be separated are introduced through the orifice *a*, which is then closed with a stopper. The one neck is then to be shut with the finger, and the phial is to be inclined to the other side. As soon as the fluids have separated by means of their specific gravity, the finger is to be removed, and the whole of the heavier fluid will run through the lower neck, before any of the lighter escapes.

Fig. 12. and 13. Glass graduated measures. 12. A cylindrical one for large, 13. A conical one for small quantities.

PLATE II.

Fig. 14. External view of Dr. Black's furnace.

a. The body.

b. The ash-pit.

c. The chimney.

d. The circular hole for receiving the sand-pot.

e. A door about the centre of the body, to be opened when the furnace is used as a reverberatory. In Dr. Black's furnace, there is properly no aperture in the side, and indeed as its peculiar excellence consists in the power which it gives the operator of regulating the quantity of air admitted to the fuel, and by that means of regulating the intensity of the fire; every aperture is rather to be considered as an injury than as an improvement; and at all times when they are not employed, they must be accurately closed and luted up.

f. The door of the ash-pit.

g. The damping plate for regulating the admission of air, having six holes, fitted with stoppers, increasing in size in a geometrical ratio.

Fig. 15. A vertical section of the body of the same furnace, to show the manner of luting, and the form and position of the grate.

a——*g*. As in the former figure, except the damping plate which is here closed by a sliding door with a graduated scale.

h. The form which is given to the lute of clay and charcoal which is applied next to the iron.

i. The form given to the lute of sand and clay, with which the former is lined.

e. Is a semicircular aperture left unluted, to serve as a door when necessary. On other occasions it is filled up with a semi-cylindrical piece of fire-brick, Fig. 17. accurately luted in.

k. The grate fastened on the outside of the body.

Fig. 16. The sand-pot which is suspended in the aperture *d* of the furnace, by means of the projecting ring *a b*.

Fig. 17. A semi-cylindrical piece of fire-brick, for closing the door *e* of the furnace.

Fig. 18. A muffle, *a a*, apertures in its sides for the admission of the heated air.

Fig. 19. A large black-lead crucible.

Fig. 20. A small Hessian crucible.

Fig. 21. 22. Tests.

Fig. 23. A small support of clay, to raise the crucible above the grate.

Fig. 24. A pair of crucible tongs.

Fig. 25. A support for raising the muffle as high as the door *e* of the furnace.

Fig. 26. A ring for suspending a retort within the furnace, when we wish to expose it to the immediate action of the fire. The ring itself *a b* is suspended within the aperture *d* of the furnace, by means of the three-hooked branches *c c c*.

Fig. 27. Semicircular rings of plate iron, for applying round the neck of a retort when suspended within the furnace, in order to close as much as possible the aperture *d*, Fig. 14. The largest pair *a* are first made to rest upon the edge of the aperture *d*, the next pair *b* upon them, and so on until they come in contact with the neck of the retort. The whole are then to be covered with ashes or sand, to prevent the loss of heat, and the escape of vapours, from the burning fuel.

Fig. 28. Circular rings *a b* to be applied in the same manner when we wish to evaporate with the naked fire. We must always take care that the fluid rises higher than the portion of the evaporating vessel introduced within the aperture of the ring: *c* a circular piece of iron, which when applied with the rings *a b* completely closes the aperture *d* of the furnace.

PLATE III.

Fig. 29. 30. 31. 32. Evaporating vessels of different shapes.

Fig. 33. A long-necked matrass.

Fig. 34. A jar.

Fig. 35. A phial or receiver.

Fig. 36. A cucurbit.

Fig. 37. A cucurbit with its capital.

Fig. 38. The arrangement of the apparatus for distilling *per descensum*. The substance to be distilled is laid on the metallic plate *a*, which is perforated with holes. The burning fuel is laid upon the upper plate *b*, also of metal, but not perforated. On the application of heat the vapour descends into the cavity *a c*, where it is condensed.

Fig. 39. A retort and receiver; *a*, the retort, *b*, the receiver.

Plate.3.

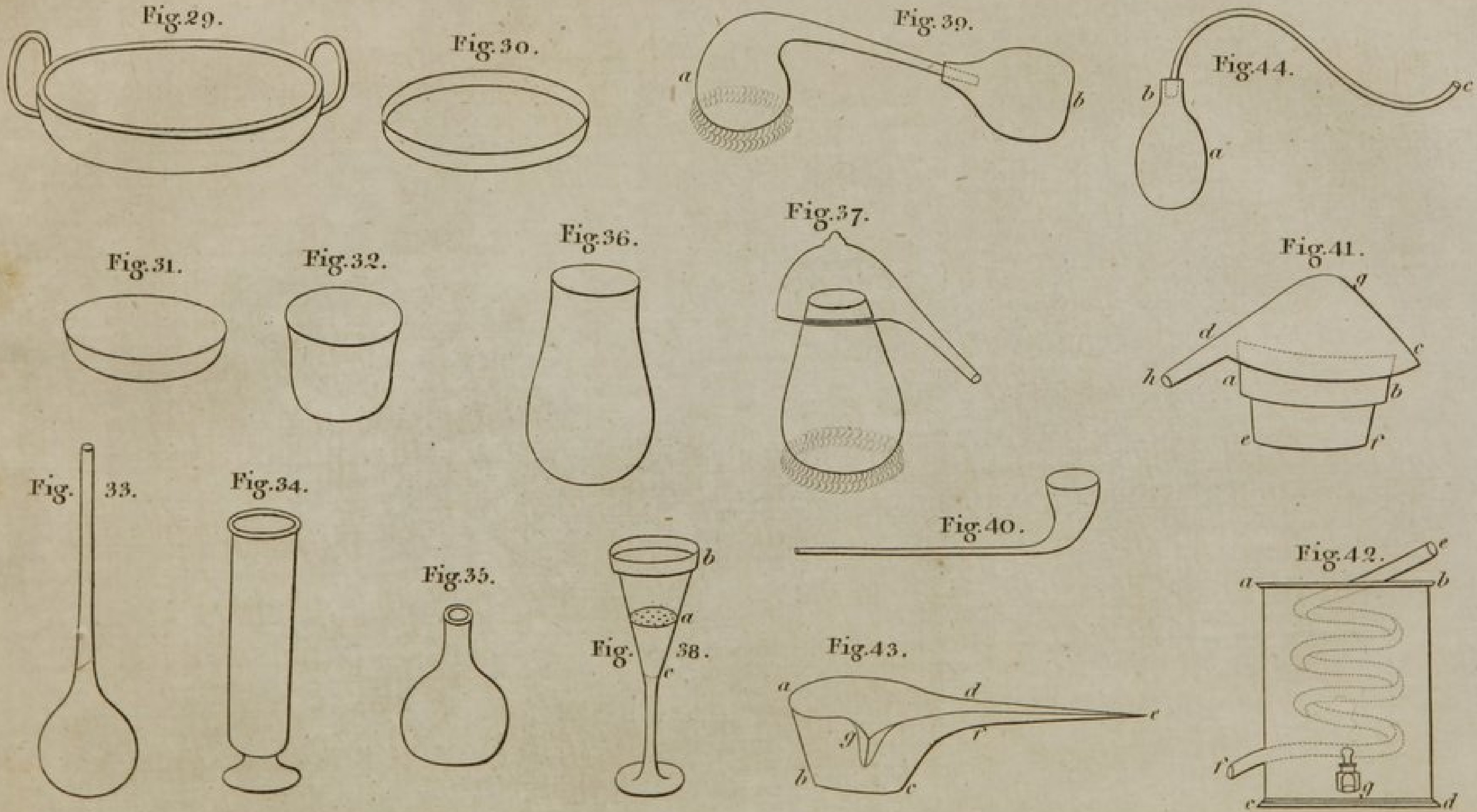
Fig.29.
Fig.30.
Fig.39.
a
b
Fig.44.
b
a
c
Fig.31.
Fig.32.
Fig.36.
Fig.37.
Fig.41.
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c
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Fig. 33.
Fig.34.
Fig.35.
Fig. 38.
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Fig.40.
Fig.43.
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Fig.42.
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Plate 4.

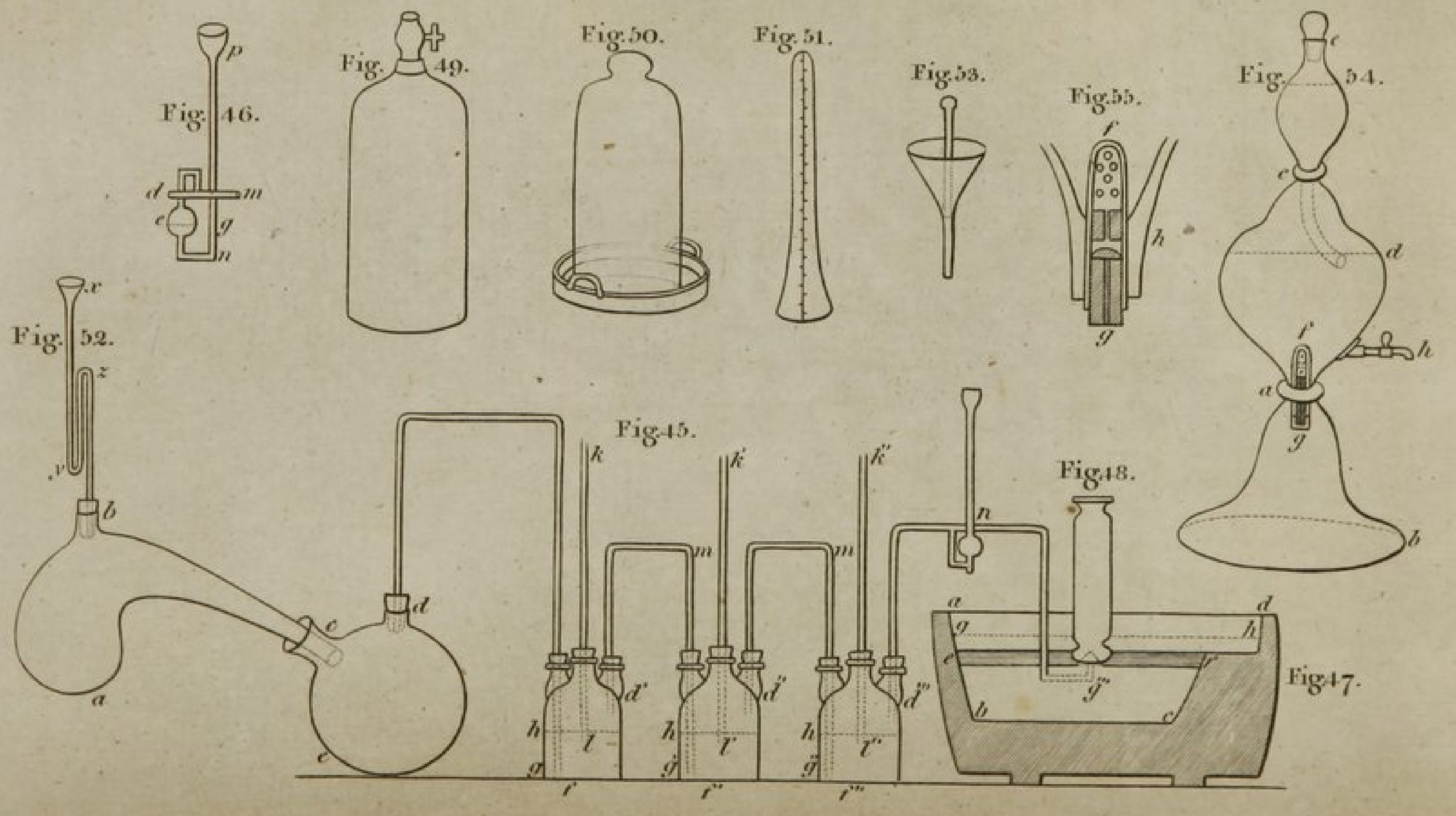


Fig. 46. Fig. 49. Fig. 50. Fig. 51. Fig. 53. Fig. 55. Fig. 54. Fig. 52. Fig. 45. Fig. 48. Fig. 47.

Fig. 40. A retort funnel.

Fig. 41. A metallic still.

c d e f. The body.

a b e f. The lower portion of the body, which hangs within the aperture *d* of the furnace, by the projecting part *a b.*

d g c. The head of the still.

d c. A gutter which goes round the bottom of the head, for conveying any vapours which may be condensed there, into the spout *h*, which conveys away the vapour and the fluid condensed in the head into the refrigeratory.

Fig. 42. A refrigeratory.

a b c d. A cylindrical vessel filled with cold water.

e f. A spiral metallic pipe which passes through it. The spout *h* of the still is inserted within the upper orifice *e;* therefore the vapours which escape from the head of the still enter it, and are condensed in their passage towards *f*, the lower termination of the pipe from which the distilled fluid runs, and is received into proper vessels. As the water in the vessels *a b c d* continually abstracts caloric from the vapours, it is apt to become too warm to condense them. As soon, therefore, as any steam escapes by the spout *f*, the water must be drawn off by the cock *g*, and its place supplied by cold water.

Fig. 43. A vessel for boiling inflammable fluids.*

a b c d. The body of the kettle.

d e f. A long spout proceeding from it, for preventing any risk of boiling over.

g. A short spout for pouring out. The vessel should not be filled above *f*, and the long spout *d e f* should be placed so as to be as little heated as possible. When the fluid begins to swell and boil up, both from the great increase of surface, and from part of it running up the cooler spout *d e f*, the ebullition will be checked, and all danger of running over be prevented.

Fig. 44. A body with a bent tube.

a b. The body.

b c. A sigmoid tube accurately ground to it. When any permanently elastic fluid is generated within the body *a b*, it escapes by the extremity of the tube, and may be collected by introducing it under a jar filled with water or mercury in the pneumatic cistern. This simple apparatus can only be used conveniently when the production of the gas is not rapid, or requires the application of heat.

PLATE IV.

Fig. 45. A Woulfe's apparatus.

a b c. c d e. A tubulated retort and receiver.

f f' f." Three three-necked bottles. The first *f* is commonly filled with water, and the two others with alkaline solutions.

* This contrivance belongs to our late ingenious countryman T. P. Smith, whose account of it was given to the American Philosophical Society, see Vol. 4 of their Transactions, p. 431. The Edinburgh editor has not mentioned from whence it is taken.

d g, *d' g'*, *d'' g''*, *d''' g'''*. Bent tubes connecting the different parts of the apparatus, so that when any vapour escapes from the receiver *c d e*, it passes along the tube *d g* and rises through the fluid contained in the bottle *f*, where it remains in contact with the surface, and under considerable pressure, until the expansion of the vapour, not condensible in *f*, overcomes the column of fluid *h g'* in the bottle *f'* and escapes into the upper part of *f.'* In the same manner the uncondensed vapours proceed to *f''* and at last to the pneumatic apparatus.

But, as in processes of this kind, diminution of temperature and other causes, frequently produce sudden condensations of the gases, contained in the different parts of the apparatus, especially in the retort and receiver, any such occurrence would cause the fluids to move through the connecting tubes in a retrograde direction. This accident is prevented, by inserting through the third neck of each bottle a small tube *k l* having its lower extremity *l* immersed in the fluid contained in the bottle. By this contrivance no fluid can possibly pass from one bottle into another, because the columns *g m* &c. which resist the absorption, are much higher than the columns *h l* which opposes the admission of external air: while, on the contrary, no gas can escape through these tubes, because the columns *h k* which oppose their escape, are higher than the columns *g h* which resist its progress to the next bottle. From their use these tubes have got the name of Tubes of Safety.

Another contrivance for the same purpose, the invention of C. Welter, seems now to be much used in France. It is fixed to the connecting tubes as at *n*.

Fig. 46. To explain it more fully, we have given a separate view, taken in an oblique direction. When the apparatus is adjusted, a small quantity of water is poured through the funnel *p* until it rises to about the centre of the ball *e*. Now, on any absorption taking place, the fluid rises in the ball *e*, until the column *g n* be annihilated, when a quantity of air will immediately rush in through *p g n e*, &c. and the water will regain its former equilibrium. On the other hand, no gas can escape by this tube, because the whole fluid contained in the ball and tube must previously enter the portion of the tube *n p* where it would form a column of such a height that its pressure could not be overcome.

Fig. 47. A vertical section of a pneumatic cistern.

a b c d. The whole cavity of the cistern.

e f. A shelf for holding the jars.

e b c f. The well for filling the jars.

g h. The surface of the fluid contained in the cistern, which must always be higher than the surface of the shelf.

Fig. 48. 49. 50 51. Pneumatic jars of different shapes.

Fig. 48. A jar in the situation in which it is filled with gas.

Fig. 49. A jar fitted with a stop cock.

Fig. 50. A jar placed upon a tray for removing it from the pneumatic cistern.

Fig. 51. A graduated jar, commonly called an Eudiometer.

Fig. 52. A hydrostatic funnel, for pouring fluids gradually into air tight vessels, especially when attended with the formation of gas. It is evident, that any portion of fluid, poured into the funnel *x*, more than sufficient to fill the two first parts of the bent tube up to the level *z*, will escape by the lower extremity *b*. At the same time, no gas can return through this funnel, unless its pressure be able to overcome the resistance of a column of fluid of the height of *x y*.

Fig. 53. Another contrivance for the same purpose. It consists of a common funnel; in the throat of which is inserted a rod with a conical point, which regulates the passage of the fluid through the funnel, according to the firmness with which it is screwed in.

Fig. 54. Nooth's apparatus for promoting the absorption of gaseous fluids by liquids. It consists of three principal pieces; a lower piece *a b*, a middle piece *a c*, and an upper piece *d e*; all of which are accurately ground to each other. The substances from which the gas is to be extricated are put into the lower piece. The middle piece is filled with the fluid with which the gas is to be combined, and the upper piece is left empty. As soon as a sufficient quantity of gas is formed to overcome the pressure, it passes through the valve *f g*, and rises through the fluid to the upper part of the middle piece. At the same time it forces a quantity of fluid into the upper piece through its lower aperture *d*. As soon as so much of the fluid has been forced from the middle piece, as to bring its surface down to the level of the lower aperture of the upper piece, a portion of gas escapes into the upper piece, and the fluid rises a little in the middle piece. The upper piece is closed with a conical stopper *e*, which yields, and permits the escape of a portion of gas, as soon as its pressure in the upper piece becomes considerable. *h* is a glass cock for drawing off the fluid.

Fig. 55. The valve of Nooth's apparatus. It consists of an internal tube *g* of small caliber, but pretty stout in substance, and ground into an external tube *f*, closed at the upper end, but perforated with small holes, to allow the gas to pass. After the internal tube is fitted to the external, a portion of it is cut out as at *h*, sufficient to receive a small hemisphere of glass, and to allow the hemisphere to rise a little in its chamber, but not to turn over in it. The upper piece of the internal tube is then thrust home into the place where it is to remain, and the glass hemisphere introduced with its plane recumbent on the upper end of the lower piece of the tube, which is ground perfectly flat, as is also the plane of the hemisphere. From this construction it is evident, that by the upward pressure of any gas, the glass hemisphere may be raised so as to allow it to pass, while nothing can pass downwards; for the stronger the pressure from above, the closer does the valve become. We have been more particular in our description of this valve, because it has been very ingeniously applied to distilling apparatuses by Mr. Pepeys *junior* and Mr. Burkit.

PLATE V.

Description of Dr. Hamilton's Apparatus for the Distillation of Acids and other substances, on a Scale of about an Inch to a Foot.

A. The retort; the neck of which is ground into, and passed through the thick stopper

B. Which is represented below separately at b, with its ground stopper a. The external part of the stopper B is accurately ground into the wide neck of the receiver

C. Whose narrow neck is ground into the wide neck of the receiver

D. The narrow neck of which is ground into that of the receiver E.

The receiver D has another aperture in its superior part, into which the tube of safety

H. Open at both ends, is fitted by grinding, so that its lower extremity may reach to the lowermost part of the receiver, and be immersed in any fluid that may be contained in it.

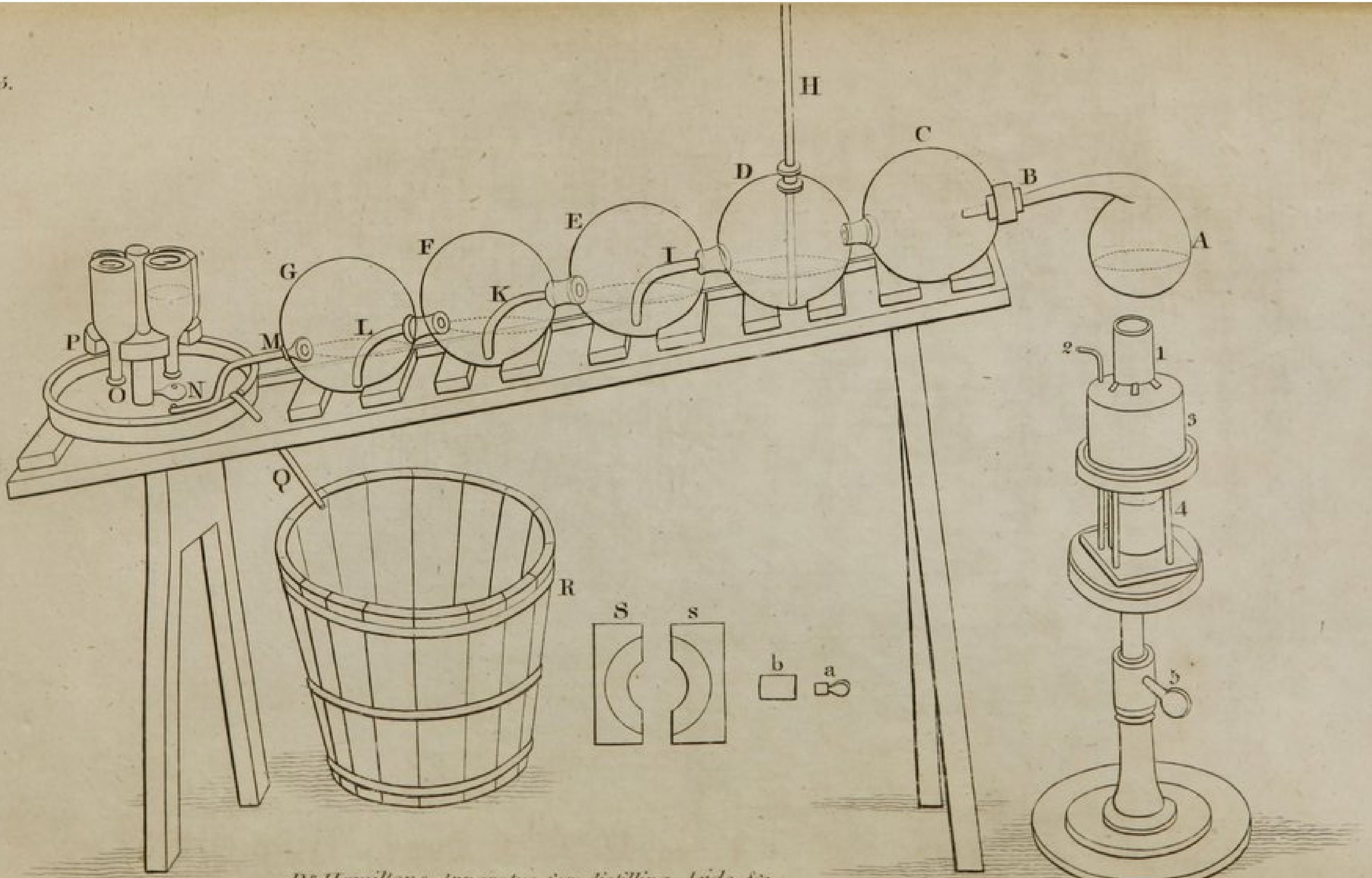
Into the small neck of the receiver D, is ground, a crooked tube

I. Forming a little more than one-fourth of a circle, open at both ends, and extending nearly to the lower part of the receiver E, whose small neck receives a similar crooked tube K; and is received into the wider neck of F, which receives tube L in like manner, and is received into G, whose narrow neck also receives a crooked tube M N, open at both ends, and bent as represented in the plate, to convey any gaseous fluid into the small inverted cup, through the hole of which it passes into one of the four inverted bottles placed above it, by means of the frame P, having four notches to retain the bottles in an upright inverted position. This frame is moveable on its centre support, and is kept steady by a heavy leaden foot, in the middle of a flat pan of water, which covers the mouths of the bottles. The water issuing from the bottles on the introduction of the air, is directed by a notch in its lip, and the pipe Q, into the bucket R placed under the frame, which is raised upon four legs, and supports the whole apparatus.

The different parts are successively applied to each other, beginning with the receiver C, and are kept fixed by slips of wood hollowed out, so as to fit the curvature of the receivers, as represented below, detached at S s.

Heat is applied to the retort by means of an Argand's lamp.

1. The chimney, most conveniently made of thin metal, as brass, copper, or common tinned iron plates, because they are not liable to break, and the heat alone is wanted.
2. The wire which elevates or depresses the wick.
3. Reservoir of Oil.
4. The support of this, with a small cup to receive the oil which may drop.
5. A pin with a screw to fix the lamp at any distance.



Dr. Hamiltons Apparatus for distilling Acids &c.

Plate. 6.

CHEMICAL SIGNS

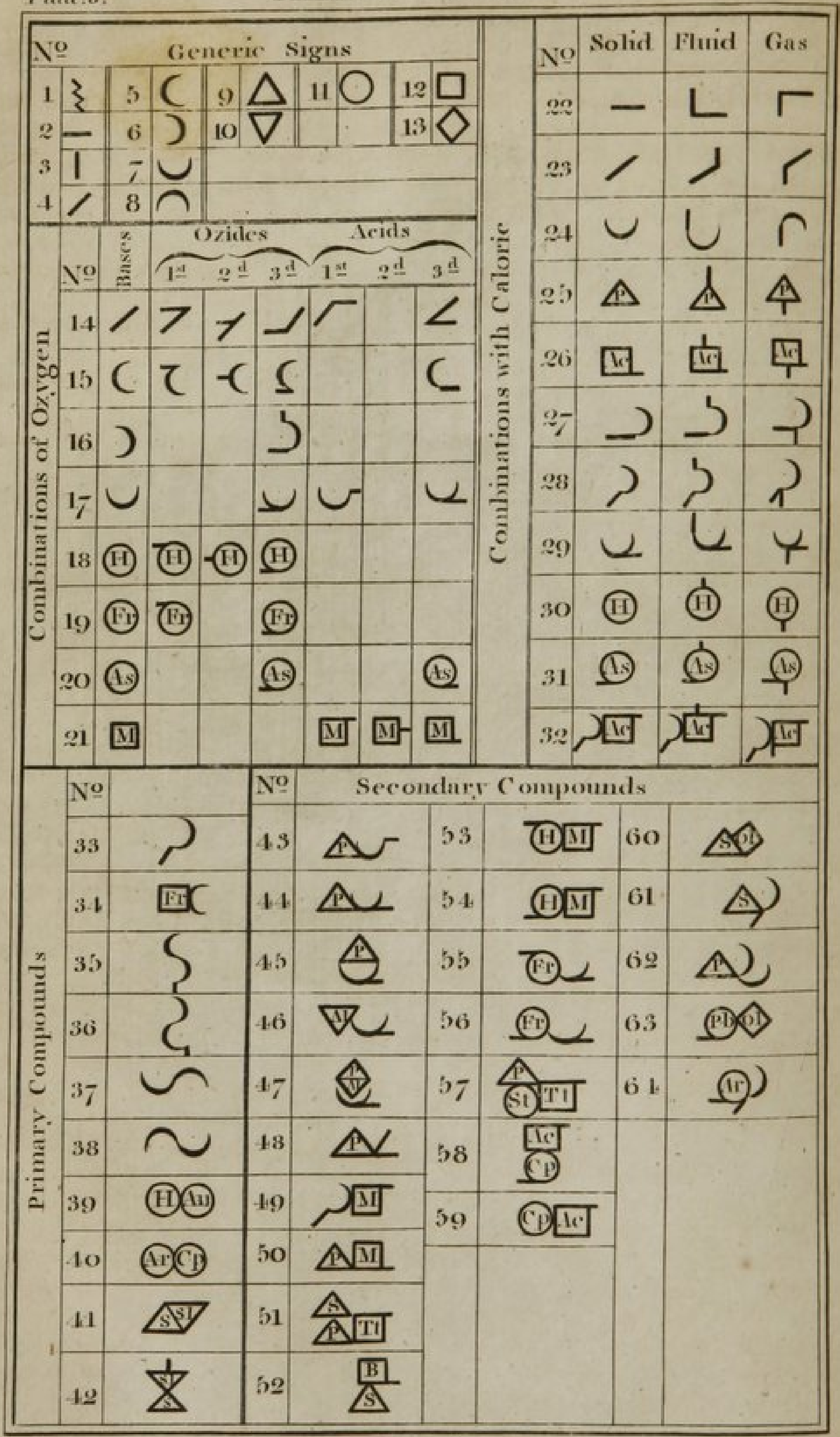


PLATE VI.

CHEMICAL SIGNS.

It is unnecessary here to point out the advantages which might result from a well-contrived system of chemical signs. About the same time that the French chemists introduced their methodical nomenclature, they also proposed a corresponding system of chemical signs, which they intended should speak a language to be understood by the learned of all nations. In the explanation of their system, we shall nearly follow what Mr. Chenevix has said in his judicious remarks upon chemical nomenclature.

There are six simple radical signs, which may be considered as so many genera.

The first genus is the zig-zag line, and is used to denote light. See plate, No 1.

The second genus is the straight line. It comprehends three species, characterized by its direction.

Sp. 1. A perpendicular line denotes caloric, 3.

Sp 2 A horizontal line denotes oxygen, 2.

Sp. 3. An oblique line from right to left, nitrogen, 4.

The third genus is a crescent, which is the generic sign of simple combustibles.

Sp 1. With the horns inclined to the right, carbon, 5.

Sp. 2. The reverse of the former, hydrogen, 6.

Sp. 3. With the points upwards, sulphur, 7.

Sp 4. The reverse of the latter, phosphorus, 8.

The fourth genus is a triangle. It comprehends the simple salifiable bases.

Sp. 1. With the point upwards, and the base horizontal, 9. the alkalies.

Sp. 2. With the point downwards, 10. the earths.

Each of the species of this genus comprehends several individuals, which are distinguished by inserting within the triangle the first letter of its name in the Latin language, or, if two species begin with the same letter, the first letter of the second syllable is added; thus, for potass P. soda S. baryta B. strontia St. limé C. magnesia M. glaucina Gc. gadolina Gd. or Y. for yttria, alumina Al. zirconia Z. silica Sl.

The fifth genus is a circle, 11. It comprehends the metals; and the species are distinguished in the same manner as the former, by inserting within it the primary letters of the first and second syllables; thus, for gold Ar. plantinum Pt. silver Ag. Mercury H. copper Cp. iron Fr. lead Pb. tin Sn. Zinc Z. antimony Sb. or At. bismuth B. cobalt Cb. nickel Nk. manganese Mg. uranium U. Titanium Tt. tellurium Tl. chromium Cm. Arsenic As. molybdenum Ml. tungsten Ts. columbium Cl.

The sixth genus is a square: it comprehends all the unknown bases of the acids, and the bases of the compound oxyds and acids.

Sp. 1. A square with perpendicular sides, 12. It contains the unknown and compound acidifiable bases.

Sp. 2. A square with inclined sides, 13. It contains the compound oxyds. The individuals of both species are distinguished as before.

All compound bodies are expressed by combinations of these simple characters. But as simple bodies are capable of uniting in various proportions, it becomes necessary that these proportions should be expressed; and relative position has appeared the most natural method of doing so. In general, when the proportion of any body in a compound is small, its sign is placed above, when large, below, as in 35. 36. 42. &c.

Caloric exists in all bodies: But according to its relative quantity, they exist as solids, fluids, or gases. To express the first state, it has not been thought necessary to introduce the sign of caloric; to express the second, it is placed above; and to express the third, below, as in the examples in the plate (22—32.)

Oxygen also combines with many bodies, and in several proportions. The products resulting from these combinations are either oxyds or acids. The oxyds may be characterized by affixing the sign of oxygen to the left side of the sine of the base, and the acids by affixing it to the right; and the greater or less degree of each may be marked by placing it above or below, as in the examples in the plate. In this then is a deviation from all the tables of chemical signs which have been seen, and, it is trusted, with propriety; for M. Chenevix has remarked of the system, that "one of its chief defects is the im-"possibility of marking, by any principles it points out, the differ-"ence of the metallic oxyds. A circle, with the mark of oxygen at "the top, is the only method of marking a metallic oxyd; for if we "put the mark of oxygen lower, it will then have the force of an acid, "and we must not confound the situation of the signs to mark differ-"ences of states, or the whole system will become confused." But the alteration proposed enables us to mark no less than six states of oxygenizement. When the sign of oxygen is placed on the left, it implies that the compound is an oxyd; if it be placed at top, it expresses the smallest degree of oxydizement; at bottom, the highest, and we have room for an intermediate one. The degrees of acidification are expressed in the same manner, except that the character of oxygen is placed to the right of the base. See 14—21. The same proposal has been made by Dr. Vandier in the Journ. de Physique, Vol. 56. and this coincidence is a proof that it is not arbitrary, but arises naturally from an attentive consideration of the subject.

The other primary combinations are expressed in the same way. When they unite only in one proportion, or when the proportions are indifferent, the signs are placed indifferently, though it would be better to place them in one determinate way; but when either of them is in excess, its sign is always placed below. Thus heavy hydro-carbonous oxyd is expressed by placing the sign of hydrogen above that of carbon, 36; light hydro-carbonous oxyd by reversing their position, 35. Glass is expressed by placing the signs of soda and silica side by side, 41; the liquor silicum, by placing the sign of the alkali under that of the earth, and adding the sign of fluidity above, 42.

The secondary compounds are expressed in a similar manner. The basis has been generally placed before the acid, to admit of the sign of the degree of acidification being added to the acid; and the same position fortunately admits of the sign of the degree of oxydizement being added to the oxyd, when a metallic oxyd forms the basis of the salt. The excess of acid or base is marked as before, by placing the acid or base below. With regard to the metallic salts, Mr Chenevix has given some reasons for not introducing the sign of oxygen; but he himself has given the most powerful reason for introducing it, by proving, that the real difference between calomel and corrosive sublimate is in the state of oxydizement of the metal. The manner of marking the oxyds proposed above, enables us to express this difference distinctly, when the degree of oxydizement is ascertained.

EXPLANATION OF THE TABLE OF CHEMICAL SIGNS.

Generic Signs.

No.

1. Light.	5. Carbon.	9. Alkalies.	11. Metals.	12. Acidifiable bases, unknown or compound.
2. Oxygen.	6. Hydrogen.	10. Earths.		
3. Caloric.	7. Sulphur.			13. Compound oxyds.
4. Nitrogen.	8. Phosphorus.			

Combinations of Oxygen.

No.		Oxyds. 1	Oxyds. 2	Oxyds. 3	Acids. 1	Acids. 2	Acids. 3
14.	Nitrogen.	Atmospheric air.	Nitrous oxyd.	Nitric oxyd.	Nitrous.		Nitric.
15	Carbon.	Incombustible coal.	Charcoal.	Carbonic oxyd.			Carbonic.
16.	Hydrogen.			Water.			
17	Sulphur.			Oxyd of sulphur.	Sulphurous.		Sulphuric.
18	Mercury.	Black oxyd.	Yellow.	Red.			
19	Iron.	Green oxyd.		Red.			
20.	Arsenic.			White.			Arsenic.
21.	Muriatic radical.				Muriatic.	Oxygenized muriatic.	Hyper-oxygenized muriatic.

Combinations of Caloric.

22. Oxygen. 23. Nitrogen. 24. Sulphur. 25. Potass. 26. Acetic acid. 27. Ice. 28. Ammonia. 29. Sulphuric acid. 30. Mercury. 31. White oxyd of arsenic. 32. Acetat of ammonia. The three columns represent the mode of characterizing the three states or aggregation of each of these substances.

Primary Compounds.

33. Ammonia. 34. Carburet of iron. 35. Light hydro-carbonous oxyd. 36. Heavy hydro-carbonous oxyd. 37. Sulphureted phosphorus. 38. Phosphureted sulphur. 39. Amalgam of gold. 40. Alloy of silver and copper. 41. Glass. 42. Liquor silicum.

Secondary Compounds.

43. Sulphit of potass. 44. Sulphat of potass. 45. Super-sulphat of potass. 46. Sulphat of alumina. 47. Super-sulphat of alumina and potass, alum. 48. Nitrat of potass. 49. Muriat of ammonia. 50. Hyper-oxygenized muriat of potass 51. Tartrat of soda and potass. 52. Sub-borat of soda 53. Sub-muriat of mercury less oxydized, calomel. 54. Muriat of mercury more oxydized, corrosive sublimate. 55. Green sulphat of iron. 56. Brown sulphat of iron. 57. Tartrat of antimony and potass. 58. Sub-acetat of copper. 59. Acetat of copper. 60. Soap of soda. 61. Soap of ammonia. 62. Hydrogureted sulphuret of potass. 63. Litharge plaster. 64. Ammoniuret of gold, Fulminating gold.

Pharmaceutical Calendar for the Climate of Weimar, by Gottling, showing the principal objects which the Apothecary has to attend to in each Month of the Year.

JANUARY—The concentration of vinegar by freezing,
Muriat of antimony,
Ethers,
Dulcified spirits,
Dippel's animal oil to be prepared;
Some gum resins, as assafœtida, galbanum, ammoniac, &c. to be powdered.

FEBRUARY—as in January.

MARCH—Mezereon bark,
Misletoe of the oak to be gathered;
Conserve of scurvy-grass to be prepared.

APRIL—Spirit of scurvy-grass,
Syrup of violets, to be prepared.

MAY—Sloe flower water,
Conserve of sorrel,
Plaster of henbane,
Extract of succory, henbane, grass, dandelion, &c.
Oil of beetles (Meloë majalis et proscarabæus,)
Spirit of ants, earthworms, &c.

JUNE—Distilled water of lily of the valley,
Various distilled spirituous waters,
Conserves of various herbs and flowers, as conserve of roses, &c.
Hemlock plaster,
Extracts of hemlock, fumatory, wild lettuce, aconite, &c.

JULY—Vinegar of roses,
Rose water,
Marjoram butter,
Preserved cherries, walnuts, currants, &c.
Extract of elaterium,
Honey of roses,
Boiled oil of hypericum, &c.
Distilled oil of rosemary, mint, parsley, pennyroyal, wild thyme, &c.
Syrup of cherries, raspberries, &c.
Spirit of rosemary.

AUGUST—Cherry water,
Extract of blessed thistle, thorn apple, &c.
Boiled oil of wormwood, chamomile, &c.
Distilled oil of wormwood, chamomile, peppermint, millefoil, rue, &c.
Rob of mulberries,
Syrup of ditto.

SEPTEMBER—Quince cinnamon water,
Oxymel of meadow saffron,
Quince cakes,
Syrup of barberries, quinces, buckthorn,
Tincture of steel, with quince-juice.

OCTOBER—Tincture of steel, with apple-juice.

NOVEMBER and DECEMBER—As in January.

APPENDIX.

No. I.

List of Substances contained in some of the latest and most esteemed Foreign Pharmacopœias, but not inserted in the Materia Medica of any of the British Colleges.

EXPLANATION OF THE ABBREVIATIONS.

1. Brem.—Pharmacopœia in usum officinarum reipublicæ Bremensis conscripta. 8vo. Bremæ, 1792.
2. Aust. prov.—Pharmacopœia Austriaco-provincialis, emendata. 8vo. Viennæ, 1794.
3. Aust. cast.—Pharmacopœia Austriaco-castrensis. 8vo. Ticini, 1795.
4. Ross.—Pharmacopœia Rossica. 8vo. Petropoli, 1798.
5. Mar.—Apparatus medicaminum nosocomiis, generatim curationi ægrotorum pauperum maxime accommodus Francisci Marabelli. 8vo. Patavia, anno Reipub. Gall. VIto. 1798.
6. Bor.—Pharmacopœia Borussica. 4to. Berolini, 1799.
7. Gen.—Formulario Farmaceutico per uso dell' Ospedale di Pammatone. 8vo. Genova, 1800.
8. Van M.—Pharmacopée manuelle, par J. B. Van Mons. 8vo. A Bruxelles, an. IX. 1801.
9. Brugn.—Pharmacopœia ad uso degli speziali, e medici moderni della republica Italiana, di L. Brugnatelli. 8vo. Pavia, 1802.
10. La G.—Manuel du Pharmacien, par E. J. B. Bouillon La Grange. 8vo. A Paris, an. XI. 1803.
11. Parm.—Code Pharmaceutique, à l'usage des hospices civiles, des secours à domiciles, et des prisons, publié par ordre du Ministre de l'interieur. Par A. A. Parmentier. 8vo. Paris, 1803.
12. Al.—Nouveaux elemens de Therapeutique et de Matiere Medicale. Par. J. L. Alibert. 8vo. Paris, an. XII.

1. ACHILLEA MILLEFOLIUM. *Millefolii herba, flores.* Ross. Aust. prov. Brem. Bor. La G.

Smell somewhat aromatic; taste slightly astringent and bitterish; effects stomachic and tonic.

2. ACHILLEA NOBILIS. *Millefolii nobilis herba, flores.* Ross.

Smell camphoraceous and aromatic, preferable in every respect to the preceding species.

3. ACHILLEA PTARMICA. *Ptarmicæ radix; herba cum floribus.* Ross.

No smell; taste acrid; effects sialogogue, sternutatory.

4. ADIANTUM CAPILLUS VENERIS. *Capillus veneris; herba.* Aust. prov. Van M. La G.

Used for preparing the syrup called Capillaire.

5. AGARICUS MUSCARIUS. Ross.

Smell fetid; taste acrid; effects inebriating, and inducing delirium.

6. ALCEA ROSEA. *Malvæ arboreæ flores.* Ross. Brem. Bor.

No smell; taste mucilaginous and sub-astringent; effects emollient and sub-astringent.

7. AMBRA AMBROSIACA GRYSEA. *Ambra Grysea.* Ross. Bor. Van M.

Smell agreeable; taste resinous and aromatic; effects exciting and augmenting the nervous power.

8. AMOMUM CURCUMA. Van M. *Curcumæ radix.* Bor.

Taste bitterish, aromatic.

9. AMOMUM GRANA PARADISI. *Grana Paradisi.* Brem. La G.

Smell slightly aromatic; taste acrid; effects stimulating.

10. AMYGDALUS NANA. *Nuclei.* Ross.

No smell; bitterish taste; a substitute for sweet almonds.

11. AMYGDALUS PERSICA. *Flores.* Van M. La G.

Aromatic; bitter; laxative.

12. ANAGALLIS ARVENSIS. *Anagallis. Herba.* Aust. prov. Brem. Ross. Bor.

No smell; taste at first herbaceous, afterwards bitter, and somewhat acrid.

13. ANEMONE PRATENSIS. *Pulsatillæ nigricantis herba.* Ross. Aust. prov. Brem.

Smell slight; taste acrid, caustic, durable; effects diuretic and stimulant.

14. ANEMONE NEMOROSA. *Ranunculi albi flores, et herba recens.* Ross.

Smell slight; taste acrid; effects rubefacient and blistering.

15. ANTIRRHINUM LINARIA. *Linaria.* Aust. prov. Brem. Bor.

Smell urinous; taste bitterish; effects diuretic.

16. ARISTOLOCHIA CLEMATITIS. *Aristolochia vulgaris. Radix.* Ross.

Smell fragrant, but heavy; taste bitter, durable; effects diuretic, emmenagogue.

17. ARISTOLOCHIA LONGA. *Radix.* La G.

18. ARISTOLOCHIA ROTUNDA. *Radix*. Brem. Bor. La G.
Smell, taste, and effects similar those of the preceding species.

19. ARISTOLOCHIA TRILOBATA. *Stipites; radix*. Ross.
Smell fragrant, strong; taste bitterish, corresponding with the smell; effect diaphoretic.

20. ARTEMISIA PONTICA. *Absinthium ponticum; herba*. Aust. prov.
Similar to A. absinthium, but weaker.

21. ASCLEPIAS VINCETOXICUM. *Radix*. La G.
Stimulant cordial; diaphoretic.

22. ASPARAGUS SATIVA. *Radix*. La G.
Taste bitter-sweet; mucilaginous; aperitive; imparting its smell to the urine.

23. ASPLENIUM SCOLOPENDRIUM. *Folia*. Van M.
Sub-astringent.

24. ASTRAGALUS EXSCAPUS. *Radix*. Ross. Aust. prov. Brem.
No smell; taste bitterish and sub-astringent; effects demulcent, and falsely supposed anti-syphilitic.

25. AURUM. La G.

26. BELLIS PERENNIS. *Flos. Folium*. Aust. prov.
No smell; taste slightly acrid.

27. BETONICA OFFICINALIS. *Folia*. La G.
Aperitive.

28. BETULA ALNUS. *Alni folia*. Ross.
No smell; taste astringent and bitterish; effects discutient and vulnerary.

29. BISMUTHUM, vulgo MARCASITA. Bor.
A very brittle, fusible, and volatile metal. White oxyd has specific effects in Gastrodynia.

30. BITUMEN ASPHALTUM. *Asphaltum*. Bor.
A black friable bitumen, shining in its fracture.

31. BOLETUS LARICIS. *Agaricus Albus. Agaricus chirurgorum*. Brem. Aust. prov. Bor. Van M. La G.
Taste nauseous and bitter; effects emetic, cathartic, drastic.

32. BOLETUS SALICIS. Bor.
An unequally porous fungus growing on the willow, and diffusing an aromatic smell, especially after rain.

33. BOLUS ALBA. Aust. prov.

34. BOLUS ARMENA. Aust. prov. Bor. Van M.
No smell; adheres to the tongue; effects exsiccative.

35. BORAGO OFFICINALIS. *Folia, flores*. Van M. La G.
Saline; aperitive.

36. BOS TAURUS. *Lac vaccinum*. Aust. prov. Gen. Bor. Van M.
Nutritious; demulcent.
Serum lactis vaccini. Mar.
Attenuant; antiseptic.
Saccharum lactis. Bor.
Nutritious; demulcent.
Butyrum. Van M.
Unctuous.
Sevum Bovinum. Ross. Aust. cast.
Unctuous, emollient.

Fel tauri. Bor. Mar. Van M.
Stomachic.

37. Brassica (Eruca.) *Erucæ semina.* Ross. Bor.
Smell heavy; taste acrid; effects stimulant.

38. Brunella Vulgaris. *Folia.* La G.
Vulnerary; astringent.

39. Bubon Macedonicum. *Semina.* La G.
Acrid, aromatic.

40. Buglossum Officinale. *Folia, flores.* La G.
Demulcent.

41. Calendula Officinalis. *Calendula.* Aust. prov. Van M.
Taste bitterish.

42. Cannabis Sativa. *Cannabis. Semina.* Ross. Brem. Bor. Van M.
Smell weak; taste mawkish; effects emollient, anodyne.

43. Carduus Marianus. *Carduus Mariæ. Semen.* Brem.
Emulsive.

44. Carex Arenaria. *Radix.* Ross. Bor.
Smell agreeable, but not strong; effects demulcent, resolvent.

45. Carlina Acaulis. *Carlinæ, seu Cardopathiæ Radix.* Bor. La G.
Taste very acrid and bitter; smell somewhat aromatic, but nauseous.

46. Carthamus Tinctorius, *Grana.* La G.
Cathartic.

47. Ceratonia Siliqua. *Siliqua dulcis.* Ross. Aust. prov. Brem. Bor.
No smell; taste sweet; effects edulcorant, expectorant.

48. Chelidonium Majus. *Radix, herba recens.* Ross. Aust. prov. Brem.
Smell heavy; taste acrid, bitterish, durable; effects acrid, purgative; when dried, aperient, diuretic.

49. Chenopodium Ambrosioides. *Chenopodii herba.* Brem. Bor. Van M.
Smell strong, fragrant; taste acrid, aromatic; effects stimulant, carminative, anthelmintic.

50. Chenopodium Botrys. *Botrys vulgaris. Herba.* Ross. Van M.
Qualities and effects similar to, but stronger than, those of the preceding species.

51. Cichorium Intybus. *Cichorii radix, herba.* Ross. Aust. prov. *et* cast. Brem. La G. Van M. Gen. Bor. Mar.
No smell; taste of the herb agreeably bitter, of the root intensely bitter; effects aperient, tonic, diuretic.

52. Cicuta Virosa. *Herba.* Bor.
Smell heavy; narcotic.

53. Clematis Erecta. *Flammulæ Jovis folia, flores.* Ross. Aust. prov. Bor. Van M.
Smell weak; taste acrid, blistering; effects diuretic, sudorific.

54. Coluber Vipera. La G.
Nutritious.

55. Conferva Dichotoma. *Fucis helminthocortos. Helminthocorton.* Ross. Brem. Gen. Bor. Mons.

Smell marine, fetid; taste saline; effects purgative, anthelmintic.

56. Convallaria Majalis. *Liliorum convallium flores.* Bor. Mons. La G.

Aromatic; cephalic.

57. Convolvulus Americanus. *Mechoacanha; radix.* Brem. La G.

Taste at first sweetish, than sub-acrid; effect purgative.

58. Convolvulus Turpethum. *Radix.* Van M.

Cathartic.

59. Cordia Myxa. *Fructus.* La G.

Pectoral.

60. Cucumis Melo. *Melo. Semen.* Aust. prov. Bor.

Emulsive.

61. Cucurbita Pepo. *Pepo. Semen.* Aust. prov.

Emulsive.

62. Cycas Circinalis. *Sago grana.* Ross Brem.

Amylaceous; nutritious.

63. Cynoglossum Officinale. *Radix.* Van M. La G.

Astringent; inspissant.

64. Cynomorium Coccineum. *Fungus Melitensis.* Ross.

No smell; taste styptic, bitterish, saline; effects roborant, astringent.

65. Cytinus Hypocistis. *Hypocistis. Succus inspissatus.* Aust. prov.

Taste acrid, austere; effect astringent.

66. Dictamnus Albus. *Radix.* Aust. prov. Brem. Bor. La G.

Smell fragrant; taste bitter, sub-aromatic; effects tonic, anthelmintic.

67. Digitalis Epiglottis. *Folia.* Gen.

An Italian substitute for the D. purpurea.

68. Epidendrium Vanilla. *Vanillæ siliqua.* Ross. Van M. La G.

Smell fragrant, balsamic; taste aromatic, sub-acid, unctuous; effects heating, diuretic.

69. Eryngium Campestre. *Radix.* La G.

Aperitive; diuretic.

70. Erysimum Officinale. *Erysimum. Herba.* Brem. La G.

Taste acrid; effects astringent, diuretic.

71. Eupatorium Cannabinum. *Folia.* Van M.

Smell acrid, penetrating; taste intensely bitter; diuretic; emetic; cathartic.

72. Euphorbia Officinalis. *Euphorbii Gummi.* Ross. Aust. prov. Bor. Van M.

No smell; taste, at first none, then pungent, burning; effects acrid, drastic.

73. Euphrasia Officinalis. *Herba.* Van M. La G.

Ophthalmic.

74. Fagara Octandra. *Tacamahaca. Gummi-resina.* Ross. Bor.

Smell fragrant, like lavender; taste bitterish, nauseous; effects tonic, stimulant.

75. Ficus Indica Religiosa. *Laccæ Gummi.* Ross. Brem. Bor.

Resinous.

76. Formica Rufa. *Formicæ cum acervo.* Ross. Brem. Bor.

Qualities and effects depend on the little acetous acid they contain.

77. FRAGARIA VESCA. *Radix.* Van M.
Refrigerant; diuretic.
78 GADUS LOTA. *Mustela fluviatilis. Liquamen hepatis.* Aust. prov.
Nauseous; diuretic, cathartic; chronic rheumatism.
79. GENTIANA PANNONICA. *Gentiana. Radix.* Aust. prov. *et* cast.
Qualities and effects the same as those of the gentiana lutea.
80. GEUM RIVALE. *Gei palustris radix.* Ross.
Smell weak; taste styptic, austere; effects tonic, astringent, febrifuge.
81. GEUM URBANUM. *Caryophyllatæ radix.* Ross. Aust. prov. Brem. Bor. La G.
Smell caryophyllaceous, lost by drying; taste styptic, bitter; effects tonic, astringent, febrifuge; said to be an excellent substitute for Peruvian bark.
82. GLECOMA HEDERACEA. *Hedera terrestris. Herba.* Aust. prov. Brem. Bor. Van M. La G.
Taste bitterish, sub-acrid; effects expectorant, roborant.
83. GLYCYRRHIZA ECHINATA. *Liquiritia, radix.* Bor.
A Russian substitute for the G. glabra.
84. GUILANDINA MORINGA. *Nuces Behen.* Bor.
Oily.
85. HEDERA HELIX. *Gummi-resina.* La G.
Agglutinant.
86. HUMULUS LUPULUS. *Lupuli strobuli.* Bor. La G.
Agreeably bitter; anodyne, diuretic, resolvent.
87. HYPERICUM QUADRANGULARE. *Hypericum. Flores.* Brem.
Smell agreeable; taste bitterish, sub-astringent; balsamic; effects vulnerary.
88. ILEX AQUIFOLIUM. *Aquifolii folia.* Ross. Bor.
No smell; taste astringent; effects febrifuge, antiarthritic.
89. ILLICUM ANISATUM. *Anisatum stellatum. Fructus.* Aust. prov. Brem. Ross. Bor. Van M. La G.
Smell aromatic; taste agreeable, like anise; effects pectoral, carminative, diuretic.
90. IMPERATORIA OSTRUTHIUM. *Imperatoriæ radix.* Ross. Aust. prov.
Smell aromatic; taste warm, pungent, very durable; effects stimulant, carminative, sudorific, diuretic.
91. JASMINUM OFFICINALE. *Jasmini flores.* Ross. Brem.
Smell fragrant; taste bitterish; used as a perfume.
92. LACTUCA SATIVA. *Folia.* La G.
Refreshing; anodyne.
93. LAMIUM ALBUM. *Flores.* Van M. La G.
Astringent; tonic.
94. LAURUS PECHURIM. *Faba.* Van M.
Bitter, aromatic; stimulant, stomachic.
95. LEDUM PALUSTRE. *Rorismarini sylvestris herba.* Ross. Aust. prov. Bor.
Smell heavy, sub-aromatic; taste bitterish, sub-astringent; effects resolvent, diuretic.
96. LEPIDUM SATIVUM. *Folia, semina.* La G.
Antiscorbutic, aperitive, diuretic.

97. Lichen Pulmonarius. La. G.

Taste saline, bitter; pectoral.

98. Ligusticum Levisticum. *Levistici herba, radix, semen.* Ross. Aust. prov. Brem. Bor.

Smell unpleasant; taste warm, aromatic; effects stimulant, carminative, sudorific.

99. Liquidambar Styracifluum. *Styrax Liquida, Balsamum.* Aust. prov. Bor. Van M. La G.

Smell fragrant; taste acrid, aromatic; effects stimulating, heating.

100. Lonicera Diervilla. *Diervillæ stipetes.* Ross.

Taste and smell nauseous; effects antivenereal.

101. Lopeziana. *Radix.* Van M.

Syphilis.

102. Loranthus Europæus. *Viscum quercinum, lignum.* Aust. prov.

Smell nauseous; taste astringent, mucilaginous; effects tonic.

103. Lupinus Albus. *Farina.* Gen.

Farinaceous; bitter.

104. Lycoperdon Bovista. Ross.

No taste or smell; effects mechanical, suppression of hæmorrhagy.

105. Lycopodium Clavatum. *Lycopodii semen.* Ross. Brem. Bor. La G.

No taste or smell; effects absorbent.

106. Lythrum Salicaria. *Lysimachia purpurea. Herba.* Brem. *Salicaria.* Aust. prov.

No smell; taste sub-astringent; effects astringent, tonic.

107. Malva Rotundifolia. *Folia et flores.* Gen.

Demulcent.

108 Manganesium. *Manganesium oxidatum nativum.* Bor. *Magnesia nigra.* Ross. *Magnesia vitrariorum.* Aust. prov.

Used for the production of oxygen gas, oxymuriatic acid, and some other chemical preparations.

109. Maranta Galanga. *Galangæ radix.* Ross. Aust. prov. Berm. Bor. Van M. La G.

Smell fragrant; taste aromatic, pungent, biting; effects stomachic, heating.

110. Matricaria Chamomilla. V. Mons. *Chamomillæ vulgaris, flores, herba.* Ross. Aust. prov. *et* cast. Brem. Bor. Mar.

Smell strong; taste bitter, warmish; effects stomachic, discutient; substitute for chamomile.

111. Matricaria Parthenium. *Matricaria. Flos, herba.* Aust. prov. Bor. Van M. La G.

Smell nauseous; taste bitter; effects stomachic.

112. Melissa Calamintha. *Folia.* La G.

Anti-hysteric.

113. Meloe Proscarabæus. Aust. prov. *Meloë majalis.* Brem. *Vermis majalis.* Ross. Bor.

No smell; taste acrid; effects stimulating, diuretic, caustic.

114. Mentha Crispa. *Herba.* Ross. Aust. prov. Brem. Gen. Mar. Van M.

Smell fragrant, strong; taste warm, aromatic, slightly bitter; effects resolvent, stomachic, carminative.

115. MENTHA AQUATICA. *Mentha rubra. Oleum distillatum.* Aust. cast.

Similar to the former.

116. MERCURIALIS ANNUA. *Herba.* Van M. La G.

Purgative.

117. MIMOSA SENEGAL. *Arabicum gummi.* Brem.

Supposed to produce the finest gum-arabic.

118. MYROBALANUS CITRINA. *Cortex fructuum. Terminaliæ species?* Aust. prov.

Taste astringent; effects astringent.

119. NARCISSUS PSEUDO-NARCISSUS. *Flores.* Van M.

Fragrant; antispasmodic.

120. NIGELLA SATIVA. *Nigella. Semen.* Brem. La G.

Smell fragrant; taste acrid, aromatic; effects stimulating, errhine, sialogogue, anthelmintic.

121. NYMPHÆA LUTEA. *Radix.* La G.

Demulcent.

122. OCIMUM BASILICUM. Van M. *Basilici herba.* Bor.

Smell fragrant; expectorant.

123. ONONIS SPINOSA. *Ononis radix.* Aust. prov. Mar.

No smell; taste sweetish; effects diuretic.

124. ONOPORDUM ACANTHIUM. *Cardui tomentosi herba recens.* Ross.

No smell; taste bitterish; effects specific, the cure of cancerous affections.

125. ORCHIS MASCULA, MORIO, MILITARIS, MACULATA, PYRAMIDALIS, et LATIFOLIA. *Salep. Satyrium. Radix.* Ross. Aust. prov. *et* cast. Brem. Bor. Van M.

Taste amylaceous; effects nutritious.

126. ORIGANUM DICTAMNUS. *Dictamnus creticus. Herba.* Brem.

Smell slight, aromatic; taste aromatic; effects stimulant.

127. ORYZA SATIVA. *Oryzæ semen decorticatum.* Ross. Van M.

Taste farinaceous; effects nutritious, astringent.

128. PÆONIA OFFICINALIS. *Pæoniæ radix.* Ross. Brem. Bor. La G.

Smell unpleasant; taste at first sweetish, then disagreeably bitter; effects antispasmodic.

129. PHELLANDRIUM AQUATICUM. *Semen.* Ross. *Fœniculum aquaticum.* Brem. Bor.

Smell heavy, taste aromatic, acrid; effects stimulating, resolvent.

130. PHOENIX DACTYLIFERA. *Fructus.* Van M. La G.

Demulcent.

131. PHYSALIS ALKEKENGI. *Bacca.* Van M. La G.

Diuretic.

132. PHYTOLACCA DECANDRA. *Phytolaccæ herba recens, radix* Ross.

No smell; taste acrid, corrosive; effects corrosive in cancer.

133. PIMPINELLA SAXIFRAGA. *Pimpinellæ albæ radix.* Ross. Aust. prov. Brem. Bor. La G.

Smell fragrant; taste warm, acrid; effects stomachic, diaphoretic, diuretic.

134. PINUS PINEA. *Pinus sativa. Nuclei.* Aust. prov.

Taste sweet, bland; effects nutritious.

135. Pistacia Vera. *Fructus.* La G.
Nourishing; analeptic.
136. Plantago Media. *Plantago. Herba.* Aust. prov.
Taste sub-astringent; effects astringent.
137. Plantago Psyllium et Cynops. *Psyllii semen.* Ross. Bor.
Taste nauseous, mucilaginous, then acrid; effects relaxant.
138. Polygala Amara. *Herba, radix.* Ross. Brem. Gen. Bor. Van M.
No smell; taste bitter, acidulous, mucilaginous; effects demulcent, roborant.
139. Polygala Vulgaris. *Polygala. Radix.* Aust. prov. Mar.
Taste sweetish, bitter; effects tonic, expectorant; substitute for seneka.
140. Polypodium Vulgare. *Polypodii radix.* Ross. Aust. prov. Brem. Bor.
Taste at first sweet, then nauseous, bitter, and astringent; effects demulcent, resolvent.
141. Populus Balsamifera. *Tacamahaca. Gummi-resina.* Ross. Van M.
Smell fragrant; taste nauseous, bitterish; effects stimulant, tonic.
142. Populus Nigra. *Gemmæ.* Van M.
Emollient; soporiferous.
143. Prunus Cerasus. *Cerasorum rubrorum acidorum fructus.* Ross. Brem. Bor.
Taste acidulous, sweetish; effects refrigerating, antiseptic.
Cerasorum nigrorum aqua. Aust. prov.
Narcotic.
144. Prunus Lauro-cerasus. *Lauro-cerasi folia.* Ross. Brem. Bor.
Smell fragrant; taste bitter, like that of bitter almonds; effects highly deleterious, narcotic, resolvent, diuretic.
145. Pteris Aquilina. *Felicis fœminæ radix.* Ross.
Smell nauseous; taste viscid, bitterish; effects anthelmintic.
146. Pulmonaria Officinalis. *Folia.* La G.
Antiphthysical.
147. Pyrus Malus. *Poma acidula.* Bor. Van M.
Acidulous.
148. Rana Esculenta. La G.
Nutritious.
149. Rhamnus Zizyphus. *Fructus.* Van M.
Lubricant; expectorant.
150. Rheum Rhaponticum. *Radix.* La G.
Astringent.
151. Rubus Arcticus. *Baccæ.* Ross. La G.
Smell fragrant; taste acidulous, vinous; effects refrigerant, antiscorbutic. Similar properties are possessed by the fruits of the *rubus idæus, cæsius, fructicosus, chamæmorus.*
152. Rumex Acutus. *Lapathum acutum. Radix.* Aust. prov. Brem. Bor. Mar. Van M. La G.
Taste bitterish, acidulous; effects astringent.
153. Sagus Farinaria. *Medulla.* Van M.
Nutritious.

154. Saliva Horminum. *Folia.* La G.
Astringent, tonic.
155. Sambucus Ebulus. *Ebulus. Radix.* Aust. prov.
Smell fetid; taste nauseous, bitter, acrid; effects drastic, cathartic, emetic, narcotic.
156. Sanicula Europæa. *Folia.* La G.
Harsh, herbaceous taste.
157. Saponaria Officinalis. *Saponariæ radix.* Ross. Aust. prov. *et* cast. Brem. Bor. Mar. Van M. La G.
No smell; taste slightly sweet, bitter, and glutinous; effects detergent.
158. Scabiosa Succisa. *Radix.* La G.
Alexipharmic.
159. Scabiosa Arvensis. *Scabiosa. Folium.* Aust. prov. Van M.
Taste slightly bitter; effects éxpectorant, vulnerary.
160. Scandix Cerefolium. *Cerefolii herba. Succus.* Brem. Aust. prov.
Smell weak, balsamic; taste aromatic, balsamic; effects aperient, pectoral, diuretic.
161. Scorzonera Hispanica. *Scorzonera. Radix.* Aust. prov. Bor.
Taste sweetish; effects aperient, demulcent.
162. Secale Cereale. *Secalis farina.* Aust. prov. Gen. Van M.
Taste farinaceous; effects nutritious.
163. Sempervivum Tectorum. *Sedi majoris folia virentia.* Ross. Aust. prov. Brem.
Smell weak; taste sub-acrid, slightly styptic; effects refrigerant, astringent.
164. Senecio Jacobæa. *Herba.* Van M.
Anthelmintic.
165. Sepia Octopoda. *Sepiæ os.* Brem.
A carbonat of lime agglutinated by animal gluten.
166. Sium Sisarum. *Ginseng. Radix.*
Bitter sweet, tonic.
167. Smilax China. *Chinæ Radix.* Aust. prov. Brem.
No smell; taste mucilaginous; effects sudorific, antivenereal.
168. Solanum Nigrum. *Herba.* Bor. Van M. Mar.
Smell nauseous; effects diuretic, narcotic.
169. Spigelia Anthelmia. *Herba cum radice.* Ross. Brem.
Taste and smell fetid; effects narcotic, purgative, anthelmintic.
170. Strychnos nux Vomica. *Nux Vomica.* Bor. Van M. La G.
No smell; taste intensely bitter; effects tonic, narcotic, deleterious.
171. Symphitum Officinale. Van M. La G. *Symphiti radix.* Ross. *Consolida major.* Aust. prov. Brem.
No smell; taste mucilaginous; effects emollient, inspissant.
172. Testudo Ferox, &c. La G.
Nutritious.
173. Teucrium Chamæpitys. *Chamæpityos herba.* Ross.
Smell fragrant; taste bitter and aromatic; effects tonic.
174. Theobroma Cacao. Van M. La G. *Cacao. Nucleus. Oleum.* Ross. Aust. prov. Brem. Bor.
Little smell; taste pleasant and oily, very slightly astringent and

bitterish; effects nutritious. Oil bland, sweetish; effects emollient, lubricating.

175. THYMUS SERPYLLUM. *Serpylli herba.* Ross. Aust. prov. Brem. Bor. La G.

Smell fragrant; taste aromatic, bitterish; effects stimulant, diuretic, emmenagogue.

176. THYMUS VULGARIS. *Thymi herba.* Ross. Brem. La G.

Smell fragrant; taste warm, pungent, bitter; effects stimulant, diuretic, emmenagogue.

177. TILIA EUROPÆA. *Flores.* Van M. La G.

Fragrant; anodyne.

178. TRIFOLIUM MELILOTUS OFFICINALIS. *Meliloti herba cum floribus.* Ross. Aust prov. Brem. Bor. Van M

Smell fragrant; taste herbaceous, bitterish; effects discutient.

179. TRITICUM REPENS. Van M. La G. *Graminis radix.* Ross. Aust. prov. *et* cast. Brem. Gen. Bor.

Smell herbaceous; taste sweetish; effects aperient, demulcent.

180. VACCINIUM MYRTILLUS. *Myrtilli baccæ.* Ross. Aust. prov.

No smell; taste acidulous, sub-astringent; effects refrigerant, astringent.

181. VACCINIUM OXYCOCCOS. *Oxycocci baccæ.* Ross.

Taste acidulous; effects refrigerant.

182. VACCINIUM VITIS IDÆA. *Vitis idææ baccæ, folia.* Ross.

Taste acidulous; effects refrigerant, antiseptic.

183. VERATRUM SABADILLA. Van M. *Sabadillæ semen.* Ross. Aust. prov. *et* cast. Brem. Bor. Mar. La G.

Taste very bitter, acrid, and caustic; effects stimulant, drastic, cathartic, anthelmintic, errhine.

184. VERBASCUM THAPSUS. Van M. La G. *Verbasci flores, folia.* Ross. Aust. prov. Brem. Bor. Mar.

Taste of the leaves herbaceous, bitterish; effects emollient, discutient; smell of the flowers sweet; taste sweet; effects pectoral.

185. VERBENA OFFICINALIS. *Folia.* La G.

Vulnerary.

186. VERONICA OFFICINALIS. *Folia.* Van M. La G.

Vulnerary; pectoral.

187. VICIA FABA. *Faba Semen.* Aust. prov.

Taste farinaceous; effects nutritious.

188. VIOLA TRICOLOR. *Herba.* Ross. Aust. prov. *Jacea. Herba.* Brem. Bor. Mar. Van M.

Smell agreeable; taste mucilaginous, bitterish; effects anodyne.

189. VISCUM ALBUM. Bor. La G.

Glutinous; specific; anti-paralytic; anti-epileptic.

190. VITIS VINIFERA APYRENA. *Passulæ minores.* Ross. Brem.

Taste sweet, acidulous; effects refrigerant, demulcent, lubricating.

No II.

List of Animals which furnish Articles of the Materia Medica, arranged according to Cuvier's System.

	MAMMALIA.
RODENTIA.	Castor fiber.
PACHYDERMATA.	Sus scrofa.
RUMINANTIA.	Moschus moschiferus.
	Cervus elaphus.
	Ovis aries.
	Bos taurus.
CETACEA.	Physeter macrocephalus.
	AVES.
GALLINÆ.	Phasianus gallus.
ANSERES.	Anas anser.
	PISCES.
CHONDROPTERYGII.	Acipenser sturio, stellatus, huso, ruthenus.
	CRUSTACEA.
CANCERES.	Cancer pagurus, astacus.
	INSECTA.
COLEOPTERA.	Lytta vesicatoria. (*Meloe vesicatorius.*)
	Meloe proscarabæus.
HYMENOPTERA.	Cyneps querci folii.
	Apis mellifera.
	Formica rufa.
HEMIPTERA.	Coccus cacti.
GNATHAPTERA.	Oniscus asellus.
	MOLUSCA.
CEPHALOPODA.	Sepia officinalis.
ACEPHALA.	Ostrea edulis.
	VERMES.
	Hirudo medicinalis.
	ZOOPHYTA.
CERATOPHYTA.	Gorgonia nobilis. (*Isis nobilis.*)
SPONGIA.	Spongia officinalis.

No. III.

List of the Genera of Medicinal Plants, arranged according to the Linnæan System.

Cl. I. MONANDRIA.
Ord. Monogynia. Kæmpferia.
Curcuma.
Amomum.
Costus.
Maranta.
Lopezia.

Cl. II. DIANDRIA.
Ord. Monogynia. Olea.
Veronica.
Gratiola.
Verbena.
Rosmarinus.
Salvia.
Ord. Trigynia. Piper.

Cl. III. TRIANDRIA.
Ord. Monogynia. Valeriana.
Crocus.
Iris.
Ord. Digynia. Saccharum.
Avena.
Secale.
Triticum.
Hordeum.

Cl. IV. TETRANDRIA.
Ord. Monogynia. Scabiosa.
Plantago.
Penæa.
Rubia.
Fagara.
Santalum.
Alchemilla.
Dorstenia.
Ord. Digynia. Cuscuta.

Cl. V. PENTANDRIA.
Ord. Monogynia. Pulmonaria.
Symphitum.
Borago.
Cynoglossum.
Anagallis.
Anchusa.
Spigelia.
Menyanthes.
Convolvulus.
Datura.
Hyosciamus.
Nicotiana.
Verbascum.
Chironia.
Cordia.
Strychnos.
Capsicum.
Solanum.
Physalis.
Atropa.
Cinchona.
Lobelia.
Psychotria.
Cephaëlis.
Lonicera.
Rhamnus.
Vitis.
Viola.
Ribes.
Hedera.
Ord. Digynia. Gentiana.
Chenopodium.
Ulmus.
Eryngium.
Sanicula.
Daucus.
Conium.
Sium.
Cuminum.
Ferula.
Bubon.
Angelica.
Coriandrum.
Phellandrium.
Imperatoria.
Cicuta.
Carum.
Pastinaca.
Anethum.
Apium.
Pimpinella.
Ord. Trigynia. Sambucus.
Rhus.
Ord. Pentagynia. Linum.

Cl. VI. HEXANDRIA.

Ord. Monogynia. Loranthus.
Berberis.
Narcissus.
Allium.
Aloë.
Convallaria.
Dracæna.
Scilla.
Asparagus.
Lilium.
Acorus.
Calamus.

Ord. Digynia. Oryza.

Ord. Trigynia. Colchicum.
Rumex.

Cl. VII. HEPTANDRIA.

Ord. Monogynia. Æsculus.

Cl. VIII. OCTANDRIA.

Ord. Monogynia. Amyris.
Vaccinium.
Daphne.

Ord. Trigynia. Coccoloba.
Polygonum.

Cl. IX. ENNEANDRIA.

Ord. Monogynia. Laurus.

Ord. Trigynia. Rheum.

Cl. X. DECANDRIA.

Ord. Monogynia. Myroxylon.
Toluifera.
Cassia.
Guliandina.
Dictamnus.
Hæmatoxylon.
Swietenia.
Guajacum.
Ruta.
Quassia.
Ledum.
Rhododendron.
Arbutus.
Styrax.
Copaifera.

Ord. Digynia. Saponaria.
Dianthus.

Ord. Pentagynia. Oxalis.

Ord. Decagynia. Phytolacca.

Cl. XI. DODECANDRIA.

Ord. Monogynia. Asarum.
Garcinia.
Canella.
Portulaca.
Lythrum.

Ord. Digynia. Agrimonia.

Ord. Trigynia. Euphorbia.

Cl. XII. ICOSANDRIA.

Ord. Monogynia. Cactus.
Eugenia.
Myrtus.
Punica.
Eucalyptus.
Amygdalus.
Prunus.

Ord. Pentagynia. Pyrus.

Ord. Polygynia. Rosa.
Rubus.
Tormentilla.
Fragaria.
Potentilla.
Geum.

Cl. XIII. POLYANDRIA.

Ord. Monogynia. Papaver.
Chelidonium.
Cistus.
Tilea.
Nymphæa.

Ord. Digynia. Pæonia.

Ord. Trigynia. Delphinium.
Aconitum.

Ord. Tetragynia. Wintera.

Ord. Pentagynia. Nigella.

Ord. Polygynia. Clematis.
Helleborus.

Cl. XIV. DIDYNAMIA.

Ord. Gymnospermia. Glecoma.
Hyssopus.
Mentha.
Lavandula.
Teucrium.
Lamium.
Satureja.
Marrubium.
Thymus.
Ocimum.
Origanum.
Melissa.

Ord. ANGIOSPERMIA. Euphrasia.
Scrophularia.
Digitalis.

Cl. XV. TETRADYNAMIA.
Ord. SILICULOSÆ. Cochleria.
Lapidium.
Raphanus.
Cardamine.
Sinapis.
Sisymbrium.

Cl. XVI. MONADELPHIA.
Ord. TRIANDRIA. Tamarindus.
Ord. POLYANDRIA. Malva.
Althæa.

Cl. XVII. DIADELPHIA.
Ord. HEXANDRIA. Fumaria.
Ord. OCTANDRIA. Polygala.
Ord. DECANDRIA. Pterocarpus.
Spartium.
Genista.
Lupinus.
Dolichos.
Astragalus.
Trifolium.
Glycyrrhiza.
Geoffroya.
Trigonella.

Cl. XVIII. POLYADELPHIA.
Ord. DECANDRIA. Theobroma.
Ord. ICOSANDRIA. Citrus.
Ord. POLYANDRIA. Melaleuca.
Hypericum.

Cl. XIX. SYNGENESIA.
Ord. POLYGAMIA ÆQUALIS.
Cichoreum.
Scorzonera.
Leontodon.
Lactuca.
Carlina.
Arcitum.
Carthamus.
Cynara.
Carduus.
Ord. POLYGAMIA SUPERFLUA.
Artemisia.
Tanacetum.
Bellis.
Matricaria.

Ord. POLYGAMIA SUPERFLUA.
Arnica.
Inula.
Solidago.
Senecio.
Tussilago.
Anthemis.
Achillea.
Ord. POLYGAMIA FRUSTRANEA.
Centaurea.
Ord. POLYGAMIA NECESSARIA.
Calendula.

Cl. XX. GYNANDRIA.
Ord. DIANDRIA. Orchis.
Epidendrum.
Ord. HEXANDRIA. Aristolochia.
Ord. DODECANDRIA. Cytinus.
Ord. POLYANDRIA. Arum.

Cl. XXI. MONOECIA.
Ord. TETRANDRIA. Betula.
Morus.
Urtica.
Ord. POLYANDRIA. Quercus.
Juglans.
Liquidamber.
Ord. MONADELPHIA. Pinus.
Ricinus.
Croton.
Ord. SYNGENESIA. Momordica.
Cucumis.
Cucurbita.
Bryonia.

Cl. XXII. DIOECIA.
Ord. DIANDRIA. Salix.
Ord. TETRANDRIA. Viscum.
Ord. PENTANDRIA. Pistacia.
Cannabis.
Humulus.
Ord. HEXANDRIA. Smilax.
Ord. OCTANDRIA. Populus.
Ord. MONADELPHIA. Juniperus.
Cissampelos.

Cl. XXIII. POLYGAMIA.
Ord. MONOECIA. Veratum.
Mimosa.
Parietaria.
Ord. DIOECIA. Fraxinus.
Panax.

Ord. Trioecia.	Ficus.
	Ceratonia.

Cl. XXIV. CRYPTOGAMIA.

Ord. Filices.	Polypodium.
	Adiantum.
Ord. Musci.	Lycopodium.
Ord. Algæ.	Lichen.
	Conferva.
Ord. Fungi.	Agaricus.
	Boletus.
	Lycoperdon.

Cl. XXV. PALMÆ.

Cocos.
Phœnix.
Sagus.

List of Officinal Genera, arranged according to the Natural System of Jussieu, improved by Ventenat.

Cl. I. ACOTYLEDONES.

Ord. 1. FUNGI. Lycoperdon.
Boletus.
Agaricus.
2. ALGÆ. Conferva.
Lichen.
Plataphyllum.
3. HEPATICÆ.
4. MUSCI. Lycopodium.
5. FILICES. Polypodium.
Peteris.
Adiantum.
Cycas.

MONOCOTYLEDONES.

Cl. II. STAMINA HYPOGYNIA.

Ord. 1. PLUVIALES.
2. AROIDEÆ. Arum.
Acorus.
3. TYPHOIDEÆ.
4. CYPEROIDEÆ.
5. GRAMINEÆ. Saccharum.
Lolium.
Hordeum.
Triticum.
Secale.
Avena.
Oryza.

Cl. III. PERIGYNIA.

Ord. 1. PALMÆ. Calamus.
Areca.
Cocos.
Sagus.
Phœnix.
Ord. 2. ASPARAGOIDEÆ.
Dracæna.
Asparagus.
Convallaria.
3. SMILACEÆ. Smilax.
4. IONCACEÆ. Veratrum.
Colchicum.
5. ALISMOIDEÆ.
6. LILIACEÆ.
a. Asphodeloideæ.
Scilla.
Allium.
b. Gloriosæ.
Lilium.
c. Aloideæ.
Aloë.
7. NARCISSOIDEÆ.
Narcissus.
8. IRIDEÆ. Iris.
Crocus.

Cl. IV. EPIGYNIA.

Ord. 1. SCITAMINEÆ.
2. DRYMYRHIZÆ.
Amomum.
Kæmpferia.
3. ORCHIDEÆ. Orchis.
Vanilla.
4. HYDROCHARIDEÆ.

DICOTYLEDONES.
A. FLORES APETALI.

Cl. V. EPIGYNIA.

Ord. 1. ASAROIDEÆ.
Aristolochia.
Asarum.
Cytinus.

Cl. VI. PERIGYNIA.

Ord. 1. ELÆAGNOIDEÆ.
2. DAPHNOIDEÆ. Daphne.
3. PROTEOIDEÆ.
4. LAURINEÆ. Laurus.
Myristica.
5. POLYGONEÆ. Coccoloba.
Polygonum.
Rumex.
Rheum.
6. CHENOPODEÆ.
Phytolacca.
Chenopodium.

Cl. VII. HYPOGYNIA.

Ord. 1. AMARANTHOIDEÆ.
2. PLANTAGINEÆ.
Plantago.
Psyllium.
3. NYCTAGINEÆ. Mirabilis.
4. PLUMBAGINEÆ.

B. MENOPETALI.
Cl. VIII. HYPOGYNIA.

Ord. 1. PRIMULACEÆ.
2. OROBANCHOIDEÆ.
3. RHINANTHOIDEÆ.
Polygala.
Veronica.
4. ACANTHOIDEÆ.
5. LILACEÆ. Fraxinus.
6. IASMINEÆ. Olea.
7. PYRENACEÆ.
8. LABIATÆ. Rosmarinus.
Salvia.
Teucrium.
Hyssopus.
Lavandula.
Mentha.
Glecoma.
Marrubium.
Origanum.
Thymus.
Melissa.
Ocimum.
9. PERSONATÆ. Digitalis.
Gratiola.
10. SOLANEÆ. Hyosciamus.
Nicotiana.
Datura.
Atropa.
Solanum.
Capsicum.
11. SEBESTENÆ. Cordia.
12. BORRAGINEÆ. Anchusa.
13. CONVOLVULACEÆ.
Convolvulus.
14. POLEMONACEÆ.
15. BIGNONEÆ.
16. GENTIANEÆ.
Menyanthes.
Gentiana.
Chironia.
Spigelia.
17. APOCINEÆ. Asclepias.
18. HILOSPERMÆ.

Cl. IX. PERIGYNIA.

Ord. 1. EBENACEÆ. Styrax.
2. RHODORACEÆ.
Rhododendron.
Ledum.
3. BICORNES. Arbutus.
Vaccinium.
4. CAMPANULACEÆ.
Lobelia.

Cl. X. EPIGYNIA, WITH UNITED ANTHERÆ.

Ord. 1. CICHORACEÆ. Lactuca.
Taraxacum.
Cichorium.
Scolymus.
2. CINAROCEPHALÆ.
Cinara.
Arctium.
Centaurea.
3. CORYMBIFERÆ.
Anthemis.
Achillea.
Solidago.
Inula.
Tussilago.
Arnica.
Matricaria.
Tanacetum.
Artemisia.
Absinthium.

Cl. XI. EPIGYNIA, WITH DISTINCT ANTHERÆ.

Ord. 1. DIPSACEÆ. Valeriana.
2. RUBIACEÆ. Galium.
Rubia.
Cinchona.
Psychotria.
Coffea.
3. CAPRIFOLIACEÆ.
Diervilla.
Sambucus.
Cornus.
Hedera.

DICOTYLEDONES. C. POLYPETALI.
Cl. XII. EPIGYNIA.

Ord. 1. ARALIACEÆ. Panax.
2. UMBELLIFERÆ.
Pimpinella.
Carum.

Ord. 2. UMBELLIFERÆ.
Apium.
Anethum.
Pastinaca.
Imperatoria.
Scandix.
Coriandrum.
Phellandrium.
Cuminum.
Bubon.
Sium.
Angelica.
Ligusticum.
Ferula.
Cicuta.
Daucus.
Eryngium.

Cl. XIII. HYPOGYNIA.

Ord. 1. RANUNCULACEÆ.
Clematis.
Helleborus.
Delphinium.
Aconitum.
2. TULIPIFERÆ. Illicium.
3. GLYPTOSPERMÆ.
4. MENISPERMOIDEÆ
5. BERBERIDEÆ. Berberes.
6. PAPAVERACEÆ.
Papaver.
Chelidonium.
Fumaria.
7. CRUCIFERÆ. Raphanus.
Sinapis.
Sisymbrium.
Cardamine.
Cochlearia.
Nasturtium.
8. CAPPARIDEÆ.
9. SAPONACEÆ.
10. MALPIGHIACEÆ.
Hippocastanum.
11. HYPERICOIDEÆ.
Hypericum.
12. GUTTIFERÆ.
Mangostana.
13. HESPERIDEÆ. Citrus.
14. MELIACEÆ. Canella.
Swietenia.
15. SARMENTACEÆ. Vitis.
16. GERANIOIDEÆ. Oxalis.

Ord. 17. MALVACEÆ. Malva.
Althæa.
Hibiscus.
Theobroma.
18. TILIACEÆ. Tilia.
19. CISTOIDEÆ. Cistus.
Viola.
20. RUTACEÆ. Guaiacum.
RUTA.
Dictamnus.
21. CARYOPHYLLEÆ.
Dianthus.
Linum.

Cl. XIV. PERIGYNIA.

Ord. 1. PORTULACEÆ.
2. FICOIDEÆ.
3. SUCCULENTÆ. Sedum.
4. SAXIFRAGEÆ. Ribes.
5. CACTOIDEÆ. Cactus.
6. MELASTOMEÆ.
7. CALYCANTHEMÆ.
8. EPILOBIANÆ.
9. MYRTOIDEÆ.
Eucalyptus.
Melaleuca.
Myrtus.
Eugenia.
Caryophyllus.
Punica.
10. ROSACEÆ. Malus.
Pyrus.
Cydonia.
Rosa.
Alchemilla.
Tormentilla.
Potentilla.
Geum.
Rubus.
Cerasus.
Prunus.
Amygdalus.
11. LEGUMINOSÆ. Mimosa.
Tamarindus.
Cassia.
Moringa.
Hæmatoxylum.
Spartium.
Genista.
Trigonella.
Lupinus.

Ord. 11. LEGUMINOSÆ.
Melilotus.
Dolichos.
Astragalus.
Glycyrrhiza.
Dalbergia.
Geoffræa.
Pterocarpus.
Copaifera.
12. TEREBINTACEÆ. Rhus.
Amyris.
Terebinthus.
Bursera.
Toluifera.
Fagara.
Juglans.
13. RHAMNOIDEÆ. Rhamnus.

DICOTYLEDONES. D. APETALI.
Cl. XV. IDIOGYNIA.
Ord. 1. TITHYMALOIDEÆ.
Euphorbia.
Clutia.
Ricinus.

Ord. 1. TITHYMALOIDEÆ.
Croton.
2. CUCURBITACEÆ.
Bryonia.
Elaterium.
Momordica.
Cucumis.
Cucurbita.
3. URTICEÆ. Ficus.
Dorstenia.
Urtica.
Parietaria.
Humulus.
Piper.
Morus.
4. AMENTACEÆ. Ulmus.
Salix.
Populus.
Betula.
Quercus.
Liquidambar.
5. CONIFERÆ. Juniperus.
Abies.
Pinus.

No. IV.

List of Substances belonging to the Mineral Kingdom, which are used in Medicine.

EARTHS.
LIME.
Carbonat of lime.
a, Chalk.
b, Marble.
BARYTA.
Carbonat of baryta.
Sulphat of baryta.
ALUMINA.
Bole.
SALTS.
Sulphat of magnesia.
Super-sulphat of alumina and potass.
Sulphat of iron.
of copper
of zinc.
Sub-borat of soda.
Nitrat of potass.
Muriat of soda.
INFLAMMABLES.
Naphtha.
Bitumen.
Amber.
Sulphur.
METALS.
Silver.
Copper.
Iron.
Tin.
Lead.
Mercury.
Zinc.
Antimony.
Arsenic.
Bismuth.

MATERIA MEDICA.

A

ACIDA—*ACIDS.*

THE opinions entertained of the principle of acidity have been many and various: the experiments of that illustrious chemist Lavoisier were generally supposed to have proved that the acidifying principle is OXYGEN; and that acids are nothing but combustible substances combined with oxygen, which differ from one another according to the nature of the combustible base. Of late, however, the opinion has declined; since later experiments tend to evince that hydrogen has an equal claim to the title,—or, what is perhaps still more correct, there is no such principle to be found in any one substance exclusively; but the property of acidity results from the agency of all the bodies entering into combination.

As oxygen possesses so important a place in the formation of acids, and as it has within these few years been introduced into pneumatic medicine, as a powerful agent in the cure of diseases, it will not be improper to enter more minutely into its consideration.

OXYGEN.

Oxygen is the principle on which most of the chemical qualities of atmospheric air depend. Its tendency to combination is so strong, that it has never been procured in a separate state. Oxygen gas, or the combination of oxygen with caloric, is its most simple form. This is permanently elastic, compressible, transparent, inodorous, and insipid. 100 cubical inches at 60° Fahrenheit, and 30 inches mercurial pressure, weigh about 34 grains. Its specific gravity in relation to water is 0.00135; and in relation to hydrogen, its specific gravity is 15 to 1; its power of refracting light 1958, hydrogen being 1000; and is capacity for heat 4.7, water being assumed as unity. It supports inflammation, is necessary for respiration and vegetation, and is decomposed in all these processes; it constitutes 0.21 of the bulk of atmospheric air. Water at 60° takes up $\frac{1}{27}$ of its bulk of the gas. Oxygen is also a constituent in water, in all acids and metallic oxyds, and in almost all animal and vegetable substances. It is separated from many of its combinations by the sun's rays.

Oxygenizement is an example of chemical union, and is subjected to all the laws of affinity.* It requires the presence and contact of oxygen, and of another substance possessing affinity for it.

The term *Combustion* has been, by the French chemists, incorrectly extended to all these combinations; for, in common language, that word is applied to cases in which oxygen is not an agent, and always supposes the production of heat and light, although in numberless instances of oxygenizement these phenomena do not appear.

Oxygenizable bases attract oxygen with very different degrees of force. This attraction is much influenced by temperature. Thus charcoal, which at ordinary temperatures seems to possess no attraction for oxygen, unites with it rapidly and almost inseparably, when heated to ignition.

In many instances, oxygenizement is so strongly opposed by cohesion, that it does not take place unless assisted by a degree of heat sufficient to melt or vaporize the oxygenizable base.

It is also often accompanied by the excitation of caloric and light in a very conspicuous degree. To these the term combustion should be confined; and only such oxygenizable bases as are capable of ex-

* Affinity is regulated by the following laws:

a. It does not act at sensible distances.

b. It is exerted only between particles of different species.

c. It is exerted by different bodies, with different degrees of force; and hence it was called *Elective Attraction.*

d. It unites bodies in definite proportions; and when bodies combine in more proportions than one, these are multiples of each other. Also when more than two bodies unite, they exist in the same proportions, or multiples of the same proportions in which they form binary compounds. Lastly, when oxygenized bodies are combined, each of them contains the same quantity of oxygen, or multiples of the same quantity; and oxygenizable bodies combine in such proportions as will require equal or multiple quantities of oxygen for their oxygenizement.

e. It unites a first proportion of one body with another, more strongly than a second; a second than a third, and so on; and hence it is in the inverse ratio of saturation, and seems to increase with the mass.

f. It is influenced by cohesion, specific gravity, elasticity and temperature.

g. It is often accompanied by a change of temperature.

h. Substances, chemically combined, acquire new properties;

i. and cannot be separated by mechanical means.

k. The action produced by different affinities, existing in one substance, is called *Resulting Affinity.*

Affinity is

a. simple, when two bodies unite, in consequence of their mutual attraction, whether these bodies be themselves simple or compound, and even although, in the latter case, it be attended with decomposition.

b. compound, when there is more than one new combination, and when the new arrangement would not have taken place, in consequence of the attractions tending to produce either combination singly.

The attractions which tend to preserve the original arrangement of bodies presented to each other, are denominated *Quiescent attractions;* those which tend to destroy the original, and to form a new arrangement, are termed *Divellent attractions.*

It is evident, that no new arrangement can take place, unless the divellent be more powerful than the quiescent attractions.

hibiting these phenomena are combustible. These phenomena depend upon the new compound having a weaker affinity or less capacity than its constituents for light and caloric, which are therefore extricated.

If the combustible body be vaporized, flame is produced, and the process is then denominated *inflammation.*

By its union with oxygenizable substances, oxygen undergoes various changes in its properties. In many instances the compounds of oxygen are fluid or solid, opaque, coloured, incapable of supporting inflammation, and deleterious to animal or vegetable life. The changes which the oxygenizable bases undergo, are no less conspicuous. Their form, colour, taste, odour, density, permeability to light and electricity, specific caloric, and, finally, their affinities, are often totally altered.

When, in consequence of oxygenizement, any substance acquires a sour taste, and the properties of converting vegetable blues to red, and of saturating or destroying the characteristic properties of alkalies and earths, it is said to be acidified, and such compounds are termed *Acids.* In general, they combine with water, in almost any proportion, without suffering any change in their properties, except what depends on dilution.

When, on the contrary, a base by oxygenation acquires a harsh, austere, and urinous taste, and the properties of converting vegetable blues to green, and of saturating or destroying the characteristic properties of acids, it may be said to be alkalized, and the compounds are termed *Earths* or *Alkalies.*

Earths, in general, are characterized by total want of inflammability, infusibility, fixedness, a specific gravity less than five, inalterability, whiteness, dryness, brittleness, sparing solubility in water, and, in general, insipidity and want of smell, capability of forming chemical compounds with acids, alkalies, sulphur, phosphorus, and oils, and fusibility when mixed with each other, or with alkalies, into colourless glasses, enamels, or porcelains.

When the oxygenized substance does not acquire the properties of Acids or Alkalies it is termed an *Oxyd;* but many oxyds have some of the properties of acids or earths.

Many oxyds are capable of combining with additional doses of oxygen; those which have only one portion are called *Protoxyds,* with two *Deutoxyds,* with three *Tritoxyds,* and when fully saturated they get the name of *Peroxyds.*

Oxygen is capable of combining at the same time with two or more substances; and the oxyds or acids which result from such combinations are termed Oxyds or Acids with a double or triple base.

In general, the bases which are least simple, unite with oxygen in the greatest variety of proportion.

Primary Compounds of Oxygen.

A. Binary,

a. With nitrogen or azote:

1. Atmospheric air.
2. Nitrous oxyd gas.

3. Nitric oxyd gas or nitrous gas.
4. Nitrous acid gas.
5. Nitric acid.

b. With hydrogen: water.

c. With carbon:

1. Incombustible coal, plumbago.
2. Charcoal.
3. Gaseous oxyd of carbon, (carbonic oxyd gas.)
4. Carbonic acid gas.
5. Carbureted hydrogen gas.
6. Supercarbureted hydrogen or Olefiant gas.

d. With sulphur:

1. Oxyd of sulphur.
2. Sulphurous acid gas.
3. Sulphuric acid (hydro-sulphuric acid.)

e. With phosphorus:

1. Oxyd of phosphorus.
2. Phosphorous acid (hydro-phosphorous acid.)
3. Phosphoric acid.

f. With metals:

1. Metallic oxyds.
2. Metallic acids.

B. Ternary,

a. With carbon and hydrogen:

1. Oxyds. Hydro-carbonous oxyds, alcohol, ether, oil, vegetable substances.
2. Acids. Vegetable acids.

b. With hydrogen and sulphur:

Sulphureted hydrogen, hydrogureted sulphur.

C. Quarternary, with hydrogen, carbon and nitrogen.

1. Oxyds. Animal substances.
2. Acids. Animal acids.

Acids are divided into those with simple bases, and those with compound bases.

Of Acids with Simple Bases.

They are,

Carbonic acid gas,	*vide Carbo Ligni.*
Nitrous acid, - Nitric acid, - -	- *Nitras Potassæ.*
Sulphurous acid gas, Sulphuric acid,	- *Sulphur.*
Phosphorous acid, Phosphoric acid,	*Phosphorus.*
Iodic acid,	*Iodine.*

Metallic acids, viz.

Arsenous acid, - Arsenic acid, -	*Arsenicum,*

Tungstic acid.
Molybdic acid.
Chromic acid.
Columbic acid.

Other metallic oxyds seem capable of acidification; but our information respecting them is not yet sufficient to enable us to enumerate their properties.

Besides some of the metals, hydrogen is the only simple substance which does not seem to be capable of acidification; and, on the other hand, there are three acids, with whose composition we are still unacquainted, viz.

Muriatic acid.*		*vide Murius sodæ.*
Boracic acid.	-	*Sub-boras sodæ.*
Fluoric acid.		

Of Acids with Compound Bases.

The compound acids possess the properties of acids in general; but they are distinguished from the acids with single bases, by their great alterability.

The *ternary* acids coincide nearly with the vegetable acids, and are characterized by their being converted entirely into water and carbonic acid when completely decomposed by oxygen. They consist of various proportions of carbon, hydrogen, and oxygen.

The *quarternary* acids coincide nearly with the animal acids; and are characterized by their furnishing ammonia as well as water and carbonic acid when decomposed, and of course contain nitrogen.

The ternary acids are,

Acetic acid.	*vide*	*Acidum Acetosum,*
Benzoic.	-	*Styrax Benzoin.*
Camphoric.	-	*Laurus Camphora.*
Citric -	-	*Citrus Medica.*
Gallic.	-	*Quercus Cerris.*
Laccic.		
Lactic.		
Malic.		
Mucous.		
Oxalic. -	-	*Oxalis Acetosella.*
Sebacic. -	-	*Adeps.*
Suberic.		
Succinic.	-	*Succinum.*
Tartaric.	-	*Super-Tartris Potassæ.*

The quaternary acids are,

Prussic acid.	*vide*	*Amygdalus Communis.*
Amnic,		
Uric.		

Of the above mentioned acids such only are noticed, as are connected with articles of the materia medica.

* The positive nature of this acid, is as yet unsettled;—Whether Davy's opinion of its being constituted of Hydrogen and Chlorine, is true, remains to be proved.

ACIDUM ACETOSUM IMPURUM. *Ed.*

Impure Acetous Acid.

Syn. ACETUM, L. } *Vinegar.*
ACETUM VINI, D. }

D.	*Azyn.*	P.	*Vinagre.*
DA.	*Aeddike.*	POL.	*Ocet.*
F.	*Vinaigre.*	R.	*Ukzus.*
G.	*Essig.*	S.	*Vinagre.*
I.	*Aceto.*	SW.	*Attika.*

This acid is employed in three different states, which have been distinguished from each other by peculiar names. When first prepared, it is called *vinegar;* when purified by distillation, it assumes the name of *distilled vinegar*, usually called acteous acid by chemists; when concentrated as much as possible by peculiar processes, it is called *radical vinegar*, or acetic acid.—These are however only one acid, properly speaking, and should be called by the name of *acetic* acid, their difference depending solely on different degrees of dilution, and some extraneous admixtures. There are of course no other salts than acetats.

Vinegar, as obtained by the fermentation of vinous liquors, besides the pure acetic acid diluted with much water, contains tartaric acid, tartrat and supertartrat of potass, mucilaginous and extractive matters, and sometimes citric, malic and phosphoric acids, alcohol and a peculiar agreeable aroma. These substances render it apt to spoil, and unfit for pharmaceutic and chemical purposes. By distillation, however, the acetic acid is easily separated from such of these substances as are not volatile. The least impure is that prepared from white wine. It should be of a pale yellow colour, perfectly transparent, of a pleasant, somewhat pungent acid taste, but without any acrimony. From the mucilaginous impurities which all vinegars contain, they are apt, on exposure to the air, to become turbid and ropy, and at last vapid. This inconvenience is best obviated by keeping them in bottles completely filled and well corked. They are said to keep better if they are boiled a few minutes before they be corked.

Vinegar is sometimes adulterated with sulphuric acid. Its presence is detected, if on the addition of a solution of nitrat of baryta to the suspected vinegar, a white precipitate is formed, which is insoluble in nitric acid, after having been burnt in the fire. With the same intention of making the vinegar appear stronger, different acrid vegetables are occasionally infused in it. This fraud is difficult of detection; but when tasted with attention, the pungency of such vinegar will be found to depend rather on acrimony than acidity.

Vinegar possesses strong antiseptic powers on dead animal and vegetable matters. Hence its employment in pickling. The fine green colour so much admired in some vegetable pickles is often improperly given them by means of copper. This poisonous addition is easily detected, on dropping some carbonat of ammonia into the suspected vinegar, by the fine blue colour produced.

Medical use. Its action on the living body is gently stimulant and astringent. It promotes transpiration and the discharge by urine; and used moderately as a condiment, it facilitates digestion.

Vinegar is employed as an useful addition to drink, in inflammatory fevers, in the proportion of about an ounce to a quart. As a medicine, it is used in scurvy, and to counteract the effects of narcotic poisons and mephitic vapours. In the form of clysters, it is used in the same diseases, and in obstinate constipation. Externally, it is applied in fomentations and baths, as a stimulant and discutient; and its vapour is inhaled in putrid sore throat, and diffused through the chambers of the sick to correct the putrescency of the atmosphere.

Officinal Preparations.

Acidum acetosum destillatum, E. L. D.	
forte, E. L.	
camphoratum, E. *Vide,*	*Aceta Medicata.*
Acetum aromaticum, E. - -	*Idem.*
colchici, D. - - -	*Idem.*
scillæ, L. D. - - -	*Idem.*
Cataplasma sinapeos, L. D. - -	*Cataplasmata.*
Ceratum saponis, L. D. - -	*Unguenta.*
Mel acetatum, L. D. - - -	*Mella Medicata.*
Oxymel æruginis, L. - - -	*Idem.*
colchici, L. - -	*Idem.*
scillæ, L. - - -	*Idem.*
compositum, - - -	*Idem.*
Syrupus acidi acetosi, E. - - -	*Syrupi.*
colchici, E. - - -	*Idem.*

ACIDUM ACETOSUM DESTILLATUM. *Ed.*

Distilled Acetous Acid.

Acidum Aceticum, L. *Acetic Acid.*

Syn. Acetum Destillatum, D. *Distilled Vinegar.*

Let eight pounds of acetous acid be distilled in glass-vessels, with a gentle heat. The two first pounds which come over, being too watery, are to be set aside; the next four pounds will be the distilled acteous acid. The remainder furnishes a still stronger acid, but too much burnt by the fire. (E.)

The specific gravity of this acid is to the weight of distilled water, as 1004 to 1000. (*Dub. Col.*)

To facilitate this process, and separate a considerable portion of water, the vinegar may be previously subjecting to freezing; the acid remains fluid, the watery parts only consolidate.

By distillation vinegar loses its agreeable flavour, and becomes considerably weaker; for the water being rather more volatile than acetic acid comes over first, while the last and strongest portion of the acid cannot be obtained free from empyreuma.

The process may be performed either in a common still or rather in a retort. The better kinds of wine vinegar should be used. Indeed, with the best kind of vinegar, if the distillation be carried on to any great length, it is extremely difficult to avoid empyreuma. The best method of preventing this inconvenience is, if a retort be used, to place the sand but a little way up its sides, and when somewhat more than half the liquor is come over, to pour on the remainder a quantity of fresh vinegar equal to the liquor drawn off. This may be repeated three or four times; the vinegar supplied at each time being previously heated. The addition of cold liquor would not only prolong the operation, but also endanger the breaking of the retort. Lowitz recommends the addition of half an ounce of recently-burnt and powdered charcoal to each pound of vinegar in the still, as the best means of avoiding empyreuma.

If the common still be employed, it should likewise be occasionally supplied with fresh vinegar, in proportion as the acid runs off, and this continued until the process can be conveniently carried no farther. The distilled acid must be rectified by a second distillation in a retort or glass alembic; for although the head and receiver be of glass or stone ware, the acid will contract a metallic taint from the pewter worm.

The residuum of this process is commonly thrown away as useless, although, if skilfully managed, it may be made to turn to good account, the strongest acid still remaining in it. Mixed with about three times its weight of fine dry sand, and committed to distillation in a retort, with a well regulated fire, it yields an exceedingly strong empyreumatic acid. It is, nevertheless, without any rectification, better for some purposes, as being stronger than the pure acid; particularly for making acetat of potass or soda; for then the empyreumatic oil is burnt out.

Distilled vinegar should be colourless and transparent; have a pungent smell, and purely acid taste, totally free from acrimony and empyreuma, and should be entirely volatile. It should not form a precipitate on the addition of a solution of baryta, or of water staturated with sulphureted hydrogen; or change its colour when supersaturated with ammonia. These circumstances show, that it is adulterated with sulphuric acid, or contains lead, copper, or tin.

Distilled acetous acid, in its effects on the animal economy, does not differ from vinegar, and as it is less pleasant to the taste, it is only used for pharmaceutical preparations.

Officinal Preparations.

Acetum potassæ, E. L. D. -	*vide*	*Potassa.*
Aqua acetitis ammoniæ, E. L. D.		*Ammonia.*
Acetis plumbi, E. L. D. } Aqua lythargyri acetati, L.D. }	-	*Plumbum.*
Acetis hydrargyri, E. L. D.	-	*Hydrargyrum.*

ACIDUM ACETOSUM FORTE. *Ed.*

Strong Acetous Acid.

Syn. Acidum Acetosum, L. *Acetous Acid.*
Acid Aceticum, D. *Acetic Acid.*

Take of
Sulphat of iron dried, one pound;
Acetat of lead, ten ounces.

Having rubbed them together, put them into a retort, and distil in a sand bath with a moderate heat, as long as any acid comes over. (E.)

Specific gravity, 1050. (L.)—1070. D.

Acetic acid is a transparent and colourless fluid, of an extremely pungent smell and a caustic acid taste, capable of reddening and blistering the skin. It is very volatile, and its vapour is highly inflammable; it combines with water in every proportion; it combines with sugar, mucilage, volatile oils, alcohol; it dissolves boracic acid, and absorbs carbonic acid gas; it is formed by the acidification of sugar, and by the decomposition of some other ternary and quaternary compounds by heat or acids. It is decomposed by the sulphuric and nitric acids, and by heat. The proportions of its constituents are not ascertained. In its ordinary state, it has only an acid taste, a pleasant odour; specific gravity 1.0005; congeals and crystallizes at —22°, and is vaporized at 212°.

Acetats are very soluble in water; are decomposed by heat, by exposure of their solutions to the air, and by the stronger acids.

By the above process the acetic acid is prepared. It is now generally believed to differ from distilled vinegar only in strength, and in being perfectly free from all mucilaginous matter; therefore, according to the principles of nomenclature, which gives simple names to simple substances, the strong acid should be acetic acid, and our present acetous acid should be weak or dilute acetic acid.

Many different processes have been proposed for preparing acetic acid, but they may be arranged in three classes. It may be prepared,

1. By decomposing metalline acetats by heat.
2. . . . . acetats by sulphuric acid.
3. . . . . acetats by sulphats.

The process of a former edition of the London college which uses the verdegris is an example of the first kind. But the heat necessary is so great, that it decomposes part of the acetic acid itself, and gives the product an empyreumatic and unpleasant smell.

By the superior affinity of sulphuric acid, the acid may be easily expelled from every acetat, whether alkaline or metallic; but part of the sulphuric acid seems to be deprived of its oxygen, and to be converted into sulphurous acid, which renders the product impure.

The processes of the last kind are preferable to the others in many respects. They are both more economical, and they furnish a purer acid. Mr. Lowitz* directs one part of carefully-dried acetat of

* For the mode of preparing the strongest acetic acid or glacial vinegar—see Lowitz's Memoirs in Crell's Chemical Journal.

soda to be triturated with three parts of super-sulphat of potass, and the distillation to be conducted in a glass retort with a gentle heat. The Berlin college mix together twelve ounces of sulphat of potass with six of sulphuric acid diluted with eighteen of water, and evaporate to dryness. With the super-sulphat of potass thus prepared they decompose nine ounces of acetat of soda dried with a gentle heat.* The process of the Edinburgh college also belongs to this class, and was first proposed by C. Badollier, apothecary at Chartres.

Medical use. It is almost solely used as an analeptic remedy in syncope, asphyxia, hysteric affections, and headachs. Applied to the skin, it acts as a stimulant and rubefacient, but it is most frequently snuffed up the nostrials in a state of vapour.

OFFICINAL PREPARATION.

Acidum acetosum camphoratum, E. *vide Aceta Medicata.*

ACETA MEDICATA,

MEDICATED VINEGARS,

INFUSIONS of vegetable substances in acetic acid are commonly called medicated vinegars. The action of the acid in this case may be considered as twofold.

1. It acts simply as water, in consequence of the great quantity of water which enters into its composition, and generally extracts every thing which water is capable of extracting.

2. It exerts its own peculiar action as an acid. In consequence of this, it sometimes increases the solvent power of its watery portion, or dissolves substances which water alone is incapable of dissolving, and in a few instances it impedes the solution of substances which water alone would dissolve.

As acetic acid, in itself sufficiently perishable, has its tendency to decomposition commonly increased by the solution of any vegetable matter in it, it should never be used as a menstruum, unless where it promotes the solution of the solvend, as in extracting the acrid principle of squills, colchicum, &c. and in dissolving the volatile, and especially the empyreumatic, oils, or where it coincides with the virtues of the solvend.

ACETUM AROMATICUM. *Ed.*

Aromatic Vinegar.

Take of

Tops of rosemary, dried,
Leaves of sage, dried, each four ounces;
Flowers of lavender, dried, two ounces;

* The acid residuum of the distillation of nistrous acid would be an economical substitute.

Cloves, two drachms;
Distilled acetous acid, eight pounds.

Macerate for seven days, express the liquor, and filter it. (E.)

This is given as an improved preparation of the *Vinaigre des quatre voleurs*, which was supposed to be a certain prophylactic against the contagion of plague, and similar diseases. It is in fact a pleasant solution of essential oils in vinegar, which will have more effect in correcting bad smells than in preventing fever.

ACETUM COLCHICI. *Dub.* L.

Vinegar of Meadow Saffron.

Take of
The recent root of colchicum, cut in slices, one ounce;
Vinegar, one pound;
Diluted spirit of wine, one ounce and a half.

Macerate the root in the vinegar four days, in a glass-vessel, frequently agitating them; then express the acid, to which, decanted from the feces, after they have subsided, add the spirit. (D.)

The acrid principle in which the virtue of the colchicum resides, is more soluble in vinegar than in water: this is therefore a preparation of considerable activity. The diluted alcohol is added merely to prevent it from spoiling.

ACETUM SCILLÆ MARITIMÆ. *Ed.*

Vinegar of Squills.

Syn. Acetum Scillæ, L. D. *Vinegar of Squills.*

Take of
Squills, recently dried, one pound;
Vinegar, six pints;
Proof spirit, half a pint.

Macerate the squills with the vinegar in a glass-vessel, with a gentle heat for twenty-four hours; then express the liquor, and set it aside until the feces subside. To the decanted liquor add the spirit, (L.)

Vinegar of squills is a medicine of great antiquity. It is a very powerful stimulant; and hence it is frequently used, with great success, as a diuretic and expectorant. The dose of this medicine is from a drachm to half an ounce: where crudities abound in the first passages, it may be given at first in a larger dose, to evacuate them by vomiting. It is most conveniently exhibited along with cinnamon, or other agreeable aromatic waters, which prevent the nausea it would otherwise, even in small doses, be apt to occasion.

Officinal Preparation.

Syrupus scillæ, E. - *vide Syrupi.*

ACIDUM ACETOSUM CAMPHORATUM. *Ed.*

Camphorated Acetous Acid.

ACIDUM ACETICUM CAMPHORATUM. *Camphorated Acetic Acid.* D.

Take of
 The stronger acetous acid, six ounces;
 Camphor, half an ounce;
 Alcohol, a sufficient quantity.

Reduce the camphor to powder, by triturating it with the alcohol, then add it to the acid, and dissolve.

THE alcohol in this preparation is used merely to facilitate the reduction of the camphor to powder; for the acetic acid is capable of dissolving even a larger portion of camphor than is directed in the above formula.

This solution is a powerful analeptic remedy. Its vapour snuffed up the nostrils, which is the only method of using it, is one of the most pungent stimula we possess. It is so extremely volatile, that it cannot be preserved without excluding it from the contact of the air; and it is so powerfnl a menstruum, that it corrodes cork, and almost all common metals except gold. It should therefore be kept in glass phials, with ground glass stoppers, or in small gold boxes, such as are used for Henry's aromatic spirit of vinegar, for which it is in fact a simple substitute.

ACIPENSER HUSO ET RUTHENUS, *Ichthyocolla*, (*L. D.*) *Isinglass.*

The Beluga or Isinglass fish. The Sterlet, or Caviar Sturgeon. *Pisces Branchiostegi*, Cuvier.

D.	*Huisenblass.*	P.	*Cola de peixe.*
DA.	*Hausblaas, Carlock.*	POL.	*Klei ryby. Karluk.*
F.	*Colle de Poisson.*	R.	*Klei rübii, Karluk.*
G.	*Hausenblase.*	S.	*Col-pez.*
I.	*Colla di pesce.*	SW.	*Husblas.*

Besides those mentioned by the London College, isinglass is prepared from other species of acipenser, especially *A. sturio*, the Sturgeon, and *A. stellatus*, the Serruga.

THE preparation of isinglass is almost peculiar to Russia. It is made in all places where the large species of sturgeon are caught, as on the Dnieper, the Don, and especially on the Caspian sea, also on the Volga, the Ural, the Oby, and the Irtysh. That prepared from the sturgeon is reckoned the best, and next to it that from the beluga. It also varies according to the mode of preparation. On the Volga and Ural, the sounds are watered while fresh, and dried to a certain degree. The outer skin is next taken off, and the inner glossy white membrane is twisted into proper shapes, and then completely dried. The best is usually rolled into the form of a snake or heart; the second folded in leaves, like a book; and the worst is dried without any care. In other places, as at Gurief, fish glue is extracted from the sounds by boiling. This is cut into slabs or plates, is perfectly transparent, and has the colour of amber. On the Okka, where the sterlet only is to be had, the sounds are beat just as they are extracted from the fish, and dried into glue.

It appears that this valuable article is likely to become an article of domestic manufacture; Mr. Waldron of Westchester county, New York, asserts that the vesicula natatoria of a certain fish frequent on the coasts of the United States affords it.

Good isinglass is white, in some degree transparent, dry, composed of membranes not too thick, and without any smell.

The properties of isinglass depend entirely on the gelatin,* of which it principally consists. One hundred grains of good isinglass was found by Mr. Hatchett to contain rather more than 98 of matter soluble in water. A nutritious jelly may be prepared from it. A watery solution of it is used as a test of the presence of tannin, and for the clarification of spirituous liquors. Mr. Davy's solution for the former purpose consists of 120 grains of isinglass dissolved in twenty ounces of water, and if properly made, at temperatures below 50. F. it has a tendency to gelatinize.

It is also said to be employed for the preparation of English court-plaster.

ACONITUM NEOMONTANUM. D.

Aconitum Napellus, L. E.

Large blue Wolfsbane, Monk's-hood, Aconite. The root.

Aconitum Napellus. *Folia. Ed.*
Aconitum. *Herba*, L.
Aconitum. *Folia*, D.

Linnæi Species Plantarum, edit. Willdenow, genus 1062. *species* 9. *Polyandria Trigynia.*—Nat. ord. *Multisiliquæ.*

The Neomontanum we are assured by Willdenow is the species of aconite which has always been used in medicine, although it is almost universally known by the name of Aconitum Napellus in conse-

* *Gelatin*, when exsiccated, is a hard, elastic, semi-transparent substance, resembling horn, having a vitreous fracture: inalterable in the air, soluble in boiling water, and forming with it a gelatinous mass on cooling; it is also soluble, but less readily, in cold water. It is completely insoluble in alcohol, and is even precipitated by it from its solution in water; it is soluble in acids, even when much diluted, and also in the alkalies; but its most characteristic property is its affinity for tannin, with which it forms a thick yellow precipitate, which soon concretes into an adhesive, elastic mass, readily drying in the air, and forming a brittle substance, of a resinous appearance, exactly resembling over-tanned leather, very soluble in ammonia, and soluble in boiling water. It is also precipitated copiously by carbonat of potass. The solution of gelatin in water first becomes acid, and afterwards putrid. When decomposed by nitric acid or heat, its products show that it contains only a small proportion of nitrogen. It is principally contained in the cellular, membranous, and tendinous parts of animals, and forms an important article of nourishment. Glue and isinglass, which are much employed in the arts, are almost pure gelatin.

quence of a botanical error of Stoerk, who introduced it into practice.

It is a perennial plant, found in the Alpine forests of Carinthia, Carniola, and other mountainous countries in Germany, and cultivated in our gardens.

The fresh plant and root are very violent poisons, producing remarkable debility, paralysis of the limbs, convulsive motions of the face, bilious vomiting, and cathæresis, vertigo, delirium, asphyxia, death. The fresh leaves have very little smell, but when chewed have an acrid taste, and excite lancinating pains, and swelling of the tongue. By drying, its acrimony is almost entirely destroyed. For medical use the plant must be gathered before the stem shoots.

Uses and dose. When properly administered, it acts as penetrating stimulus, and generally excites sweat, and sometimes an increased discharge of urine.

On many occasions, it has been found a very effectual remedy in glandular swellings, venereal nodes, anchylosis, spina ventosa, itch, amaurŏsis, gouty and rheumatic pains, intermittent fevers, and convulsive disorders.

We may begin by giving one or two grains of the dried leaves in powder, but it is commonly used in the form of an inspissated juice. As soon as the plant is gathered, the juice is expressed, and evaporated without any previous clarification, to the consistence of an extract. It is an unfortunate circumstance, that the powers of this medicine vary very much, according to its age and the heat employed in its preparation. When recently prepared, its action is often too violent, and when kept more than a year it becomes totally inert. It may therefore be laid down as an universal rule, in the employment of this and of many other similar active medicines, to begin with very small doses, and to increase them gradually to the necessary degree; and whenever we have occasion to begin a new parcel of the medicine, we should commence with an inferior dose, and proceed with the same caution at first.

We may begin by giving half a grain of this extract, either formed into a powder with ten grains of white sugar, or made up with any convenient addition into a pill, twice or thrice a day, and gradually increase the dose: Or a tincture of aconite may be prepared by digesting one part of the dried leaves in six parts of spirit of wine; the dose of which will be at first five or ten drops, and may be gradually increased to forty and upwards.

A decoction of the roots is said to destroy bugs, and to prove fatal to rats and mice.

Officinal Preparation.

Succus spissatus aconiti napelli, E. *vide Succi spissati.*

ACORUS CALAMUS. *Ed.* L. D.

Sweet Flag. The Root.

Syn. Calamus Aromaticus.

Willd. g. 663. *sp.* 1. *Smith. Flor. Brit. g.* 179. *sp.* 1.—*Hexandria Monogynia.*—Nat. ord. *Piperitæ.*

This plant is perennial, and grows plentifully in rivulets and marshy places about Norwich and other parts of England, in the canals of Holland, in Switzerland, and in other countries of Europe. It is also abundant in America. The shops have been usually supplied from the Levant with dried roots, which are not superior to those of our own growth.

The root of acorus is full of joints, crooked, somewhat flatted on the sides, internally of a white colour, and loose spongy texture; its smell is strong; the taste warm, acrid, bitterish, and aromatic; both the smell and taste are improved by exsiccation. This root is generally looked upon as a carminative and stomachic medicine, and as such is sometimes made use of in practice. It is said by some to be superior in aromatic flavour to any other vegetable that is produced in the northern climes of Europe; which is by no means strictly true: it is nevertheless, a sufficiently elegant aromatic. The fresh root, candied, is said to be employed at Constantinople as a preservative against epidemic diseases. The leaves of this plant have a sweet fragrant smell, more agreeable, though weaker, than that of the roots.

Neumann obtained by distillation about two scruples of fragrant volatile oil from sixteen ounces of the dried root. It also rose in distillation with water, but not with alcohol. The spirituous extract from two ounces weighed 370 grains, and water extracted from the residuum 190 grains. The watery extract from two ounces weighed 445 grains, and the residuum gave out to alcohol 43.

ACTEA SPICATA.

Herb Christopher. The root.

This vegetable is perennial, growing in woods and shady places. It attains the height of about two and a half feet, and flowers in the months of May or June; and produces black, shining, pulpy berries in Autumn, about the size of peas, which are considered as poisonous. On account of its fetid smell, this plant is said to be frequented by toads.

There are two varieties of this plant in the United States; one of which is thus described by the Rev. Dr. Cutler, "Christopher baneberries. Blossoms white, berry red. In woodland and shady places—May. The berries are exceedingly poisonous. Dr. Withering says, the plant is powerfully repellent; and that the root is useful in some nervous cases, but it must be administered with caution." Actea racemosa, says Dr. Mease, (Dom. Encyclop.) black snake root, or rich weed, is a very beautiful plant when in flower. The utility of the root of this plant is well known. It is an astringent; and Dr. Barton says, it was used in the form of decoction as a gargle, with success, in a putrid sore throat, which prevailed in New-Jersey, many years ago. A decoction of the root cures the itch. In North-Carolina, it has been useful as a drench in the disease of cattle, called the murrain.

ADEPS.—*FAT, TALLOW.*

D.	*Tælg, Talg.*	P.	*Sebo.*
DA.	*Tælg, Talg.*	POL.	*Lay.*
F.	*Saif.*	R.	*Salo toplenoe.*
G.	*Talg.*	S.	*Sebo.*
I.	*Sevo, Sego.*	SW.	*Talg.*

Fat and *tallow* scarcely differ from the fixed oils, except in being more concrete and more disposed to rancidity. Fat melts between 92° and 127°. Tallow is still less fusible. They cannot be converted into vapour without suffering decomposition, and, when melted, leave, like oil, a greasy stain on paper.

Fat enters into the composition of the various ointments, plasters, cerates, &c. hereafter to be noticed. It is chiefly obtained from the following sources, although many others might be advantageously employed.

BOS TAURUS. *Adeps.*

The Ox. Tallow.

Cl. *Mammalia.* Ord. *Ruminantia.*

The properties of this animal are well understood. Its fat is equally useful with that of mutton for all those medicinal preparations into which the latter enters.

OVIS ARIES. *Adeps.* (*Ed.*) *Ovis Sevum.* (*Lond.*) *Sevum ovillum.* (*Dub.*)

The sheep. Mutton-suet.

Cl. *Mammalia.* Ord. *Ruminantia.*

Mutton is a highly nutritious and wholesome food. Ewe-milk is thick and heavy, and contains much cream and little whey. The cheese made from it has a bitter biting taste, especially when old, and is supposed to be stomachic. Mutton-suet is officinal, for the purpose of giving consistency to ointments and plasters.

SUS SCROFA. *Adeps.* (*Ed.*) *Sus. Adeps.* (*Lond.*) *Adeps suillus.* (*Dub.*)

The hog. The fat. Hogs-lard.

Cl. *Mammalia.*—Ord. *Pachyderma.*

In hogs-lard we have a very pure animal fat, almost entirely free from any peculiar impregnation, and of a soft consistence. Hence it is a very useful emollient for relaxing those parts to which it is applied; and it is also a very convenient article for giving the proper consistence to ointments, plasters, and liniments. Indeed this and the sevum ovillum, or mutton suet, are the only fats now retained by the London and Edinburgh colleges, although formerly more than twenty different fats entered some lists of materia medica. Each particular fat was then supposed to possess peculiar properties; but for this there is probably no foundation: even those retained are now less employed than before, as it has been imagined that a proper consistence of any kind may be more certainly obtained by determined proportions of wax and oil; but as these articles are more expensive, hogs-lard and mutton-suet are often substituted for them by the apothecaries.

Officinal Preparations.

Adipis bovis, suillæ, sevique ovilli, præparatio, *vide Unguenta.*
Unguenta, &c. varia. - - - - *Idem.*

Sebacic acid, or acid of fat, has no place in the Materia Medica. Its presence however must doubtless influence the properties of many of the preparations into which fat or tallow enter; it may therefore be proper to introduce its chemical properties.

Sebacic acid has no smell, and a slightly acid taste. It is crystallizable, melts like fat, and is not volatile. It is so soluble in hot water as to become solid on refrigeration. It is also very soluble in alcohol. It precipitates the nitrats of lead, silver, and mercury, and the acetats of lead and mercury. It does not precipitate the waters of lime, baryta, or strontia.

Sebats are soluble salts.

ÆRUGO.—*Vide*, Sub-Acetis Cupri.

ÆSCULUS HIPPOCASTANUM. (*Ed.*) *Semen*, *Cortex*.

Horse chesnut, the fruit and bark.

Willd. g. 717. *sp.* 1. *Heptandria Monogynia.*—Nat. Ord. *Trihilatæ.*

This is a very common and well-known tree. The fruit, which contains much amylaceous matter,* has been used as food for domestic animals, and even for men, in times of scarcity. But its introduction into the Edinburgh Pharmacopœia, was probably owing to its having been used and recommended as a sternutatory in some cases of ophthalmia and headach. With this view it was drawn up the nostrils in the form of an infusion or decoction.

* Professor Woodhouse obtained from a single nut of the Æsculus Pavia, weighing half an ounce and twenty-five grains, forty-four grains of fine starch. Half a pound of this starch, preserved its colour unimpaired two years. The doctor thought it superior to the finest Polish starch. The water of the first washing, used to receive the grated nuts, was found to hold a poisonous matter in solution. See Med. Repos. vol. 3. p. 211.

The bark has been proposed as a substitute for the very expensive and often adulterated Peruvian bark. Many successful experiments of its effects, when given internally in intermittent and typhus fever, and also when applied externally in gangrene, sufficiently warrant future trials. Although chemical analysis is not yet sufficiently advanced to enable us to determine from it the medical uses of any substance, it appears that the active constituent of this bark is tannin, which is incompatible with the presence of Cinchonin, the predominant, and probably the active constituent, of Peruvian bark. In powder it may be given to the extent of a scruple and a half, or a drachm for a dose. Buchholz prefers a solution of a drachm of the extract in an ounce of cinnamon water, of which sixty drops are to be given every three hours.

AGRIMONIA EUPATORIA. (D.) *The Herb.*

Agrimony. The root.

Willd. g. 951. *sp.* 1. *Smith, Flor. Brit. g.* 224. *sp.* 1.—*Dodecandria Digynia.*

This is a native of the United States. The number of stamina from five to twelve. Blossoms on long terminating spikes; yellow. By fences—July. It is said the Indians used an infusion of the roots in inflammatory fevers with great success; and, according to Kalm, the Canadians have great confidence in it for the same purpose. The leaves of this vegetable are said to be aperient, detergent, and to strengthen the tone of the viscera; hence they have been used in laxity of the intestines, in scorbutic, and other disorders arising from debility. Digested in whey, agrimony affords a diet-drink grateful to the palate and stomach, and was formerly supposed to be an effectual remedy for the jaundice.

The leaves and stalks, together with the closed flowers, afford a dark yellow decoction, which when previously impregnated with a diluted solution of bismuth imparts a beautiful and permanent gold-colour to animal wool.

The herb, when fresh, has a pleasant smell, which however is lost on drying. Its taste is then bitterish and astringent. Lewis got from it an oil of a yellow colour.

ALCOHOL. *Ed. ALCOHOL.*

Syn. Spiritus Vinosus Rectificatus, D.

Spiritus Rectificatus, L.

Rectified Spirit of Wine.

This is the spirit distilled from wine or other fermented liquors, perfectly free from any unpleasant smell, and of which the specific gravity is to that of water as 835 to 1000, such as may be easily procured. (*Ed.*) The London college order a spirit of the same specific gravity, and add, that it contains 95 parts of pure alcohol, and 5 of water. The Dublin college order it of the specific gravity 840.

Alcohol forms the true characteristic of vinous liquors, and arises from the decomposition of sugar, being always in proportion to its quantity. It is found in greatest quantity in the wines of warm countries, and in wines prepared from thoroughly ripened fruit. In the south of France, some wines yield a third of brandy. It is the proportion of alcohol which renders wines more or less generous, and prevents them from becoming sour. The richer a wine is in alcohol, the less malic acid it contains, and, therefore, the best wines give the best brandy, because they are free from the disagreeable taste which the malic acid imparts to them. Old wines give better brandy than new wines, but less of it.

Alcohol is procured from wine by distillation; in conducting which, the following rules are to be observed:

1. To heat the whole mass of fluid at once, and equally.
2. To remove all obstacles to the ascent of the vapour.
3. To condense the vapour as quickly as possible.

The distillation is continued until the liquor which comes over is not inflammable.

Beaumé mentions a very remarkable fact concerning the preparation of alcohol. He distilled two pounds of alcohol, sp. gr. 832, in the water bath, and filled the refrigeratory with ice, and he obtained two pounds four ounces of an alcohol having only sp. gr. 862. This he ascribes to water condensed from the air in the worm by the coldness of the ice, and he assures us from experience, that to get an alcohol of 827, it is absolutely necessary that the refrigeratory be filled with water of 145° F.

Distillers judge of the strength of their spirits by the size and durability of the bubbles it forms, when poured from one vessel into another, or in agitating it in a vessel partly filled. Another proof is, by the combustion of gunpowder: some of which is put in a spoon; it is then covered with the spirit to be tried, which is set on fire; if it kindle the gunpowder, it is supposed to be strong, and *vice versa.* But a small quantity of spirits will always kindle gunpowper, and a large quantity never. Another proof is, by the carbonat of potass, which attracts the water, and dissolves in it, while the alcohol swims above. But all these are uncertain; and dependence can only be put in the proof by hydrometers, or some such contrivance, for ascertaining the weight of a given quantity at a given temperature.

In this country, alcohol is procured from an infusion of malt, and before its rectification is termed Whiskey. In the East Indies, arrack is distilled from rice; in the West Indies, rum from the sugar cane; and in France and Spain, brandy from wine. Of all these, the French brandy is the finest spirit; for the others are more or less impregnated with essential oils, of which it is almost impossible to free them entirely. When any ardent spirit is redistilled to procure alcohol, the water bath is commonly used, which gives a more equal and temperate heat, and improves the product. Gren says, that the addition of four pounds of well burnt charcoal, and three or four ounces of sulphuric acid, previous to this rectification, destroys entirely the peculiar taste of malt spirit; and that a second rectification with one pound of charcoal, and two ounces of sulphuric acid, affords an alcohol of very great purity.* But the affinity of alcohol for water is so very strong, that it cannot be obtained entirely free from it by simple distillation. We must, therefore, abstract the water by means of some substance which has a stronger affinity for it than alcohol has. Carbonat of potass was formerly employed; but muriat of lime is preferable, because its affinity for water is not only very great, but by being soluble in alcohol, it comes in contact with every particle of the fluid. For this purpose, one part of muriat of lime, rendered perfectly dry by having been exposed to a red heat, and powdered after it becomes cold, is put into the still. Over this three parts of highly rectified spirits are to be poured, and the mixture well agitated. By distillation with a very gentle heat, about two-thirds of the spirit will be obtained in the state of perfectly pure alcohol.

The chemial properties of alcohol are as follow.

Alcohol is a transparent colourless liquid, of an agreeable penetrating smell, and pungent burning taste: specific gravity 0.8. It remains fluid in the greatest natural or artificial cold. It boils at 176°, and in vacuo at 56°. Alcohol unites with water in every proportion. During the combination, caloric is evolved, and the specific gravity of the compound is greater than the mean of those of the components. Alcohol dissolves about 60 of sulphur, when they are presented to each other in the state of vapour. It also dissolves a little phosphorus. These solutions are decomposed by water. It dissolves the boracic and carbonic acids, ammonia, soda, and potass, and is the means employed to obtain the two last in a state of purity. Its action on the salts is various. It dissolves the volatile oils, resins, soaps, balsams, camphor, sugar, tannin, extractive, and in part the gummy resins. Alcohol is very inflammable, and when kindled it burns entirely away with a blue flame without smoke. The products of its combustion are carbonic acid and water. It is also decomposed by being transmitted in the state of vapour through a red-hot porcelain tube; by being heated with the fixed alkalies; and by the action of the sulphuric, nitric, oxy-muriatic and acetic acids. From Lavoisier's experiment on the combustion of alcohol, it was found by calculation to consist of 51.72 oxygen, 29.88 charcoal, and 18.40 hydrogen; but by correcting the calculation according to Morveau's experiments, proving the composition of charcoal, from the same experiment alcohol would seem to consist of 65.05 oxygen, 18.22 carbon, and 16.73 hydrogen.

Medical uses.—On the living body alcohol acts as a most violent stimulus. It coagulates all the albuminous and gelatinous fluids, and corrugates all the solids. Applied externally, it strengthens the vessels, and thus may restrain passive hæmorrhagies. It instantly contracts the extremities of the nerves it touches, and deprives them of

* Although this is an old established fact in Europe, yet a patent has been obtained in the United States for the same employment of charcoal!!

sense and motion; by this means easing them of pain, but at the same time destroying their use. Hence employing spiritous liquors in fomentations, notwithstanding the specious titles of vivifying, heating, restoring mobility, resolving, dissipating, and the like, usually attributed to them, may sometimes be attended with unhappy consequences. These liquors received undiluted into the stomach, produce the same effects, contracting all the solid parts which they touch, and destroying, at least for a time, their use and office: if the quantity be considerable, a palsy or apoplexy follows, which ends in death. Taken in small quantity, and duly diluted, they act as a cordial and tonic: if farther continued, the senses are disordered, voluntary motion destroyed, and at length the same inconveniences brought on as before. Vinous spirits, therefore, in small doses, and properly diluted, may be applied to useful purposes in the cure of diseases; whilst in large ones they produce the most deleterious effects.

Officinal Preparations.

Alcohol, L. D.
Æther sulphuricus, E. L. D.
Æther sulphuricus cum alcohole, E. L. D.
Oleum vini, L.
Spiritus ætheris nitrosi, E. L. D.

It also enters into the preparations of all tinctures and distilled spirits. It is used undiluted in

Tinctura Assafœtidæ, E. L. D. Balsami Peruviani, L. Benzoës composita, L. E. Camphoræ, E. L. D. Guaiaci, E. Moschi, D. Myrrhæ, D. Saponis, E. Toluiferæ balsami, E. L. D.	*vide, Tincturæ.*
Spiritus Lavendulæ, E. L. D. Rorismarini, E. L.	*vide, Spiritus destillati.*

ALCOHOL. L. D.

Alcohol.

Take of
Rectified spirit of wine, five pounds;
Pearl-ashes, dried at 300° Fahr., and still warm, one pound;
Caustic kali, in powder, one ounce;
Muriat of lime, dried, half a pound.

Mix the spirit and kali; add the pearl-ashes, previously reduced to powder, and digest the mixture for three days in a close vessel, frequently agitating it; then pour off the spirit, mix with it the muriat of lime, and distil with a moderate heat, until the residuum begins to grow thick. (D.)

Specific gravity 820. *Dub.*

Specific gravity 815. *Lond.*

The muriat of lime is readily obtained from the residuum left in the preparation of water of caustic ammonia.

THE theory of these processes has been already explained, and also the superiority of muriat of lime over carbonat of potass for separating the last portions of water from alcohol. The potass is used by the London and Dublin colleges in such small quantity that it can have little effect; when added in considerable quantity, it acts upon the alcohol itself, and decomposes it, converting it into an ethereal liquor. The Edinburgh college gives no directions for the preparation of a perfectly pure alcohol, as it is never used in pharmacy; but it is perhaps to be regretted, that they have given the title of alcohol to a liquid which is not the alcohol of chemists.

ÆTHER SULPHURICUS. *Ed.* L. D.

Sulphuric Ether.

Syn. AETHER VITRIOLICUS, *Vitriolic Ether.*

Take of
Sulphuric acid,
Alcohol, each thirty-two ounces.

Pour the alcohol into a glass retort fit for sustaining a sudden heat, and add to it the acid in an uninterrupted stream. Mix them by degrees, shaking them gently and frequently; instantly distil from sand previously heated for the purpose, into a receiver kept cool with water or snow. The heat is to be so managed, that the liquor shall boil as soon as possible, and continue to boil till sixteen ounces are drawn off; then let the retort be removed from the sand.

To the distilled liquor add two drachms of potass; then distil from a very high retort, with a very gentle heat, into a cool receiver, until ten ounces have been drawn off.

If sixteen ounces of alcohol be poured upon the acid remaining in the retort after the first distillation, and the distillation be repeated, more ether will be obtained; and this may be repeated several times. (E.)

ÆTHER RECTIFICATUS. *Lond.*

Rectified Ether.

Take of
Sulphuric ether, fourteen ounces;
Fused potass, half an ounce;
Distilled water, two ounces.

Dissolve the potass in the water, and add the ether to it, shaking constantly until they are mixed. Then with a heat of about 120°, distil from a large retort into a cold receiver twelve ounces of rectified ether.

Ether is a transparent colourless fluid, of a very fragrant odour, and hot pungent taste: specific gravity 0.758. It freezes and crystallizes at —46°. It boils at 98°, and in vacuum at —20°. It is very soluble in air, and during its evaporation it produces an intense degree of cold. It is soluble in ten parts of water, and in alcohol in every proportion. It dissolves a small portion of phosphorus, and the solution is decomposed by alcohol. It absorbs nitrous gas, combines with ammonia, and dissolves the volatile oils, resins, and caoutchouc. Ether is extremely inflammable, and burns with a white flame. Its vapour explodes when kindled in contact with oxygen gas. It is decomposed by sulphuric acid, oxy-muriatic acid gas, and being transmitted through a red-hot porcelain tube. Its constituents are oxygen, carbon, and hydrogen, the proportions not ascertained.

ÆTHER SULPHURICUS CUM ALCOHOLE. *Ed.*

Sulphuric Ether with Alcohol.

Syn. SPIRITUS ÆTHERIS SULPHURICI. L.

Spirit of Sulphuric Ether. Dulcified Spirit of Vitriol.

LIQUOR ÆTHERUS SULPHURICUS. D.

Sulphuric Ethereal Liquor.

Take of
  Sulphuric ether, one part;
  Alcohol, two parts.
Mix them. (E.)

OFFICINAL PREPARATIONS.

Tinctura aloës æthera. E. - - *vide*, Tincturæ ætheræ.
Æther sulphuricus cum alcohole aromaticus. E. *Idem.*

OLEUM ÆTHEREUM VEL OLEUM VINI. L.

Ethereal Oil or Oil of Wine.

Take of
  Alcohol,
  Vitriolic acid, each one pint.
Mix them by degrees, and distil; taking care that no black froth pass into the receiver. Separate the oily part of the distilled liquor from the volatile vitriolic acid. To the oily part add as much water of pure kali as is sufficient to correct the sulphureous smell; then distil off the little ether with a gentle heat. The oil of wine will remain in the retort, swimming on the watery liquor; from which it is to be separated. (L.)

After the distillation of sulphuric ether, continue the process with a reduced heat, until a black froth swell up. Immediately remove the retort from the fire, and pour water (warm) upon the liquor in the retort. Skim off the oily matter, which swims upon the water, and mix with it as much lime water as will saturate the acid in it. Shake them together; and collect the ethereal oil after it has separated.

SPIRITUS ÆTHERIS SULPHURICI COMPOSITUS. L.

Compound Spirit of Sulphuric Ether.

Syn. LIQUOR ÆTHEREUS OLEOSUS; olim, LIQUOR HOFFMANNI ANODYNUS. D.

Oily Ethereal Liquor, formerly *Anodyne Liquor of Hoffman.*

Take of
Spirit of sulphuric ether, one pint;
Ethereal oil, two drachms.
Mix them. (L.)

THE products arising from the decomposition of alcohol by the action of the acids are extremely curious and interesting. The theory of their formation was not understood until lately, when it was very ingeniously attempted by Fourcroy and Vauquelin, who endeavour to show that the acid remains unchanged, and that the alcohol is converted into ether, water, and charcoal.

The most convenient way of mixing the ingredients is to put the alcohol into a tubulated retort, and, with a long-tubed funnel reaching down to the bottom of the retort, to pour in the acid. By cautious agitation the two fluids unite, and heat is produced, which may be taken advantage of in the distillation, if we have a sand bath previously heated to the same degree, to set the retort into immediately after the mixture is completed; nor is there any occasion for a tubulated receiver, if we immerse the ordinary receiver, which ought to be large, in water, or bury it in broken ice.

The distillation should be performed with an equal and very gentle but quick heat; but Mr. Phillips says erroneously, for when the distillation of ten ounces of product was completed in three hours, its specific gravity was 0.791; but when it occupied almost nine hours, it was only 0.782. The juncture of the retort and recipient is to be luted with a paste made of linseed meal, and further secured by a piece of wet bladder.

Immediately on mixing the acid with the alcohol, there is a considerable increase of temperature, and a slight disengagement of alcohol, somewhat altered, and having an aromatic odour. On placing the retort in the sand bath, a portion of pure alcohol first comes over; and when the mixture in the retort boils, the ether rises, and is condensed in thin, broad, straight streaks, having the appearance of oil. Until the liquor which passes over into the receiver amounts to about half, or somewhat more than half, of the alcohol operated on, it consists almost entirely of elcohol and ether, and there has been no production of any permanently elastic fluid; but now the product of ether ceases; the sulphuric acid is decomposed; and suphurous vapours begin to arise, which condense in irregular streaks, or in drops: we must therefore either put a stop to the process, or change the receiver. In the latter case the products are, sulphurous acid, acetic acid, water, and oil of wine, as it was called, accompanied towards the end by a peculiar species of carbureted hydrogen gas, called by the Dutch chemists Olefiant gas; because, when mixed with oxygenized muriatic acid, it forms oil. At last the matter in the retort, which has now become thick and black, swells up, and prevents us from carrying the process further.

If we stop the process before the sulphurous vapours arise, the whole acid, diluted with a proportion of water, and mixed with charcoal, remains in the retort; but if we allow the process to go on, there is a continual decomposition of the acid, which is therefore diminished in quantity. In either case, according to Proust, the sulphuric acid may be obtained from the black residuum in the retort, by diluting it with twice its weight of water, filtering it through linen, and evaporating it till it acquire the specific gravity 1.84, then adding about one five-hundredth part of nitrat of potass, and continuing the evaporation until the acid become perfectly colourless, and acquire the specific gravity of 1.86. The residuum, however, may be more advantageously preserved, as the Edinburgh college direct, for preparing more ether, by repeating the process with fresh quantities of alcohol. Proust indeed denies that this residuum is capable of converting more alcohol into ether; but that excellent chemist has somehow fallen into error, for it is a fact that was known in the time of that no less excellent chemist Dr. Lewis, and inserted in his first edition of the Edinburgh Dispensatory, published in 1753, and not a recent discovery of Citizen Cadet, as Fourcroy would lead us to believe. If farther confirmation be wanted, we shall instance Gottling, who says, that from three or four pounds of this residuum, he has prepared 60 or 70 pounds of the spirit of vitriolic ether, and more than twelve pounds of vitriolic ether, without rectifying the residuum, or allowing the sulphurous vapour to evaporate. The ether may be separated from the alcohol and sulphurous acid, with which it is always mixed, by re-distilling it with a very gentle heat, after mixing it with potass, or rather lime, which combines with acid; or with black oxyd of manganese, which converts the sulphurous into sulphuric acid, and thus deprives it of its volatility.

Medical use.—As a medicine taken internally, ether is an excellent antispasmodic, cordial, and stimulant. In catarrhal and asthmatic complaints, its vapour is inhaled with advantage, by holding in the mouth a piece of sugar on which ether has been dropt. It is given as a cordial in nausea, and in febrile diseases of the typhoid type; as an antispasmodic, in hysteria, and in other spasmodic, and painful diseases; and as a stimulus in soporose and apoplectic affections. Regular practitioners seldom give so much as half an ounce, much more frequently only a few drops, for a dose; but empirics have sometimes ventured upon much larger quantities, and with incredible benefit. When applied externally, it is capable of producing two very opposite effects according to its management; for, if it be prevented from evaporating, by covering the place to which it is applied closely with the hand, it proves a powerful stimulant and rubefacient, and excites a sensation of burning heat. In this way it is frequently used for removing pains in the head or teeth. On the contrary, if it be dropt on any part of the body, exposed freely to the contact of the air, its rapid evaporation produces an intense degree of cold; and as this is attended with a proportional diminution of bulk in the part to which it is applied, in this way it has frequently facilitated the reduction of strangulated hernia.

The mixture of ether with alcohol, whether prepared directly by mixing them as the Edinburgh college direct, or in the impure state in which it comes over in the first part of the process for distilling ether, the spirit of vitriolic ether of the London, and the vitriolic ethereal liquor of the Dublin, colleges, possesses similar virtues with ether, but in an inferior degree.

ÆTHER NITROSUS. *Dub.*

Nitrous Ether.

Take of

Nitrat of kali, dried, and in coarse powder, a pound and a half;
Sulphuric acid, one pound;
Rectified spirit of wine, nineteen ounces, by measure.

Put the nitrat of kali into a tubulated retort, placed in a bath of cold water, and pour upon it gradually, and in different portions, the sulphuric acid and spirit, previously mixed, and allowed to cool after having been mixed. Without any external heat, or only a very slight degree of it (such as the addition of tepid water to the bath,) an ethereal liquor will begin to arise, without applying fire under it. In a short time, the heat will spontaneously increase in the retort, and a remarkable ebullition will take place, which are to be moderated, by cooling the bath with cold water. The receiver ought also to be cooled with water or snow, and furnished with a proper apparatus for transmitting the very elastic vapour (arising from the mixture, with very great force, if the heat should accidentally become too high) through a pound of rectified spirit of wine, placed in a cooled phial.

Put the ethereal liquor, which has distilled spontaneously, into a phial with a ground glass stopper, and gradually add, (closing the phial after each addition,) as much very dry sub-carbonat of kali, in powder, as shall be sufficient to saturate the superabundant acid, according to the test of lithmus. This is done commonly on the addition of about a drachm of the salt; and, in a short time, the nitrous ether will swim on the surface, and is to be separated by means of a funnel.

If it be required very pure, re-distil the ether from a water bath, at about 140°, to one half.

Its specific gravity is 900.

When alcohol and nitrous acid are mixed in the proportion necessary for the formation of nitrous ether, the utmost precautions must be taken to diminish their action on each other. Dr. Black contrived a very ingenious method of doing this, by rendering their mixture extremely slow. On two ounces of the strong nitrous acid put into a phial, pour slowly and gradually about an equal quantity of water, which, by being made to trickle down the sides of the phial, will float on the surface of the acid without mixing with it; then add, in the same cautious manner, three ounces of alcohol, which, in its turn, will float on the surface of the water. By these means the three fluids are kept separate on account of their different specific gravities, and a stratum of water is interposed between the acid and spirit. The phial containing the spirit must be stopped with a conical stopper, and this stopper confined to its place by a weak spring. The phial is now to be set in a cool place, and the acid will gradually ascend, and the spirit descend, through the water, this last acting as a boundary to restrain their action on each other. When this commences bubbles of gas rise through the fluids, and the acid gets a blue colour, which it again loses in the course of a few days, at which time a yellow nitrous ether begins to swim on the surface. As soon as the formation of air-bubbles ceases, it is time to remove the ether formed; for if allowed to remain, its quantity decreases. By this method a quantity of nitrous ether is formed, without the danger of producing elastic vapours or explosion. The residuum of this process is still capable of forming a spirit of nitrous ether, with an additional quantity of alcohol.

By adding the acid to the alcohol in very small quantities, and at considerable intervals, Mr. Dehne procured from two pounds of alcohol, and one pound ten ounces and three drachms of nitrous acid, one pound, nine ounces and three drachms of ether: the residuum weighed one pound twelve ounces. There was therefore a loss of five ounces. Mr. Dehne put the alcohol into a tubulated retort, to which a receiver was luted, and poured the acid through the tubulature, and the ether passed over into the receiver, without the application of any heat. The action of the acid on the alcohol did not begin until six ounces and a half were added, and was exhausted, when, on adding more acid, it fell to the bottom in the form of green drops. By using Mr. Dehne's precaution of adding the acid gradually, Dr. D. prepared nitrous ether in a Woulfe's apparatus, with perfect ease and safety, although Fourcroy represents it as a most dangerous operation. The acid was introduced gradually through a funnel luted into the tubulature of the retort. The tube of the funnel was very long, and its extremity was immersed in the alcohol in the retort. This simple contrivance not only enabled Dr. D. to add the acid as he pleased, but also acted as a tube of safety.

There is still another method of forming nitrous ether, which is indeed said to be preferable to those mentioned. It was first practised by M. Voigt. Four pounds of dried nitrat of potass are to be introduced into a tubulated retort, connected with a Woulfe's apparatus; and a mixture of four pounds of sulphuric acid, and three pounds four ounces of alcohol, is to be poured upon it. Without the application of an external heat, nitrous ether passes over into the receiver, and the residuum furnishes, on more alcohol being added to it, spirit of nitrous ether.

When alcohol is converted into ether by the action of nitrous acid, the change produced on it is nearly the same with that produced by sulphuric acid. In the latter case, it is effected by the affinities which form water, and charcoal is precipitated. In the former it is effected by the affinities which form carbonic acid, and no water is formed.

Nitrous ether seems to differ from sulphuric ether only in being combined with nitric oxyd; at least it is highly inflammable, pungent, volatile, and is not soluble in water, while it gives a deep olive colour to green salts of iron, and has a considerable specific gravity. When simply washed with water, it was found to be 0.912, when the acid which it evidently contained was removed by saturating it with potass it became 0.896, and when rectified, by re-distilling it, it became 0.866, but recovered decidedly acid properties, probably from the nitric oxyd being acidified by the air of the apparatus.

SPIRITUS ÆTHERIS NITROSI. *Ed.*

Spirit of Nitrous Ether.

Syn. Spiritus Æthereus Nitrosus. D. *Nitrous Ethereal Liquor.*

Spiritus Nitri Dulcis. *Dulcified Spirit of Nitre.*

Spiritus Ætheris Nitrici. L. *Spirit of Nitric Ether.*

Take of

Alcohol, three pounds;

Nitrous acid, one pound.

Pour the alcohol into a capacious phial, placed in a vessel full of cold water, and add the acid by degrees, constantly agitating them. Let the phial be slightly covered, and placed for seven days in a cool place; then distil the liquor with the heat of boiling water into a receiver kept cool with water or snow, till no more spirit comes over. (E. D.)

The action of alcohol and nitrous acid upon each other is much influenced by their proportions. If we use a small proportion of alcohol, or pour alcohol into nitrous acid, there immediately takes place a great increase of temperature, and a violent effervescence and disengagement of red fumes. On the contrary, by placing the phials containing the alcohol and acid, in cold or rather iced, water, they may be mixed, without danger, in the proportions directed by the colleges, and if the acid be added in small quantites at a time, and each portion thoroughly mixed with the alcohol by agitation, no action takes place until heat be applied. It is therefore unnecessary to keep the mixture for seven days, but we may immediately proceed to the distillation, which must be performed with a very slow and well regulated fire; for the vapour is very apt to expand with so much violence as to burst the vessels; and the heat must at no time exceed 212°, otherwise a portion of undecomposed acid will pass over and spoil the product. By performing this operation carefully in a Woulfe's apparatus, Dr. Duncan obtained from three ounces of alcohol, specific gravity 841, and one ounce of nitrous acid, two ounces four drachms of spirit of nitrous ether, specific gravity 887. Eight ounces of alcohol, contained in the first phial, gained one drachm and a half, and specific gravity 873, and eight ounces of water in the second, 18 grains: the residuum weighed seven drachms and a half. There was therefore a loss of two drachms forty-two grains of permanently elastic fluid. The first portion that was examined seemed to be the air of the apparatus: in the next the candle burnt with an enlarged and brightened flame; was it nitrous oxyd? and all that passed afterwards was a mixture of carbonic acid and the etherized nitrous gas first described by the Dutch chemists. When recently prepared this gas is inflammable, and does not form red fumes, when atmospheric air is admitted to it: but when attempted to be kept over water, the water becomes acidulous, the gas is diminished in bulk about two-thirds, has lost its inflammability, and is now converted into red vapour on the admission of atmospheric air. It therefore appears to consist of nitric oxyd gas, holding ether in chemical solution. Dr. D. has formed a similar gas, by admitting a few drops of ether to nitric oxyd gas over mercury. The Edinburgh and Dublin colleges direct the distillation to be continued till no more spirit comes over. But how is this to be ascertained? After having drawn off about two thirds, according to the directions of the London College, Dr. D. again applied heat to the retort, and on examining the air, which began to come over into the pneumatic apparatus, by carelessly approaching a lighted candle to the extremity of the tube, it kindled and burst the whole with a violent explosion.

The spirit of nitrous ether thus obtained is a colourless fluid, of a fragrant odour, lighter than water, extremely volatile and inflammable, possessing properties in general analogous to the spirit of sulphuric ether, but of considerably greater specific gravity, striking a deep olive with a solution of green sulphat of iron, and often, if not always, acid. By age and exposure to the air, it is gradually decomposed, and gives rise to the re-production of more nitrous acid. When this change has taken place, it may be rectified by saturating the acid with lime-water, and re-distilling the ethereal fluid. In all probability it is a mixture of nitrous ether and alcohol; for by diminishing the quantity of alcohol employed, we obtain a fluid having a similar relation to the spirit of nitrous ether, that sulphuric ether has to the spirit of sulphuric ether; and by mixing nitrous ether with alcohol, we obtain a fluid exactly resembling spirit of nitrous ether.

Medical use.—Spirit of nitrous ether has been long deservedly held in great esteem. It quenches thirst, promotes the natural secretions, expels flatulencies, and moderately strengthens the stomach. It may be given in doses of from twenty drops to a drachm, in any convenient vehicle. Mixed with a small quantity of spiritus ammoniæ aromaticus, it proves a mild, yet efficaçious, diaphoretic, and often remarkably diuretic; especially in some febrile cases, where such a salutary evacuation is wanted. A small proportion of this spirit added to malt spirits, gives them a flavour approaching to that of French brandy.

ALCOHOL DILUTUM. *Ed.*

Diluted Alcohol.

Syn. Spiritus Vinosus Tenuior, D.

Spiritus Tenuior, L.

Spirit of Wine. Proof Spirit.

D.	*Brandewyn.*	P.	*Aguardente.*
DA.	*Brændevin.*	POL.	*Gorzalka, Wodka.*
F.	*Eau de vie, Brandevin.*	R.	*Wino.*
G.	*Branntewein.*	S.	*Aguardiente.*
I.	*Acqua vita, Acquarzente.*	SW.	*Brännvin.*

Alcohol mixed with an equal quantity of wrate, being somewhat weaker than proof spirit; its specific gravity is to that of distilled water, as 935 to 1000 (*Ed.*) The London and Dublin colleges order it of the specific gravity of 930, which according to the former contains 55 parts of pure alcohol, and 45 of water.

Although it be desirable that diluted alcohol should always be prepared by mixing rectified spirit with water, instead of employing an impure spirit of the requisite strength, it is hardly to be expected that apothecaries will either be at the trouble or expense. The diluted alcohol of the Edinburgh college is somewhat weaker than that of the other two colleges; but besides that it is more convenient for their mode of preparing it, this will be attended with no disadvantage, as it is still sufficiently strong for any purpose to which it may be applied.

Officinal Preparations.

Alcohol ammoniatum, E. L. D. *vide Ammonia.*

And all the tinctures and distilled spirits, except those made with alcohol. It is also used somewhat extravagantly in the preparation of various extracts.

TABLE of the Specific Gravities according to Gilpin, and degrees according to Beaumé's hydrometer, and in Clark's hydrometer, which is used in the revenue (Great Britain,) of various mixtures of alcohol and water.

Water.	Alcohol.	Specific Gravities. 60°	55°	Degrees. 55°	Sp. Gr. 60°	Clark's Hydrom.
0	100	.825	.82736	38	833	Spirit of Wine.
10	100	.84568	.84802	34+	858	1 to 2
20	100	.86208	.86441	30—	881	3
30	100	.87569	.87796	29+	891	4
40	100	.88720	.88945	27+	896	5
50	100	.89707	.89933	25+	900	6
60	100	.90549	.90768	23—	904	7
70	100	.91287	.91502	22	907	8
80	100	.91933	.92145	21—	909	9
90	100	.92499	.92707	20—	910	10
100	100	.93002	.93208	19—	913	15
100	90	.93493	.93696	19+	916	20
100	80	.94018	.94213	18	920	Proof Spirit.
100	70	.94579	.94767	17—	926	1 in 20
100	60	.95181	.95357	16—	928	15
100	50	.95804	.95966	16+	932	10
100	40	.96437	.96575	15+	933	9
100	30	.97074	.97181	14+	934	8
100	20	.97771	.97847	13+	936	7
100	10	.98654	.98702	12+	938	6
100	0	.1		10	942	5
					945	4
					954	3
					964	2

ALKALI.

THE word ALKALI is of Arabian origin, and was introduced into chemistry after it had been applied to a plant which still retains the name of *kali*.

Alkalies are a class of bodies which are commonly defined to be incombustible, soluble in water, caustic, and capable of neutralizing the acids, of combining with alcohol, oils, earths, sulphur, and phosphorus, and of changing vegetable blues and reds to green: But as many of these properties are possessed in a greater or less degree by substances usually classed with the earths, and as there is a continual gradation from the insipidity, insolubility, and infusibility of silica, to the causticity, solubility, fusibility, and comparative volatility of potass, they may be classed together under the general name of Salifiable Bases.

The alkalies at present known are three in number, viz.

1. Potass. - *vide Potassa.*
2. Soda. - - *Soda.*
3. Ammonia. - - *Ammonia.*

The two first mentioned alkalies are called *fixed*, because they require a red heat to volatilize them; the last is called *volatile alkali*, because it readily assumes a gaseous form, and consequently is dissipated by a very moderate degree of heat.*

ALLIUM.

Willd. g. 626.—*Hexandria Monogynia.*—Nat. Ord. *Liliaceæ.*

ALLIUM SATIVUM. *Sp.* 14. *Radix. Ed.* D.L.

Garlic. The Root.

THE garlic is a perennialb ulbous-rooted plant, which grows wild in Sicily, and is cultivated in our gardens. The root consists of five or six small bulbs, called *cloves*, inclosed in one common membranous coat, but easily separable from each other. All the parts of this plant, but more especially the roots, have a strong, offensive, very penetrating and diffusible, smell, and an acrimonious, almost caustic, taste. The root is full of a limpid juice, of which it furnishes almost a fourth part of its weight by expression. The root loses about half its weight by drying, but scarcely any of its smell or taste. By decoction its virtues are entirely destroyed; and by distillation it furnishes a small quantity of a yellowish essential oil, heavier than water, which possesses the sensible qualities of the garlic in an eminent degree. Its peculiar virtues are also in some degree extracted by alcohol and acetous acid.

By Neumann's analysis, it lost two-thirds of its weight by exsiccation. By decoction from 960 parts, water extracted 380, and the residuum yielded 27 to alcohol, and was reduced to 40. Alcohol applied first, extracted 123, the residuum yielded 162 to water, and was reduced to 40. In both cases the alcoholic extract was unctuous and tenacious, and precipitated metallic solutions. But the active ingredient was a thick ropy essential oil, according to Hagen heavier than water, not amounting to more than 1.3 of the whole, in which alone resided the smell, the taste, and all that distinguishes the garlic.

Medical use.—Applied externally, its acts successively as a stimulant, rubefacient, and blister. Internally, from its very powerful and diffusible stimulus, it is often useful in diseases of languid circulation and interrupted secretion. Hence in cold, leucophlegmatic habits, it proves a powerful expectorant, diuretic, and, if the patient be kept warm, sudorific: it has also been by some supposed to be emmenagogue. For the same reason, in cases in which a phlogistic diathesis, or other irritability prevails, large doses of it may be very hurtful.

It is sometimes used by the lower classes as a condiment, and also

* These substances having been discovered to be metallic, the probable changes which they will produce in chemistry, have prevented any present alteration of their situation.—They must (at least Potash and Soda) be regarded as metallic oxyds. Barytes, Strontites, Lime, and Magnesia, require to be inserted in the same class.

enters as an ingredient into many of the epicure's most favourite sauces. Taken in moderation, it promotes digestion; but in excess, it is apt to produce headach, flatulence, thirst, febrile heat, and inflammatory diseases, and sometimes occasions a discharge of blood from the hæmorrhoidal vessels.

In fevers of the typhoid type, and even in the plague itself, its virtues have been much celebrated.

Garlic is with some also a favourite remedy in the cure of intermittents; and it has been said to have sometimes succeeded in obstinate quartans, after the Peruvian bark had failed. In catarrhal disorders of the breast; asthma, both pituitous and spasmodic; flatulent colics; hysterical and other diseases, proceeding from laxity of the solids, it has generally good effects: it has likewise been found serviceable in some hydropic cases. Sydenham relates, that he has known the dropsy cured by the use of garlic alone; he recommends it chiefly as a warm strengthening medicine in the beginning of the disease.

It is much recommended by some as an anthelmintic, and has been frequently applied with success externally as a stimulant to indolent tumours, in cases of deafness proceeding from atony or rheumatism, and in retention of urine, arising from debility of the bladder.

Garlic may be either exhibited in substance, and in this way several cloves may be taken at a time without inconvenience, or the cloves cut into slices may be swallowed without chewing. This is the common mode of exhibiting it for the cure of intermittents.

The expressed juice, when given internally, must be rendered as palatable as possible by the addition of sugar and lemon juice. In deafness, cotton moistened with the juice is introduced within the ear, and the application renewed five or six times in one day.

Infusions in spirit, wine, vinegar, and water, although containing the whole of its virtues, are so acrimonious, as to be unfit for general use; and yet an infusion of an ounce of bruised garlic in a pound of milk, was the mode in which Rosenstein exhibited it to children afflicted with worms.

But by far the most commodious form for administering garlic, is that of a pill or bolus conjoined with some powder, corresponding with the intention of giving the garlic. In dropsy, calomel forms a most useful addition. It may also sometimes be exhibited with advantage in the form of a clyster.

Garlic made into an ointment with oils, &c. and applied externally, is said to resolve and discuss indolent tumours, and has been by some greatly esteemed in cutaneous diseases. It has likewise sometimes been employed as a repellent. When applied under the form of a poultice to the pubes, it has sometimes proved effectual in producing a discharge of urine, when retention has arisen from a want of due action in the bladder. Sydenham assures us, that among all the substances which occasion a derivation or revulsion from the head, none operates more powerfully than garlic applied to the soles of the feet: he was led to make use of it in the confluent small-pox: about the eighth day, after the face began to swell, the root cut in pieces and tied in a linen cloth, was applied to the soles, and renewed once a-day till all danger was over.

OFFICINAL PREPARATION.

Syrupus allii, D. - - *vide Syrupi.*

ALLIUM CEPA. *Sp.* 43. *Cepa. Radix.* D.

Onion. The Root.

D.	*Uyen, Ajuin.*	P.	*Cebola.*
DA.	*Rödlög.*	POL.	*Cebula.*
F.	*Ognions.*	R.	*Luk.*
G.	*Zwiebel.*	S.	*Cebolla.*
I.	*Cipolla.*	SW.	*Rödlök.*

THIS is also a perennial bulbous-rooted plant. The root is a simple bulb, formed of concentric circles. It possesses in general the same properties as the garlic, but in a much weaker degree. Neumann extracted from 480 parts of the dry root, by means of alcohol, 360, and then by water 30; by water applied first 395, and then by alcohol, 30: the first residuum weighed 56, and the second 64. By distillation the whole flavour of the onions passed over, but no oil could be obtained.

Medical uses.—Onions are considered rather as articles of food than of medicine: they are supposed to yield little or no nourishment, and when eaten liberally produce flatulencies, occasion thirst, headachs, and turbulent dreams; in cold phlegmatic habits, where viscid mucus abounds, they doubtless have their use; as by their stimulating quality they tend to excite appetite, and promote the secretions: by some they are strongly recommended, in suppressions of urine and in dropsies. The chief medicinal use of onions in the present practice is in external applications, as a cataplasm for suppurating tumours, &c.

ALLIUM PORRUM. *Sp.* 2. L.

Leek. The Root.

THE common leek is rather an article of the Materia Alimentaria, than of the Materia Medica. In its properties, it is an analogous to garlic, but weaker even than the common onion. A decoction of the beards or filaments of the bulbs is supposed by the vulgar to be lithontriptic.

ALOE.

Willd. g. 659.—*Hexandria Monogynia.*—Nat. ord. *Liliaceæ.*

Sp. 2. Aloe spicata. *Dub. Lond.*
Sp. 3. Aloe perfoliata. *Ed.*

D.	*Aloë.*	P.	*Aloes, Azevre.*
DA.	*Aloe.*	POL.	*Aloes, Aloa.*
F.	*Aloê.*	R.	*Sabir.*
G.	*Aloe.*	S.	*Aloe, Acibar.*
I.	*Aloe.*	SW.	*Aloë.*

The London College now agree with that of Dublin, and with Thunberg, in indicating the *Aloë spicata* as the species which produces the Socotorine aloes, and they assume as the source of the Barbadoes aloes, a species to be described under the name of *Aloë vulgaris*, in the great work of the late Dr. Sibthorpe, the Flora Græca, now preparing for publication by Dr. Smith, who informed Dr. Powell, the authorised translator and commentator of the London Pharmacopœia, "that the plant described under the above name is asserted by Dr Sibthorpe to be the true *Aloë* of Dioscorides, which is described as producing our officinal Barbadoes aloes by Sloane, in his history of Jamaica."

During the first four years that the Cape of Good Hope was in possession of the British, more than 300,000 pounds, the produce of that settlement, were imported into England; and as this quantity was infinitely greater than could be required for the purposes of medicine, it is not improbable, that, as Mr. Barrow states, its principal consumption was by the London porter brewers.

Officinal—The gum-resin or extract, called Socotorine Aloes.

Aloes spicatæ extractum. *Lond.*
Aloe socotorina; gummi-resina.* *Dub.*
Aloes socotorina; Aloes perfoliatæ gummi-resina. *Var. b. Ed.*

This article is brought, wrapt in skins, from the island of Socotora in the Indian ocean. This sort is the purest of the three in use; it is dark coloured, of a glossy clear surface, and in some degree pellucid; in mass, of a yellowish red colour, with a purple cast; fracture unequal; easily pulverisable; when reduced to powder, of a bright golden colour. It is hard and friable in the winter, somewhat pliable in summer, and growing soft between the fingers. Its taste is bitter and disagreeable, though accompanied with some aromatic flavour; the smell is not very unpleasant, and somewhat resembles that of myrrh. It is said not to produce hæmorrhoidal affections so readily as Barbadoes aloes.

It is prepared in July, by pulling off the leaves, from which the juice is expressed, and afterwards boiled and skimmed. It is then

* Gum-resins are secondary compounds, and probably vary much in their nature. They seem to be compounds of resin with extractive and essential oil, and perhaps other immediate principles, not yet ascertained.

preserved in skins, and dried in August in the sun. According to others, the leaves are cut off close to the stem, and hung up. The juice which drops from them without any expression, is afterwards dried in the sun.

Sp. 2. ALOE VULGARIS. *Lond.*
Sp. 5. ALOE SINUATA? *Dub.*
Sp. 3. ALOE PERFOLIATA. *Ed.*

Off.—The gum-resin or extract, called Hepatic Aloes.

ALOES VULGARIS EXTRACTUM. *Lond.*
ALOE HEPATICA; gummi-resina. *Dub.*
ALOE HEPATICA; Aloes perfoliatæ gummi-resina. *Var. a. Ed.*

HEPATIC aloes is of two kinds, one from the East Indies, the other from Barbadoes. The former has a light brown, or reddish yellow colour; a clean fracture, and possessing nearly the same medical properties as the socotorine. Barbadoes aloes is not so clear and bright as the foregoing sort; it is also of a darker colour, more compact texture, and for the most part drier; though not so brittle. Its smell is much stronger and more disagreeable; the taste intensely bitter and nauseous, with little or nothing of the aromatic flavour of the socotorine. The best hepatic aloes from Barbadoes is in large gourd shells, and an inferior sort of it, which is generally soft and clammy, is brought over in casks. In Barbadoes the plant is pulled up by the roots, and carefully cleaned from the earth and other impurities. It is then sliced into small hand-baskets and nets, which are put into large iron boilers with water, and boiled for ten minutes, when they are taken out, and fresh parcels supplied till the liquor is strong and black, which is then strained into a deep vat, narrow at bottom, where it is left to cool and to deposite its feculent parts. Next day the clear liquor is drawn off by a cock, and again committed to a large iron vessel. At first it is boiled briskly, but towards the end it is slowly evaporated, and requires constant stirring to prevent burning. When it becomes of the consistence of honey, it is poured into gourds or calabashes for sale, and hardens by age. Barbadoes aloes is extremely apt to induce hæmorrhoids; but it is generally preferred, because it is very difficult to adulterate it without altering its appearance.

FETID, CABALLINE, or HORSE ALOES.

This sort is easily distinguished from both the foregoing kinds by its strong rank smell; although, in other respects, it agrees pretty much with the hepatic, and is not unfrequently sold in its stead. Sometimes the caballine aloes is prepared so pure and bright, as not to be distinguishable by the eye even from the socotorine, but its offensive smell of which it cannot be divested, readily betrays it. Its fracture also resembles that of common rosin, with which it is often adulterated, whereas the fracture of socotorine aloes is unequal and irregular.

From sixteen ounces of aloes, Neumann extracted near fifteen by means of alcohol. From the residuum water took up one drachm, about an ounce of impurities being left; on inverting the procedure, and applying water first, he obtained but thirteen ounces and a half of watery extract, and from the residuum alcohol dissolved an ounce and a half. According to this analysis, 1000 parts of aloes contain about 7.8 soluble in water only, or analogous to gum, 4. soluble in alcohol only, or resinous matter, and 825 soluble both in alcohol and water or extractive.* Tromsdorff makes them consist of 25 resin and 75 extractive, and Lagrange of 32 resin and 86 extractive. Dr. Lewis also remarks, that decoctions of aloes let fall a precipitate, as they cool, probably from extractive being more soluble in boiling than in cold water. He also found the hepatic aloes to contain more resin and less extractive than the socotorine, and this less than the caballine. Tromsdorff, on the contrary, gives 81.25 extractive, 6.25 resin, and 12.50 albumen, as the constituents of hepatic aloes. Boulduc also found in socotorine aloes $\frac{1}{2}$, and in hepatic aloes $\frac{1}{4}$ of resin. The resins of all the sorts, purified by alcohol, have little smell; that obtained from the socotorine has scarce any perceptible taste; that of the hepatic, a slightly bitterish relish; and the resin of the caballine, a little more of the aloetic flavour. The extractive obtained separately from any of the kinds is less disagreeable than the crude aloes: the extractive of socotorine aloes has very little smell, and is in taste not unpleasant; that of the hepatic has a somewhat stronger smell, but is rather more agreeable in taste than the extract of the socotorine: the extractive of the caballine retains a considerable share of the peculiar rank smell of this sort of aloes, but its taste is not much more unpleasant than that of the extractive obtained from the two other sorts.

Medical use.—Aloes is a bitter stimulating purgative, exerting its action chiefly on the rectum. In doses of from 5 to 15 grains it empties the large intestines, without making the stools thin; and likewise warms the habit, quickens the circulation, and promotes the uterine and hæmorrhoidal fluxes. If given in so large a dose as to purge effectually, it often occasions an irritation about the anus, and sometimes a discharge of blood.

It is frequently employed in cases of suppression of the menses, or of the hæmorrhoidal discharge; but it is particularly serviceable in habitual costiveness, to persons of a phlegmatic temperament and sedentary life, and where the stomach is oppressed and weakened. For its use in typhus fever, scarlatina, cynanche maligna, marasmus, chlorosis, hæmatemesis, chorea, hysteria, and tetanus, Dr. Hamilton's excellent work on Purgatives may be consulted. Aloes is also used as an anthelmintic, both given internally and applied to the abdomen in the form of a plaster. Dissolved in alcohol, it is employed to check hæmorrhagies in recent wounds, and as a detergent in ulcers.

* *Extractive* is soluble in water, especially when hot, and in alcohol; it is also soluble in the weak acids, but is insoluble in ether. It attracts moisture from the atmosphere; and when dissolved in water, it absorbs oxygen, and becomes insoluble in water; it is also altered and precipitated by oxy-muriatic acid; it has a strong affinity for alumina, and decomposes several metallic salts. It is found in almost all plants, but can scarcely be procured separate, so that its characters are not well ascertained.

Some are of opinion, that the purgative virtue of aloes resides entirely in its resin; but experience has shewn, that the pure resin has little or no purgative quality, and that the extractive part separated from the resinous, acts more powerfully than the crude aloes. If the aloes indeed be made to undergo long coction in the preparation of the gummy extract, its cathartic power will be considerably lessened, not from the separation of the resin, but from an alteration made in the extractive itself by the action of the heat and air. The strongest vegetable cathartics become mild by a similar treatment.

Socotorine aloes, as already observed, contains more extractive than the hepatic; and hence is likewise found to purge more, and with greater irritation. The first sort, therefore, is most proper where a stimulus is required, as for promoting or exciting the menstrual flux; whilst the latter is better calculated to act as a common purge.

Aloes is administered either

a. Simply, or

b. In composition:

1. With purgatives. Soap, scammony, colocynth, rhubarb.
2. With aromatics. Canella.
3. With bitters. Gentian.
4. With emmenagogues. Iron, myrrh.

It is exhibited in the form of

a. Powder; too nauseous for general use.

b. Pill; the most convenient form.

c. Solution in wine or diluted alcohol.

Officinal Preparations.

Extractum aloes. - - -	*vide Extracta.*
colocynthidis compositum, L. -	*Idem.*
Pilulæ aloëticæ, E. L. D. - - -	*Pilulæ.*
aloës compositæ, L. - - -	*Idem.*
cum assa fœtida, E. - -	*Idem.*
colocynthide, E. - -	*Idem.*
myrrha, E. L. - -	*Idem.*
rhei compositæ, E. - -	*Idem.*
Pulvis aloës cum canella, L. - -	*Pulveres.*
aloëticus cum guaiaco, L. -	*Idem.*
ferro, L. - -	*Idem.*
Pulvis scammonii compositus cum aloë, L.	*Pulveres.*
Tinctura aloës ætherea, E. - - -	*Tincturæ æthereæ.*
Tinctura aloë socotorinæ, E. L. D. - -	*Tincturæ.*
cum myrrha, E. L. - -	*Idem.*
benzoës composita, L. E. - -	*Idem.*
rhei cum aloë, E.	*Idem.*
Vinum aloës socotorinæ, E. L. D. - -	*Vina medicata.*

ALTHÆA OFFICINALIS. *Ed. Radix, Folia.*

Marsh-Mallow. The Root and Leaves.

Syn. Althæa, L.

Willd. g. 1289. *sp.* 1.—*Monadelphia Polyandria.*—Nat. ord. *Columnaceæ.*

The marsh-mallow is a perennial plant, which is found commonly on the banks of rivers, and in salt marshes.

The whole plant, but especially the root, abounds with mucilage. The roots are about the thickness of a finger, long and fibrous. They are peeled and dried, and then are perfectly white.

From 960 parts of the dry root, Neumann extracted by water 650, and afterwards with alcohol 41; by alcohol applied first 360, and afterwards by water 348. Lewis extracted by alcohol only 120, and he observed that the alcoholic extract was sweeter than the watery, and had the smell peculiar to the root. The substance soluble in this instance, both in alcohol and water, is probably saccharine. From 960 parts of the dry leaves, Neumann extracted by water 340, and then by alcohol 213; by alcohol first 280, and then by water 218. The residuum of the root was only one-fourth; of the leaves one-half, of the whole. The root is therefore the most mucilaginous. The decoction of the root reddens turnsol, and gelatinizes silicized potass.

Medical use.—It is used as an emollient and demulcent, in diseases attended with irritation and pain, as in various pulmonary complaints, and in affections of the alimentary canal and urinary organs; and it is applied externally in emollient fomentations, gargles, and clysters.

Officinal Preparations.

Decoctum althææ officinalis, E. *vide Decocta.*
Syrupus althææ officinalis, E. L. *Syrupi.*

AMMONIA.—*AMMONIA.*

Syn. Alkali Volatile.

Volatile Alkali.

Ammonia is commonly classed with the alkalies, from the analogy of its taste, causticity, combinations with the acids, and effects upon vegetable blues; but it differs in many particulars, being extremely volatile, and a compound substance, which is readily decomposed, and formed in many chemical operations. It is now known to be composed of nitrogen and hydrogen, and consequently is no longer to be regarded as a simple substance; which is also the case with the other alkalies.

Ammonia consists of one part of nitrogen, with three of hydrogen by bulk, or of three of hydrogen and thirteen of nitrogen by weight. it exists in its purest form combined with caloric as a gas, which is perfectly transparent and colourless, elastic and compressible; specific gravity eight to hydrogen, or one hundred inches weigh eighteen grains. It has an urinous and acrid odour, irritating the nostrils and eyes, and an acrid and caustic taste; it does not dissolve animal substances; is irrespirable; extinguishes flame; colours vegetable blues green; and is decomposed by being transmitted through a red-hot tube, and by the electric spark, into its constituent gases; and by oxygen and atmospheric air at a red heat, and by oxy-muriatic acid, it is converted into water and nitrogen gas. It is absorbed without change by porous bodies; it dissolves sulphur and phosphorus; and combines readily with water in all its states. Water at a mean temperature and pressure is saturated by 670 times its volume of gaseous ammonia, and is thereby increased in bulk, and acquires the specific gravity of 0.875. Ammonia combines with all the acids, forming neutral salts. It is formed during the putrefactive fermentation.

Officinal Preparations.

Carbonas Ammoniæ.
Murias Ammoniæ.

MURIAS AMMONIÆ. *Ed. Muriat of Ammonia.*

Syn. Sal Ammoniacus, L. D. *Sal Ammoniac.*

D.	*Sal Ammoniak.*	P.	*Sal Ammoniaco.*
DA.	*Salmiak.*	POL.	*Salmiak, Salmoniak.*
F.	*Sel Ammoniac.*	R.	*Naschatür.*
G.	*Salmiak.*	S.	*Sal Ammoniaca.*
I.	*Sale Ammoniaco.*	SW.	*Salmiak.*

Muriat of ammonia is found native, especially in the neighbourhood of volcanos. It was first prepared in Egypt from the soot of camel-dung by sublimation. But the greatest part of that now used is manufactured in Europe, either by combining directly ammonia with muriatic acid, or by decomposing the sulphat of ammonia by means of muriat of soda, or the muriats of lime and magnesia by means of ammonia.

In commerce, muriat of ammonia occurs either sublimed in firm, round, elastic, concavo-convex cakes, or crystallized in conical masses. The latter commonly contain other salts, especially muriat of lime, which renders them deliquescent; and therefore the sublimed muriat of ammonia is to be preferred for the purposes of medicine.

Muriat of ammonia has an acrid, pungent, urinous taste. It is soluble in about three times its weight of water at 60°, and in an equal weight at 212°. During its solution, it produces 32 degrees of cold. It is also soluble in about 4.5 parts of alcohol. It is permanent in the ordinary state of the atmosphere. By a gentle heat, it may be deprived of its water of crystallization, and reduced to the form of a white powder. At a higher temperature it sublimes unchanged. Its crystals are either six-sided pyramids, aggregated in a plumose form, or still more commonly four-sided pyramids. It consists of 42.75 muriat-acid, 25.00 ammonia, and 32.25 water. It is decomposed by the sulphuric and nitric acids, by baryta, potass, soda, strontia, and lime; by several secondary salts, containing these acids or bases; and by those metalline salts whose bases form with muriatic acid an insoluble compound.

Medical use.—Muriat of ammonia is now seldom used internally. It was formerly supposed to be a powerful aperient and attenuant of viscid humours.

Externally applied, it is a valuable remedy. It may act in two ways,

1. By the cold produced during its solution.

It is from this cause that fomentations of muriat of ammonia probably prove beneficial in mania, apoplexy from plethora, and in violent headachs. When used with this intention, the solution should be applied as soon as it is made.

2. By the stimulus of the salt.

On this principle we may explain its action as a discutient in indolent tumours of all kinds, contusions, gangrene, psora, ophthalmia cynanche, and in stimulating clysters. In some cases, as in chilbains and other indolent inflammations, both modes of action may be serviceable. When first applied, the coldness of the solution will diminish the sense of heat and uneasiness of the part, and the subsequent stimulus will excite a more healthy action in the vessels.

Officinal Preparations.

Aqua ammoniæ, E. L. D.		
Alcohol ammoniatum, E. L. D.		
Carbonas ammoniæ, E. L. D.		
Aqua carbonatis ammoníæ, E. L. D.		
Liquor cupri ammoniati, L. D.		*vide Cuprum.*
Murias ammoniæ et ferri, E. L.		*Ferrum.*
Calx hydrargyri alba, L.	- -	*Hydrargyrum.*
Spiritus ammoniæ fœtidus, L.	-	*Spiritus destillati.*

AQUA AMMONIÆ; olim, AQUA AMMONIÆ CAUSTICÆ. *Ed.*

Water of Ammonia, formerly *Water of Caustic Ammonia.*

Syn. AQUA AMMONIÆ CAUSTICÆ, D.

Water of Caustic Ammonia.

LIQUOR AMMONIÆ, L.

Liquor of Ammonia.

Take of
Muriat of ammonia, sixteen ounces;
Lime, fresh burnt, two pounds;
Water, six pints.

Sprinkle one pint of the water upon the lime, placed in a stoneware vessel, and cover it up. Twenty-four hours afterwards, mix the salt with the lime, which will have crumbled to powder, taking care to avoid the vapours. Then put the mixture into a retort, and pour upon it the rest of the water. Having previously agitated them, draw off with a moderate heat, twenty ounces, by measure, of liquor, into a refrigerated receiver, having luted carefully the joining of the vessels.

The specific gravity of this liquor is to that of distilled water as 936 to 1000.

The lime is slaked before it is mixed with the muriat of ammonia, in order that the heat generated during the slaking may not decompose the muriat when they are mixed before adding the water.

In this process, the muriat of ammonia is decomposed by the lime, in consequence of its having a stronger affinity for muriatic acid than ammonia has. It is absolutely necessary that the lime employed be very recently burnt, as the presence of carbonic acid would render the ammonia partially carbonated. This accident is also prevented by the great excess of lime used, which having a greater affinity for carbonic acid than ammonia has, retains any small quantity of it which may be accidentally present. The water is essential to the existence of the ammonia in a liquid form; for, in itself, it is a permanently elastic fluid. In the process adopted by the Dublin college, a much greater quantity of water, however, is used than what is sufficient to absorb all the ammonia: the rest is intended to render the decomposition slower and more manageable, and to keep the muriat of lime, which remains in the retort, in solution; for otherwise it would concrete into a solid mass, adhering strongly to the bottom of the retort, very difficult to be washed out, and often endangering its breaking. A very small degree of heat is sufficient for the distillation, and the whole ammonia rises with the first portion of water, or even before it. It is therefore necessary that the vessels be very closely luted to each other, to prevent it from escaping. But this renders the utmost care necessary in the distillation; for too sudden, or too great a heat, from the rapid disengagement of gas, or even the expansion of the air contained in the vessels, would endanger their bursting.

In the process directed in the Edinburgh Pharmacopœia, this danger is completely obviated, by disengaging the ammonia in the form of gas, and combining it with the water, by means of pressure in a pneumatic apparatus. By this process, the water should be saturated with ammonia; but of this strength it is never sold in shops, unless particularly inquired for, as for common sale it is always diluted with a certain proportion of water.

Dörfurt, Bucholz, and Van Mons, agree in recommending nearly the following process, which resembles that of the Edinburgh college. Slake 16 oz. of lime with a sufficient quantity of water to form a thick paste; put it into a cucurbit, and add 16 oz. of sal ammoniac; lute on the capital, furnished with a bent tube, reaching to the bottom of a receiver containing 24 oz. of water, and draw off 24 oz. so as to fill the space of 48 oz. previously marked on the receiver, and keep it in phials perfectly closed, by dipping their necks when corked in wax.

We have already mentioned the properties of ammonia in its gaseous form. When combined with water, it imparts to it many of these properties, and lessens its specific gravity.

Table of the quantities of Real or Gaseous Ammonia in solutions of different Specific Gravities. (Dalton.)

Specific Gravity.	Grains of ammonia in 100 water grain measures of liquid.	Grains of ammonia in 100 grains of liquid.	Boiling point of the liquid. Fahr. scale.	Volume of gas condensed in a given vol. of liquid.
.85	30	85.3	26°	494
.86	28	32.6	38	456
.87	26	29.9	50	419
.88	24	27.3	62	382
.89	22	24.7	74	346
.90	20	22.2	86	311
.91	18	19.8	98	277
.92	16	17.4	110	244
.93	14	15.1	122	211
.94	12	12.8	134	180
.95	10	10.5	146	147
.96	8	8.3	158	116
.97	6	6.2	173	87
.98	4	4.1	187	57
.99	2	2	196	28

Sir Humphry Davy's results were somewhat different. He found 100 parts of sp. gr. 0.875, to contain 32.5 of ammonia; of sp. gr. 0.9054, 25.37; and of sp. gr. 0.9692, 9.5 of ammonia.

Water of ammonia decomposes many of the earthy, and all the metalline salts, and is capable of dissolving, or combining with, many of the metallic oxyds, and even of oxydizing some of the metals. When pure, water of ammonia does not effervesce with any of the acids, or form a precipitate with alcohol. As it readily absorbs carbonic acid from the atmosphere, the Edinburgh college, very properly, order it to be kept in small phials. By neglecting this precaution in the shops, it often becomes carbonated before the large bottles, in which it is commonly kept, be half done.

Medical use.—Water of ammonia is very rarely given internally, although it may be used in doses of ten to twenty drops, largely diluted, as a powerful stimulant in asphyxia, and similar diseases. Externally, it is applied to the skin as a rubefacient, and, in the form of gas, to the nostrils, and to the eyes, as a stimulant; in cases of torpor, paralysis, rheumatism, syncope, hysteria, and chronic ophthalmia.

Officinal Preparations.

Hydro-sulphuretum ammoniæ, E.
Oleum ammoniatum, E. L. *vide Olea præparata.*
Linimentum camphoræ compositum, L. D. *Tinct. ammoniatæ.*
Spiritus ammoniæ succinatus, L. *Idem.*

ALCOHOL AMMONIATUM, olim SPIRITUS AMMONIÆ. *Ed.*

Ammoniated Alcohol, formerly *Spirit of Ammonia.*

Syn. SPIRITUS AMMONIÆ, L. D. *Spirit of Ammonia.*

Take of
  Proof spirit, three pints;
  Sal ammoniac, four ounces;
  Potashes, six ounces.
Mix, and distil with a slow fire, two pints. (D.)

WHEN muriat of ammonia is decomposed by carbonat of potass, the product is a mixture of carbonat of ammonia with a variable quantity of ammonia; for the carbonat of potass is never saturated with carbonic acid. Again, as diluted alcohol is employed in this process, and one half only is drawn off, it is evident that there is either a want of economy, or the whole alcohol comes over before any of the water. But if the latter supposition be true, there is also a want of economy, for the alcohol will dissolve only the ammonia, and leave the whole carbonat undissolved. The fact is, that when we perform the process as directed by the colleges, a very large proportion of carbonat of ammonia sublimes, which remains undissolved in the distilled liquor; but as this liquor (after the particles of carbonat of ammonia, which were diffused through it, have separated in the form of very regular crystals, adhering to the sides of the vessel) effervesces with acids, the distilled liquor cannot be pure alcohol, but must contain a proportion of water capable of dissolving some carbonat of ammonia. From both considerations, it appears that the process directed, if not un-chemical is at least un-economical.

It is remarkable that the Edinburgh college, for what reason we know not, should have adopted, in the two last editions of their Pharmacopœia, this process from the London college, and relinquish one which appears unexceptionable, as it is not attended with the smallest loss, either of alcohol or ammonia, and gives both a more active and a more uniform preparation. A strong proof of its superiority is, that the apothecaries still continue to follow it, although it has been rejected by the college. It is therefore inserted here without any alteration, except of the nomenclature.

Take of
  Quicklime, sixteen ounces;
  Muriat of ammonia, eight ounces;
  Alcohol, thirty-two ounces.
Having bruised and mixed the quicklime and muriat of ammonia, put them into a glass retort; then add the alcohol, and distil to dryness, in the manner directed for the water of ammonia.

The Berlin college directs this preparation to be made by simply mixing two parts of alcohol with one of water of ammonia.

Officinal Preparations.

Alcohol ammoniatum fœtidum, E. D. *vide Spiritus destillati.*
aromaticum, E. L. D. *Tinct. ammoniatæ.*
Tinctura castorei composita, E. - *Idem.*
guaiaci ammoniata, E. - - *Idem.*
opii ammoniata, E. - - *Idem.*

CARBONAS AMMONIÆ; olim, Ammonia Præparata. *Ed.* D.

Carbonat of Ammonia, formerly *Prepared Ammonia.*

Syn. Subcarbonas Ammoniæ, L. *Subcarbonat of Ammonia.*

Take of
Muriat of ammonia, one pound;
Soft carbonat of lime (chalk), dried, two pounds.
Having triturated them separately, mix them thoroughly, and sublime from a retort into a refrigerated receiver. (E.)

In this process the two substances employed undergo a mutual decomposition, the muriatic acid combining with the lime, and the carbonic acid with the ammonia. The proportion of carbonat of lime directed, is perhaps more than sufficient to decompose the muriat of ammonia; but it is the safe side to err on; for it is only sometimes inconvenient, from obliging us to make use of larger vessels, whereas, if any portion of the muriat of ammonia were to remain undecomposed, it would sublime along with the carbonat, and render the product impure. Göttling uses three parts of chalk to two of muriat of ammonia, but he dries his chalk before he weighs it. The chalk is always to be very carefully dried before it is used in this preparation, as the presence of moisture injures the product. The ingredients are to be thoroughly mixed by trituration, before they are introduced into the retort, that no part of the muriat of ammonia may escape decomposition; and we are even sometimes directed to cover the surface of the mixture, after they are in the retort, with powdered chalk. This however is unnecessary. Carbonat of lime does not act on muriat of ammonia till a considerable heat be applied. Göttling says, that the sublimation must be conducted in the open fire, and therefore uses an earthenware cucurbit, with a tubulated capital. When a glass retort is employed, it should have a very wide neck; and the best form for the receiver is cylindrical, as it enables us to get out the carbonat of ammonia condensed in it without breaking it. The residuum which remains in the retort, furnishes muriat of lime by lixivation and evaporation.

Sometimes carbonat of potass or soda, is employed for the preparation of carbonat of ammonia. The theory of the process is the same, and the decomposition is effected at a lower temperature. But as potass or soda are very rarely saturated with carbonic acid, part of the ammonia is evolved in the form of gas, which, if not permitted to escape, will burst the vessels. To prevent this loss, therefore, Mr. Göttling uses a cucurbit and capital, furnished with a bent tube, which is to be immersed in a phial of water; by which contrivance, while the carbonat of ammonia is condensed in the capital, the gaseous ammonia is absorbed by the water. The residuum contains either muriat of potass or soda.

Carbonat of ammonia is obtained in the form of a white crystallized mass, of a fibrous texture, having the smell and taste of ammonia, but weaker. It is soluble in twice its weight of cold water, and is more soluble as the temperament of the water increases; but when it approaches to a boiling heat, the carbonat is volatilized. It is insoluble in alcohol. It is permanent in the air, and is not decomposed, but is easily evaporized by heat. It is said to vary very much in its composition, and to contain more ammonia, and less acid and water, in proportion to the high temperature employed in preparing it, the quantity of alkali varying from 50 to 20 *per cent*. It is decomposed by most of the acids, and all the alkaline, and some of the earthy, bases; by the earthy sulphats, except those of baryta and strontia; by the earthy muriats, and fluats; by the nitrats of baryta, and super-phosphat of lime.

Medical use.—Carbonat of ammonia exactly resembles ammonia in its action on the living body; but is weaker, and is principally used as smelling salts in syncope and hysteria.

OFFICINAL PREPARATIONS.

Aqua acetitis ammoniæ, E. L. D.
Ammoniaretum cupri, E. L. D. *vide Cuprum.*

AQUA CARBONATIS AMMONIÆ; olim, AQUA AMMONIÆ. E.D.

Water of Carbonat of Ammonia, formerly *Water of Ammonia.*

Syn. LIQUOR AMMONIÆ SUBCARBONATIS, L. *Liquor of Subcarbonat of Ammonia.*

Take of
Muriat of ammonia,
Carbonat of potass, each sixteen ounces;
Water, two pounds.

Having mixed the salts, and put them in a glass retort, pour the water upon them, and distil to dryness in a sand bath, gradually increasing the heat. (E.)

Specific gravity 1095. (D.)

THE product of this process is a solution of carbonat of ammonia, while the residuum in the retort is muriat of potass. In this instance, the decomposition of the muriat of ammonia cannot be effected by carbonat of lime, because the addition of the water prevents the application of the necessary heat, whereas carbonat of potass acts at a moderate temperature. The London college form this preparation by merely dissolving four ounces of subcarbonat of ammonia in a pint of distilled water, and filtering. This as more simple, is perhaps preferable. The addition of more water than what is to be drawn off by distillation, must increase the size of the apparatus employed, an inconvenience always to be avoided, if possible.

Officinal Preparations.

Oxidum hydrargyri cinereum, E. D. *vide Hydrargyrum.*
Linimentum camphoratum, D. - *Tincturæ ammoniata.*
Pilulæ ammoniareti cupri, E. - - *Pilulæ.*

LIQUOR VOLATILIS CORNU CERVINI, D.

Volatile Liquor of Hartshorn.

Take of
Harts-horn any quantity.

Distil with a fire gradually increased, the volatile liquor, salt, and oil. Repeat the distillation of the volatile liquor until it becomes as limpid as water, separating by filtration, the oil and salt after each distillation. The liquor is more easily purified, if, after each distillation, except the first, we add $\frac{1}{6}$ of wood charcoal, previously heated to redness, then extinguished, by covering it with sand and powdered while hot.

If harts-horn cannot be had, the bones of any other land animal may be substituted.

The wholesale dealers have very large pots for this distillation, with earthen heads, almost like those of the common still; for receivers, they use a couple of oil jars, the mouths of which are luted together; the pipe that comes from the head, is connected by means of an adopter with the lower jar, which is also furnished with a cock for drawing off the fluids condensed in it. The upper jar is entire, and in it is condensed the solid carbonat of ammonia. When a large quantity of the subject is to be distilled, it is customary to continue the operation for several days successively; only unluting the head occasionally, to put in fresh materials. When the upper jar becomes entirely filled with carbonat of ammonia, it cracks. It is then to be removed, the salt to be taken out of it, and a fresh one substituted in its place.

When only a small quantity of spirit or salt is wanted, a common iron pot, such as is usually fixed in sand furnaces, may be employed; an iron head being fitted to it. The receiver ought to be large, and a glass, or rather tin, adopter, inserted between it and the pipe of the head.

The distilling vessel being charged with pieces of horn, a moderate fire is applied, which is slowly increased, and raised at length almost to the utmost degree. At first water arises, which gradually acquires colour and smell, from the admixture of empyreumatic oil and ammoniacal salts; carbonat of ammonia next arises, which at first dissolves, as it comes over, in the water, and thus forms what is called the *spirit*. When the water is saturated, the remainder of the salt concretes in a solid form to the sides of the recipient. If it be required to have the whole of the salt solid, and undissolved, the water should be removed as soon as the salt begins to arise, which may be known by the appearance of white fumes; and that this may be done the more commodiously, the receiver should be left unluted, till this first part of the process be finished. The white vapours which now arise, sometimes come over with such vehemence as to throw off or burst the receiver: to prevent this accident, it is convenient to have a small hole in the luting, which may be occasionally stopped with a wooden peg, or opened, as the operator shall find proper. Lastly, the oil arises, which acquires greater colour and consistency as the operation advances. Carbonat of ammonia still comes over, but it is partly dissolved in the hot oily vapour. At the same time, there is a considerable disengagement of gas, consisting of a mixture of carbureted hydrogen, often containing sulphur and phosphorus, and of carbonic acid.

All the liquid matters being poured out of the receiver, the salt which remains adhering to its sides, is to be washed out with a little water and added to the rest. It is convenient to let the whole stand for a few hours, that the oil may the better disengage itself from the liquor, so as to be first separated by a funnel, and afterwards more perfectly by filtration through wet paper.

None of these products, except perhaps a small quantity of the water, exist ready formed in the matter subjected to the distillation, but are produced by a new arrangement of its constituents. For the production of ammonia, it is absolutely necessary that it contain nitrogen, or be what is called a quaternary oxyd. Although some vegetable, and most animal substances, are of this kind, yet only the most solid parts of animals, such as bone and horn, are employed for the production of ammonia; because they furnish it less mixed with other substances, are easily obtained, and at little expense, and are very manageable in the distillation. On the application of heat, as soon as all the water which they contained is expelled, their elements begin to act on each other, and to form binary, or at most ternary compounds. Water is formed of part of the oxygen and hydrogen, ammonia of nitrogen and hydrogen, carbonic acid of carbon and oxygen, then oil, of hydrogen and charcoal, while the superfluous carbon remains in the retort in the state of charcoal. As the formation of these substances is stimultaneous, or in immediate succession, they are not obtained separately, but are mixed with each other. The water is saturated with carbonat of ammonia, and impregnated with empyreumatic oil, while the carbonat of ammonia is discoloured with oil; and the oil contains carbonat of ammonia dissolved in it. They may however, be separated from each other in a great measure, in the manner already described. But a small portion of oil obstinately adheres both to the salts and its solution, which constitutes the only difference between salt and spirit of harts-horn, as they are called, and the purer carbonat of ammonia, as obtained by the decomposition of muriat of ammonia.

AQUA ACETITIS AMMONIÆ; vulgo, SPIRITUS MINDERERI. *Ed.*

Water of Acetite of Ammonia, commonly called *Spirit of Mindererus.*

Syn. LIQUOR AMMONIÆ ACETATIS, L. *Solution of Acetat of Ammonia.*

AQUA ACETATIS AMMONIÆ, D. *Water of Acetat of Ammonia.*

Take of

Carbonat of ammonia in powder, any quantity.

Pour upon it as much distilled acetous acid as may be sufficient to saturate the ammonia exactly. (E.)

By this process we obtain acetat of ammonia, dissolved in the water of the acetic acid; but as this is apt to vary in quantity, the solution also varies in strength, and the crystallization of the salt is attended with too much difficulty to be practised for pharmaceutical purposes. Its crystals are long, slender, and flatted, of a pearly white colour, and of a cool sweetish taste, are very deliquescent, melt at 170°, and sublime at 250°. It is decomposed by the acids, alkalies, and several of the earths, and metalline salts; and when in solution, its acid is decomposed spontaneously, and by heat.

Different proposals have been made to get a solution of greater strength and uniformity, than that still retained by the British colleges. Mr. Lowe saturates four ounces of carbonat of potass with distilled vinegar, and evaporates the solution to 36 ounces He then mixes it with two ounces of muriat of ammonia, and distils the mixture in a glass retort. Acetat of ammonia comes over. The last edition of the Prussian Pharmacopœia prepares it by saturating three ounces of carbonat of ammonia with a strong acetic acid, (obtained by distillation from acetat of soda, dissolved in two parts of water, and decomposed by sulphuric acid), and diluting the solution with water, so that it shall weigh twenty-four ounces. One ounce, therefore, contains the alkali of a drachm of carbonat of ammonia.

Medical use.—Acetat of ammonia, when assisted by a warm regimen, proves an excellent and powerful sudorific; and as it operates without quickening the circulation or increasing the heat of the body, it is admissible in febrile and inflammatory diseases, in which the use of stimulating sudorifics are attended with danger. Its action may likewise be determined to the kidneys, by walking about in a cool air. The common dose is half an ounce, either by itself, or along with other medicines adapted to the same intention.

This medicine may be made very readily and extemporaneously by adding the acetic acid to the carbonat in a phial; and by corking it, the carbonic acid is prevented from escaping; it unites in consequence of the pressure, with the acetat of ammonia, and forms a much more pleasant mixture.

HYDRO-SULPHURETUM AMMONIÆ. *Ed.*—D.

Hydro-Sulphuret of Ammonia.

Take of

Water of ammonia, four ounces;

Subject it in a chemical apparatus to a stream of the gas, which arises from

Sulphuret of iron, four ounces,

Muriatic acid, eight ounces, previously diluted with two pounds and a half of water.

Sulphuret of Iron is conveniently prepared for this purpose, from

Purified filings of iron, three parts;

Sublimed sulphur, one part.

Mixed and exposed to a moderate degree of heat in a covered crucible, until they unite into a mass.

Sulphureted hydrogen is capable of combining with different bases in the manner of an acid. In the present preparation, it is combined with ammonia. It is obtained by decomposing sulphuret of iron with muriatic acid. As soon as the acid, by its superior affinity, separates the iron from the sulphur, the latter immediately re-acts on the water, the oxygen of which forms with one portion of it sulphuric acid, while the hydrogen dissolves another portion, and forms sulphureted hydrogen gas. The combination of this with ammonia is facilitated by reduction of temperature, and by making it pass through a column of the water of ammonia by means of an apparatus, such as Woulfe's or Nooth's. Tromsdorff has proposed, that the sulphureted hydrogen gas should be obtained by the decomposition of sulphuret of potass; but in this way its formation is too rapid to be easily managed. Göttling says, that the acid should be added gradually, and that the whole must be constantly agitated. But these precautions are rendered more unnecessary, by diluting the acid in the degree directed by the pharmacopœia. Mr. Cruickshank, who first suggested the use of hydro-sulphuret of ammonia in medicine, directs the sulphuret of iron to be prepared by heating a bar of iron to a white heat in a smith's forge, and rubbing it against the end of a roll of sulphur. The iron at this temperature immediately combines with the sulphur, and formes globules of sulphureted iron, which should be received in a vessel filled with water. It is, however, more conveniently obtained in the manner directed by the college. Proust has proved that iron is capable of combining with two proportions of sulphur. At a high temperature 100 parts of iron combine with 60 of sulphur, and form a compound of a dull blackish colour. In this state it is fit for the production of sulphureted hydrogen gas. At a lower temperature the same quantity of iron takes up 90 of sulphur, acquires a greenish yellow colour, and in every respect resembles native pyrites. This cannot be decomposed by acids, and is therefore unfit for the production of gas; but it may be reduced to the state of iron sulphureted to the minimum, by exposing it to a sufficiently high temperature, or by melting it with half its weight of iron filings. It was probably from not attending to the different states of sulphureted iron, that some of the German chemists failed in their attempts to procure from it sulphureted hydrogen gas, and had recourse to sulphuret of potass.

Medical use.—Hydro-sulphuret of ammonia, or more correctly, sulphureted hydroguret of ammonia, acts powerfully on the living system. It induces vertigo, drowsiness, nausea, and vomiting, and lessens the action of the heart and arteries. According to the doctrine of the chemical physiologists, it is a powerful disoxygenizing remedy. It has only been used in diabetes by Dr. Rollo and others, under the name of hepatized ammonia, in doses of five or ten drops twice or thrice a day.

AQUA SULPHURETI AMMONIÆ. *Dub.*

Liquor of Sulphuret of Ammonia.

Take of
Fresh burnt lime,
Muriat of ammonia in powder, each four ounces;
Sublimed sulphur,
Warm water, each two ounces, by weight.

Sprinkle the water upon the lime, placed in an earthen vessel, and cover it up until the lime falls to powder, which, as soon as it is cold, is to be mixed by trituration with the sulphur and muriat of ammonia. Put the mixture into a retort, and distil with a sudden and sufficiently strong degree of heat. Keep the liquor thus obtained in a phial, accurately closed with a glass stopper.

This process of the Dublin college is totally different. The ammonia and sulphureted hydrogen are presented to each other in a nascent state, and, with the undecomposed part of the water, pass over into the receiver, while, in the retort, the lime remains combined with sulphuric and muriatic acid.

The hydro-sulphuret of ammonia was formerly called the *fuming liquor of Boyle*. It is of a dark red colour, and is extremely fetid. It is decomposed by all acids, and almost all metallic solutions.

AMMONIACUM. *Gummi Resina.* E. L. D.

Ammoniac. A Gum-resin.

Ammoniacum is a concrete, gummy-resinous juice, brought from the East Indies, usually in large masses, composed of little lumps or tears, of a milky colour, but soon changing upon being exposed to the air, to a yellowish hue.

Gum-ammoniac is now referred by the London College, on the authority of Willdenow, to the *Heracleum gummiferum*, which he raised from seeds taken out of the Ammoniacum of the shops; and which, he is satisfied, is the plant which yields it, although he has not been able to procure it from the plants raised at Berlin. I regret that I have not been able to see the *Flora Berolinensis*, in which this plant is described, as the question might be decided, with great certainty, by comparing it with the figure, unfortunately not the drawing of a botanist, though sufficiently characteristic, published in his account of the empire of Morocco, by Mr. Jackson, who was perfectly familiar with it. He gives the following account of it: "*Ammoniacum*, called *Feshook* in Arabic, is produced from a plant similar to the European fennel, but much larger. In most of the plains of the interior, and particularly about El Araiche and M'sharrah Rummillah, it grows ten feet high. The gum ammoniac is procured by incisions in the branches, which, when pricked, emit a lacteous glutinous juice, which being hardened by the heat of the sun, falls on the ground, and mixes with the red earth below; hence the reason that gum ammoniac of Barbary does not suit the London market. It might, however, with a little trouble, be procured perfectly pure; but when a prejudice is once established against any particular article, it is difficult to efface it. The gum, in the above-mentioned state, is used in all parts of the country, for cataplasms and fumigations. The sandy light soil which produces the gum ammoniac, abounds in the north of Morocco. It is remarkable that neither bird nor beast is seen where this plant grows, the vulture only excepted. It is, however, attacked by a beetle, having a long horn proceeding from its nose, with which it perforates the plant, and makes the incisions whence the gum oozes out."

Ammoniacum has a nauseous sweet taste, followed by a bitter one; and a peculiar smell, somewhat like that of galbanum, but more grateful: it softens in the mouth, and acquires a white colour upon being chewed. It softens by heat, but is not fusible; when thrown upon live coals, it burns away in flame: it is in some degree soluble in water and in vinegar, with which it assumes the appearance of milk: but the resinous part, amounting to about one-half, subsides on standing.

Such tears as are large, dry, free from small stones, seeds, or other impurities, should be picked out and preferred for internal use; the coarser kind is purified by solution, colature, and careful inspissation; but unless this be artfully managed, the gum will lose a considerable deal of its more volatile parts.

There is often vended in the shops, under the name of strained gum ammoniacum, a composition of ingredients much inferior in virtue.

Neumann extracted from 480 parts, 360 by alcohol, and then by water 105; by water applied first 410, and then by alcohol 60. Alcohol distilled from it arose unchanged, but water acquired a sweetish taste, and the smell of the ammoniac. More modern chemists say that the spirit drawn from it by distillation smelt strongly of the gum, and that a small portion of a very pungent strong smelling oil could be got from it. The solution in alcohol is transparent; but on the addition of water, becomes milky. It therefore seems to consist principally of a substance soluble both in water and in alcohol, combined with some volatile matter. Braconnot makes it consist of 700 resin, 184 gum, 44 gluten, and 60 water.

Medical Use.—The general action of gum-ammoniac is stimulant. On many occasions, in doses of from ten to thirty grains, it proves a valuable antispasmodic, deobstruent, or expectorant. In large doses it purges gently, excites perspiration, and increases the flow of urine. It is used with advantage to promote expectoration in some pulmonary diseases; in dropsical affections, to augment the flow of urine, and to support the salivation of small-pox. It is also an useful deobstruent; and is frequently prescribed for removing obstructions of the abdominal viscera, and in hysterical disorders occasioned by a deficiency of the menstrual evacuations. In long and obstinate colics, proceeding from viscid matter lodged in the intestines, this gummy-resin has produced happy effects, after purges and the common carminatives had been used in vain. Externally, it is supposed to soften and ripen hard tumors. A solution of it in vinegar has been recommended by some for resolving even scirrhous swellings.

It is exhibited internally,

a. In solution, combined with vinegar, vinegar of squills, assafœtida, &c.
b. In pills, with bitter extracts, myrrh, assafœtida.
c. And externally combined with vinegar, turpentine, common plaster, &c.

Officinal Preparations.

Ammoniacum purificatum, L.		
Lac ammoniaci, L. D.	- -	*vide Mixturæ.*
Pilulæ scilliticæ, E. L. D.	- -	*Pilulæ.*
Emplastrum gummosum, E.	- -	*Unguentum.*
ammoniaci cum hydrargyro, L.		*Idem.*

AMMONIACUM PURIFICATUM. L.

Purified Gum Ammoniacum.

If gum ammoniac do not seem to be pure, boil it in water till it becomes soft; then squeeze it through a canvass bag, by means of a press. Let it remain at rest till the resinous part subside; then evaporate the water; and towards the end of the evaporation, mix the resinous part with the gummy.

In the same manner are purified *assafœtida* and similar *gum resins.* You may also purify any gum which melts easy, such as *Galbanum*, by putting it in an ox bladder, and holding it in boiling water till it becomes so soft that it can be separated from its impurities by pressing it through a coarse linen cloth.

As one, and perhaps the most active constituent of gummy resins, as they are called, is of a volatile nature, it is evident that it must be in a great measure dissipated in the process just described, and that we cannot expect the same virtues in these substances after they are purified, which they possess in their crude state. This process is therefore contrary to the principles of good pharmacy; and such specimens of these gummy resins as stand in need of it to give them an apparent degree of purity, should not be admitted into the shop of the apothecary. Besides, many of the impurities which they usually contain, are easily separated in compounding the preparations or extemporaneous prescriptions into which they enter.

AMOMUM.

Willd. g. 4.—*Monandria Monogynia.*—Nat. Ord. *Scitamineæ.*

SPECIES I. AMOMUM ZINGIBER. *Ed. Dub.*

ZINGIBER OFFICINALE. L. *Ginger.*

Off. (*a*)—The dried root, the ginger of the shops.
AMOMI ZINGIBERIS RADIX SICCATA. *Ed.*
ZINGIBERIS RADIX. *Lond.*

(*b*) Preserved ginger imported from the East or West Indies.
AMOMI ZINGIBERIS RADIX CONDITA. *Ed.*
ZINGIBERIS RADIX CONDITA. *Dub.*

D.	*Gember.*	P.	*Gengibre.*
DA.	*Ingesaer.*	POL.	*Imbier.*
F.	*Gingembre.*	R.	*Jubir.*
G.	*Ingwer, Ingher.*	S.	*Jenjibre, Agengibre.*
I.	*Zenzero, Zenzovero, Zinzibo, Gengiovo.*	SW.	*Ingesara.*

IN the botanical arrangement of the well-known plant which produces the Ginger, the London College have followed Mr. Roscoe of Liverpool, who has given a new classification of the Scitamineous plants in the eighth volume of the Linnæan Society, in which he has separated the Zingiber from the Cardamom. "It has been well remarked by Jussieu," says Mr. Roscoe, "that the *Zingibers* flower in a dense spike near to the stem; the *Cardamoms* in a lax panicle in the base of the stem. Such an uniform natural distinction in the habit of these plants, gave great reason to suppose that, by a closer examination, sufficient generic distinctions would be ascertained. This expectation has been fully confirmed. In the plants of the Ginger tribe, it appears that the anthera-bearing filament is extended beyond the anthera, and terminates in an awl-shaped appendage, with a groove or furrow to receive the style after it has passed between the lobes of the anthera, and which terminates with the stigma, a little beyond the extremity of the filament; but in the plants of the Cardamom, or proper amomum tribe, the anthera-bearing filament terminates in an appendage of three or more lobes, and differs also in other respects, as will be more particularly noticed under the genus *Amomum.*

Ginger is a perennial plant, indigenous in the East Indies, but now cultivated in the West India islands. It is cultivated there very much in the same manner as potatoes are here, and is fit for digging once a-year, unless for preserving in syrup, when it should be dug at the end of three or four months, at which time it is tender and full of sap.

Ginger is distinguished into two sorts, the black and the white. The former is rendered fit for preservation by means of boiling water, the latter by insolation; and as it is necessary to select the fairest and roundest sorts for exposure to the sun, white ginger is commonly one-third dearer than black.

Black ginger consists of thick and knotty roots, internally of an orange or brownish colour, externally of a yellow-grey. White ginger is less thick and knotty, internally of a reddish-yellow, and externally of a whitish-grey or yellow. It is firm and resinous, and more pungent than the black. Pieces which are worm-eaten, light, friable, or soft, and very fibrous, are to be rejected.

Preserved ginger should be prepared in India from the young and succulent roots. When genuine, it is almost transparent. That manufactured in Europe is opaque and fibrous.

Ginger has a fragrant smell, and a hot, biting, aromatic taste. Neumann obtained by distillation with water from 7680 parts of white ginger, about 60 of a volatile oil, having the smell and distinguishing flavour of the ginger, but none of its pungency. The watery extract was considerably pungent, and amounted to 2720, after which alcohol extracted 192 of a very pungent resin. Alcohol applied first extracted 660 of pungent resin, and water afterwards 2160 of a mucilaginous extract, with little taste, and difficultly exsiccated. The black ginger contained less soluble matter than the white.

Medical use.—Ginger is a very useful spice in cold flatulent colics, and in laxity and debility of the intestines; it does not heat so much as the peppers, but its effects are more durable. It may also be applied externally as a rubefacient. Lately, the powder of ginger, taken in very large doses in milk, was supposed to be almost specific in the gout.

Officinal Preparations.

Syrupus amomi zingiberis, E. - *vide Syrupi.*
Tinctura zingiberis, L. - - *Tincturæ.*

It is also an ingredient in many of the powders, pills, electuaries, &c. &c.

AMOMUM ZEDOARIA. *Sp.* 3. *Radix.* D.

Long Zedoary. The Root.

The Zedoary is perennial, and grows in Ceylon and Malabar. The roots come to us in pieces, some inches in length, and about a finger thick. Externally they are wrinkled, and of an ash-grey colour, but internally are brownish red. The best kind comes from Ceylon, and should be firm, heavy, of a dark colour within, and neither worm-eaten nor very fibrous. It has an agreeable fragrant smell, and a warm, bitterish, aromatic taste.

In distillation with water, it yields an essential oil, heavier than water, possessing the smell and flavour of the zedoary in an eminent degree; the remaining decoction is almost simply bitter. Spirit likewise brings over some small share of its flavour: nevertheless the spiritous extract is considerably more grateful than the zedoary itself. From 7680 parts Neumann got 2720 of watery extract, and afterwards 140 of almost insipid resin; by applying alcohol first, 720, and water afterwards, 2400 much bitterer than the original watery extract.

OFFICINAL PREPARATION.

Confectio aromatica, L. - *vide Electuaria.*

AMOMUM CARDAMOMUM. *Sp.* 7. D.

———— REPENS. *Sp.* 10. *Ed.* L.

CARDAMOMUM MINUS. *Semina.* L. D.

Lesser Cardamom Seeds.

D.	*Kardamomen.*	P.	*Cardamomos.*
DA.	*Cardamomer.*	POL.	*Kardamom.*
F.	*Cardamomes.*	R.	*Kardamon.*
G.	*Kardamumen.*	S.	*Cardamomos.*
I.	*Cardamomi.*	SW.	*Kardemummor.*

THE Edinburgh college, on the authority of Sonnerat, has supposed these seeds to be the product of the latter species, while the Dublin college, with Murray, Willdenow, and all the foreign pharmaceutical writers, ascribe them to the former. Both species are natives of India.*

Cardamom seeds are a very warm, grateful, pungent aromatic, and frequently employed as such in practice: they are said to have this advantage, that notwithstanding their pungency, they do not, like those of the pepper kind, immoderately heat or inflame the bowels. Both water and rectified spirit extract their virtues by infusion, and elevate them in distillation; with this difference, that the tincture and distilled spirit are considerably more grateful than the infusion and distilled water: the watery infusion appears turbid and mucilaginous; the tincture limpid and transparent. From 480 parts Neumann got about 20 of volatile oil, 15 of resinous extract, and 45 of watery. The husks of the seeds, which have very little smell or taste, may be commodiously separated, by committing the whole to the mortar, when the seeds will readily pulverize, so as to be freed from the shell by the sieve: this should not be done till just before using them; for if kept without the husks, they soon lose considerably of their flavour.

* In the last edition of the London Pharmacopœia the plant affording these seeds, is considered as a new genus, and is denominated Elettaria Cardamomum, by Dr. Maton.

Officinal Preparations.

Tinctura amomi repentis, E. L. D.	*vide Tincturæ.*
cardamomi composita, L. D.	*Idem.*
sennæ, L. D.	*Idem.*
gentianæ composita, L.	*Idem.*
cinnamomi composita, E. L. D.	*Idem.*
rhei, E. L.	*Idem.*
cum aloë, E.	*Idem.*
Vinum aloës socotorinæ, E.	*Vina medicata.*
rhabarbari, L.	*Idem.*
Extractum colocynthidis compositum, L.	*Extracta.*
Pulvis aromaticus, E. L. D.	*Pulveres.*
Confectio aromatica, L.	*Electuaria.*
Pilulæ scilliticæ, E.	*Pilulæ.*

AMYGDALUS COMMUNIS. *Nucleus. Ed.*

a. Amygdalus dulcis, E. Amygdalæ dulces, L. D.

b. Amygdalæ amaræ, L. *Sweet and bitter Almonds.*

The Almond Tree. The kernel of the fruit.

Willd. g. 981. *sp.* 2. *Icosandria Monogynia.*—Nat. ord. *Pomaceæ.*

D.	*Amandelen.*	P.	*Amendoas.*
DA.	*Mandler.*	POL.	*Migdal.*
F.	*Amandes.*	R.	*Mindal.*
G.	*Mandeln.*	S.	*Almendras.*
I.	*Mandole, Mandorle.*	SW.	*Mandlar.*

The fruit which affords these kernels, is the produce of a tree nearly resembling the peach. It originally came from Syria and Barbary; but is now much cultivated in the south of Europe.

The eye distinguishes no difference betwixt the trees which produce the sweet and bitter, or betwixt the kernels themselves; it is said that the same tree has, by a difference in culture, afforded both.

The almond is a flattish kernel, of a white colour, and of a soft sweet taste, or a disagreeable bitter one. The skins of both sorts are thin, brownish, unpleasant, and covered with an acrid powdery substance. They are very apt to become rancid on keeping, and to be preyed on by a kind of insect, which eats out the internal part, leaving the almond to appearance entire. To these circumstances regard ought to be had in the choice of them.

Sweet almonds are of greater use in food than as medicine, but they are reckoned to afford little nourishment; and when eaten in substance, are not easy of digestion, unless thoroughly comminuted. They are supposed, on account of their unctuous quality, to abtund acrimonious juices, in the primæ viæ: peeled sweet almonds, eaten six or eight at a time, sometimes give present relief in the heartburn.

Bitter almonds have been found poisonous to dogs and some other animals; and a water distilled from them, when made of a certain degree of strength, has had the same effects. Nevertheless, when eaten, they appear innocent to most men, and are every day used in cookery on account of their agreeable flavour; but there are some habits in which the smallest quantity produces urticaria, and other unpleasant symptoms. The similarity of the smell of bitter almonds to prussic acid led Mr. Schrader to suppose, that it was owing to the presence of this acid, and he has found his supposition correct: prussic acid is equally poisonous with the bitter distilled waters, and is found in all the bitter poisonous vegetables.

Both sorts of almonds yield, on expression, a large quantity of oil, which separates likewise upon boiling the almonds in water, and is gradually collected on the surface.

The oils obtained by expression from both sorts of almonds are in their sensible qualities the same. They should be perfectly free from smell and taste, and possess the other properties of fixed oils.

Medical use.—The general virtues of these oils are, to blunt acrimonious humours, and to soften and relax the solids: hence their use internally, in tickling coughs, heat of urine, pains and inflammations; and externally, in tension and rigidity of particular parts. On triturating almonds with water, the oil and water unite together, by the mediation of the other matter of the kernel, and form an unctuous milky liquor.

The milky solutions of almonds in watery liquors, commonly called emulsions, contain the oil of the subject, and participate in some degree of its emollient virtue; but have this advantage above the pure oil, that they may be given in acute or inflammatory disorders, without danger of the ill effects which the oil might sometimes produce; since emulsions do not turn rancid or acrimonious by heat, as all the oils of this kind in a little time do. As the bitter almond imparts its peculiar taste when treated in this way, the sweet almonds are employed in making emulsions.

Several unctuous and resinous substances, of themselves not miscible with water, may, by trituration with almonds, be easily mixed with it into the form of an emulsion; and are thus excellently fitted for medicinal use. In this form, camphor, and the resinous purgatives, may be commodiously taken.

Officinal Preparations.

Oleum fixum, E. L. D. - -	*vide Oleum.*
Emulsio amygdalæ communis, E. L. D.	*Mixturæ.*
arabica, E. D. - -	*Idem.*
camphorata, E. L. - -	*Idem.*

Although the prussic acid forms no part of the Materia Medica; yet as it appears to be a constituent of the almond, its chemical properties are here introduced.

Prussic acid is a colourless fluid, of a strong smell, like that of peach flowers or bitter almonds, and a sweetish pungent taste. It does not redden vegetable blues. It is easily decomposed by light, heat, and chlorine. It does not act upon the metals, but forms coloured and generally insoluble combinations with their oxyds. It has a great tendency to form triple salts with alkaline and metallic bases. It is obtained from animal substances by the action of heat, nitric acid, fixed alkalies, and putrefaction.

Prussiats of alkalies are easily decomposed even by carbonic acid. They form variously coloured precipitates in the solutions of the metallic salts, except those of platinum. Several new speculations on the subject of prussic acid are to be found in late chemical authors.

AMYLUM

Ex tritico præparatum.

Wheat Starch.

D.	*Amydon, Ameldonk.*	P.	*Amido.*
DA.	*Amdam.*	POL.	*Krochmal.*
F.	*Amidon.*	R.	*Kruchmal.*
G.	*Amidam.*	S.	*Amidon, Almidon.*
I.	*Amido, Amito.*	SW.	*Stärkelse.*

The Edinburgh college have inserted starch as a separate substance in their catalogue of the Materia Medica, probably considering it to be a general principle common to many vegetables, although they point out the particular species which they wish to be employed.

Starch is a fine white powder, generally concreted in friable hexagonal columns, smooth to the feel, and emitting a particular sound when compressed. It has neither taste nor smell. It is decomposed by heat. It is not soluble in cold water or in alcohol. Warm water converts it into a kind of paste, which on cooling assumes a gelatinous form. This jelly when dried by heat becomes transparent and brittle like gum, but is not soluble in cold water. Starch, after being thus dissolved in hot water, cannot be reduced to its original state. It is precipitated by infusion of galls, (Dr. Thomson.) It is one of the best tests of the presence of the newly discovered substance, Iode, or Iodine.

Medical uses.—As a constituent of many vegetable substances, it forms a most important alimentary material. In a medical point of view, it is to be considered as a demulcent; and accordingly it forms the principal ingredient of an officinal lozenge; and a mucilage prepared from it often produces excellent effects, both taken by the mouth, and in the form of a clyster in dysentery and diarrhœa from irritation of the intestines.

Starch is found in many vegetables, combined with different substances. Fourcroy accordingly makes various species of it as combined,

1. With gluten or fibrine, as in wheat, rye, and other similar seeds.
2. With extractive, as in beans, peas, lupins, &c.
3. With mucilaginous matters, as in the potato and many other roots, in unripe corn.

4. With saccharine matter, in most roots, and in corn after it has begun to germinate.
5. With oil, in the emulsive seeds, almonds, &c.
6. With an acrid principle, as in the root of the burdock, jatropha, manihot, arum, asarum, and other tuberous roots.

Officinal Preparations.

Mucilago amyli, E. L.	-	*vide Mucilagines.*
Trochisci gummosi, E. L.	-	*Trochisci.*
Pulvis tragacanthæ compositus, L.		*Pulveres.*
Pilulæ hydrargyri, E.	- -	*Pilulæ.*

AMYRIS.

Willd. g. 755. *Octandria Monogynia.*—Nat. ord. *Dumosæ.*

AMYRIS ELEMIFERA. *Sp.* 2. *Elemi. Resina.* L. D.

Elemi. A Resin.

The tree which furnishes elemi grows in Carolina and Spanish America. In dry weather, and especially at full moon, incisions are made in the bark, from which a resinous juice flows, and is left to harden in the sun. It is brought to us in long roundish cakes, generall wrapped up in flag leaves. The best sort is softish, somewhat transparent, of a pale whitish yellow colour, inclining a little to green, of a strong not unpleasant smell, resembling somewhat that of fennel. Dr. Wright says, that on wounding the bursera gummifera, a thick milky liquor flows, which soon concretes into a resin no way different from the elemi of the shops. Of 100 parts 94 dissolves in alcohol, and part of its fragrance rises along with this menstruum in distillation: distilled with water it yields 6.4 of pale-coloured, thin, fragrant, essential, oil. Its only constituents, therefore, are resin and essential oil. It gives name to one of the officinal unguents, and is at present scarce any otherwise made use of; though it is certainly preferable for internal purposes to some others which are held in greater esteem.

Officinal Preparation.

Unguentum elemi, L. D. - *vide Unguenta.*

AMYRIS ZEYLANICA. *Sp.* 18.

The elemi which comes from the East Indies is said to be the produce of this species.

AMYRIS GILEADENSIS. *Sp.* 6. *Balsamum Gileadense. Ed. Resina.*

Balsam of Gilead. A Liquid Resin.

This article, which has also had the name of Balsamum Judaicum, Syriacum, de Mecca, Opo-balsamum, &c. is a resinous juice, obtained from an evergreen tree, growing spontaneously, particularly near to Mecca, on the Asiatic side of the Red Sea. The best sort of it is a spontaneous exudation from the tree; and is held in so high esteem by the Turks, who are in possession of the country where it is produced, that it is rarely, if ever, to be met with genuine among us. From the high price set upon it, many adulterations are practised. The true opo-balsamum, according to Alpinus, is at first turbid and white, of a very strong pungent smell, like that of turpentine, but much sweeter; and of a bitter, acrid, astringent taste: upon being kept for some time, it becomes thin, limpid, of a greenish hue, then of a gold yellow, and at length of the colour of honey.

This balsam is in high esteem among the eastern nations, both as a medicine, and as an odoriferous unguent and cosmetic. It has been recommended in a variety of complaints. But in Europe it is never obtained genuine; and as all the signs of its goodness are fallacious, it has been very rarely employed. Nor need we regret it; for any of the other resinous fluids, such as the balsam of Canada or Copaiba will answer every purpose full as well.

The dried berries of this tree were formerly kept under the title of Carpo-balsamum, and the dried twigs under that of Xylo-balsamum. Although Willdenow has inserted the amyris opo-balsamum as a distinct species, he thinks they are the same.

ANCHUSA TINCTORIA. *Radix. Ed.* Anchusa, D.

Alkanet. The Root.

Willd. g. 277. *sp.* 7. *Pentandria Monogynia.*—Nat. ord. *Asperifoliæ.*

D.	*Ossetong, Orkanette.*	P.	*Alcanna bastarda, Orcaneta.*
DA.	*Oxetunge, Orkanette.*	POL.	*Czerwieniec.*
F.	*L'Orcanette.*	R.	*Wolowoi jasük.*
G.	*Rothe Ochsenzunge, Orkanet.*	S.	*Arcaneta, Palomilla de Tinte.*
I.	*Ancusa.*	SW.	*Röd Oxtungerot.*

This plant is a native of Europe: it is sometimes cultivated in gardens; but the greatest quantities are raised in Germany or France, particularly about Montpelier, from whence the dried roots are usually imported to us. The alkanet root produced in England is much inferior in colour to that brought from abroad; the English being only lightly reddish, the others of a deep purplish red; and it has been suspected, but without sufficient foundation, that the foreign roots owe part of their colour to art. The cortical part of the root is of a dusky red, and imparts an elegant deep red to alcohol, oils, wax, and all unctuous substances, but not to watery liquors.

Alkanet root has but little or no smell; when recent, it has a bitterish astringent taste; but when dried, scarcely any. As to its virtues, the present practice expects not any from it. Its chief use is for colouring oils, ointments, and plasters. As the colour is confined to the cortical part, the small roots are best, having proportionally more bark than the large.

ANDROMEDA MARIANA.

Broad-leaved Moor-wort.

The different species of the andromeda are very nearly akin in botanical character to the rhododendron and kalmia, and are suspected by professor Barton to be poisonous. A decoction of the plant under consideration has been successfully employed as a wash, in a disagreeable ulceration of the feet, which is not uncommon among the slaves, &c. in the southern states, and which is known by the name of the toe-itch and ground itch.

The brown powder attached to the foot-stalks of the leaves of the andromeda, is considerably errhine. The powder about the seeds, in the seed-vessels, possesses a similar quality.*

ANETHUM.

Willd.g. 560. *Smith,g.* 151. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

ANETHUM GRAVEOLENS. *Sp.* 1. *Semen.* L.

Dill. The Seed.

Dill is an annual umbelliferous plant, cultivated in gardens, as well for culinary as medical use. The seeds are of a pale yellowish colour, in shape nearly oval, convex on one side, and flat on the other. Their taste is moderately warm and pungent; their smell aromatic, but not of the most agreeable kind. These seeds are recommended as a carminative in flatulent colics. The most efficacious preparations of them, are, the distilled oil, and a tincture or extract made with rectified spirit.

Officinal Preparation.

Aqua anethi, L. - *vide Aquæ destillatæ,*

* Barton's Collections towards a Materia Medica, part 1st.

ANETHUM FOENICULUM. *Willd. Sp.* 3. *Smith. Sp.* 1. *Radix, Semen. Ed.*

FOENICULUM DULCE. L. D. *Sweet Fennel. The Root and Seeds.*

D.	*Venkel.*	P.	*Funcho.*
DA.	*Fennikel.*	POL.	*Kopr wlowsky.*
F.	*Fenouil.*	R.	*Woloskoi Ukrop.*
G.	*Fenchel.*	S.	*Hinojo.*
I.	*Finocchio.*	SW.	*Fänkol.*

THIS is a biennial plant, of which there are four varieties. One of these, the common fennel, is indigenous to England, on chalky cliffs. The sweet fennel, the variety of which is officinal, grows wild in Italy, but is also cultivated in gardens in England. It is smaller in all its parts than the common, except the seeds, which are considerably larger. The seeds of the two sorts differ likewise in shape and colour: those of the common are roundish, oblong, flattish on one side, and protuberant on the other, of a dark almost blackish colour; those of the sweet are longer, narrower, not so flat, generally crooked, and of a whitish or pale yellowish colour.

The seeds of both the fennels have an aromatic smell, and a moderately warm, pungent taste: those of the *fœniculum dulce* are in flavour most agreeable, and have also a considerable degree of sweetness.

From 960 parts, Neumann obtained 20 of volatile oil, 260 of watery extract, and afterwards some alcoholic extract, which could not be exsiccated on account of its oiliness. By alcohol first, he got 34 resinous extract, 120 fixed oil, and then by water 129 of a bitter extract.

OFFICINAL PREPARATIONS.

Aqua fœniculi dulcis, L. D.	*vide Aquæ destillatæ.*
Oleum volatile flor. F. dul. D. seminum F. dul. D.	*Olea volatilia.*
Decoctum chamæmeli, D.	*Decocta.*

ANGELICA ARCHANGELICA. *Radix, Caulis, Folia, Semen. Ed.*

ANGELICA. L. D.

Angelica. The root, stalk, leaves and seeds.

Wild. g. 543. *sp.* 1. *Smith, g.* 138. *sp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

D.	*Angelica.*	I.	*Angelica.*
F.	*Racine d'Angelique.*	P.	*Angelica.*
G.	*Angelicawurzel, Engelwurz.*	S.	*Anjelica.*

ANGELICA is a large biennial umbelliferous plant. It grows spontaneously on the banks of rivers in Alpine countries; but for the use of the shops, it is cultivated in gardens in different parts of Europe.

All the parts of Angelica, especially the roots, have a fragrant aromatic smell; and a pleasant bitterish warm taste, glowing upon the lips and palate for a long time after they have been chewed. The flavour of the seeds and leaves is very perishable; particularly that of the latter, which, on being barely dried, lose the greatest part of their taste and smell: the roots are more tenacious of their flavour, though they lose part of it with keeping. The fresh root, wounded early in the spring, yields an odorous yellow juice; which, slowly exsiccated, proves an elegant gummy resin, very rich in the virtues of the angelica. On drying the root, this juice concretes into distinct moleculæ, which, on cutting it longitudinally appear distributed in little veins; in this state, they are extracted by alcohol, but not by watery liquors. Angelica roots are apt to grow mouldy, and to be preyed on by insects, unless thoroughly dried, kept in a dry place, and frequently aired. We apprehend, that the roots which are subject to this inconvenience, might be preserved, by dipping them in boiling spirit, or exposing them to its steam, after they are dried. Baumé says that it is only the roots gathered in the spring that are subject to this inconvenience, and that when gathered in the autumn, they keep good several years. Roots only worm-eaten are as fit as ever for making a tincture, or affording volatile oil.

Angelica is one of the most elegant aromatics of European growth, though little regarded in the present practice. The root, which is the most efficacious part, is used in the aromatic tincture. The stalks make an agreeable sweetmeat.

Officinal Preparation.

Spiritus anisi compositus, L. *vide Spiritus destillati.*

ANGUSTURA. *Ed. D. Cortex.*

Cusparia Febrifuga. L.

Angustura Bark.

Pentandria Monogynia.—Ord. nat. *Quassiæ*, Jussieu.

The natural history of this bark was long but imperfectly known. Willdenow suspected that it was the bark of the magnolia plumieri.* The first parcel of it that was imported to England, came from Dominica in July 1788, with an account, "that it had been found superior to the Peruvian bark in the cure of fevers." Subsequent importations from the Spanish West Indies, either immediately or through the medium of Spain, gave reason to suppose, that it was the produce of South America. This has been fully established by the late travels of Humboldt in that country. He gave to Willdenow a dried specimen of the tree of which it is the bark, and that eminent botanist discovered it

* The late professor Barton inclined to the opinion that this article of the materia medica is the bark of some species of magnolia.

Barton's Collections, Part 1st, page 14.

It is more lately asserted by Humboldt and Bonpland, to belong to a tree not before known, and which they have promised to describe under the name of *Cusparia.*

to be a new genus, to which he gave the name of BONPLANDIA, in honour of the botanical companion of Humboldt's travels. It belongs to the first order of the fifth class of Linné's system; and its generic characters are, calyx 5 titus.; coroll. 5 petal. recept. versus margin adhærent.; 5 nectaria germen obducent; caps. 5 locularis; monosperm.

The London college, however, give this tree the name of Cusparia Febrifuga, derived from *Cuspa*, the native appellation of the tree; but this name must be abandoned, for although it was inserted by Humboldt in the chart belonging to his geography of plants, that of Bonplandia Trifoliata is adopted by him in his Plantæ Æquinoctiales. The name Angustura bark is derived from the Spanish denomination, *cascarilla*, or *corteza del Angostura*, which is the vulgar name of the town of St. Thomas, near the Straits of the Orinoco, where it forms a considerable article of commerce.

The appearance of the bark varies, according as it has been taken from larger or smaller branches. It is only one or two lines in thickness, and is sometimes cracked externally. The outer surface is more or less wrinkled, and of a greyish colour, and the inner surface is of dark brown. The bark of the younger branches is of a fine green colour, dotted with greyish tubercles. Its substance is of a yellowish brown colour. Its fracture is short and resinous. Its taste is intensely bitter, and slightly aromatic, leaving a strong sense of heat and pungency in the throat and fauces. The odour is peculiar. The powder is yellow.

According to the experiments related by Mr. Brande, from 3840 parts of angustura, there were extracted by alcohol, 144 of resin, and 300 of an acrid unctuous substance, the residuum yielded to water 1500 of dry gummy extract. Treated first with water, it gave 2110 grains of a clear brown extract, bitter, but not acrid, and afterwards 161 of a resin of a light brown colour, and extremely acrid. By distillation it gave 26 of essential oil. The tincture is of a deep yellow colour, reddens infusion of turnsole, and becomes turbid and white on admixture with water. By repeated filtration a brownish resin is separated, and the transparent fluid has a pale yellow colour. It is not precipitated by solution of gelatin, but by infusion of galls. It therefore does not contain tannin but cinchonin, and it has the peculiar property of acquiring a deep red colour with red sulphat of iron, and depositing a purplish slate-coloured precipitate.

Medical use.—As an aromatic bitter, it has been found to be a tonic and stimulant of the organs of digestion. It increases the appetite for food, removes flatulence and acidity arising from dyspepsia, and is a very effectual remedy in diarrhœa from weakness of the bowels, and in dysentery; and it possesses the singular advantage of not oppressing the stomach, as Peruvian bark is apt to do. It does not cure intermittents.

It is exhibited,

1. In powder, in doses of from 5 to 20 grains, either alone or with rhubarb, magnesia, or carbonat of lime.
2. In infusion. The infusion of one drachm in four ounces of water may be used daily.
3. In tincture.
4. In watery extract.

ANNONA TRILOBA. *Papaw. Custard Apple.*

The dried fruit is purgative, according to professor Barton.

ANTHEMIS.

Willd. g. 1517. *Smith, g.* 376. *Syngenesia Polygamia superflua.*—Nat. ord. *Compositæ radiatæ.*

ANTHEMIS NOBILIS. *Flores. Ed.* L. D.

CHAMÆMELUM. L. D. *Chamomile. The Flowers.*

Willd. sp. 15. *Smith, sp.* 1.

CHAMOMILE is a perennial plant, indigenous to the south of England, but cultivated in most gardens for the purposes of medicine. The flowers have a strong, not ungrateful, aromatic smell, and a very bitter nauseous taste. These are so very generally employed in medicine, as to render their extensive cultivation in the United States, well worthy of attention.

Their active constituents are bitter extractive, and essential oil. To the latter is to be ascribed their antispasmodic, carminative, cordial, and diaphoretic effects; to the former their influence in promoting digestion.

Neumann obtained from 480 parts, 180 of alcoholic extract, and afterwards 120 of watery; and reversing the procedure, 240 watery, and 60 alcoholic.

Medical use.—Chamomile flowers are a very common and excellent remedy, which is often used with advantage in spasmodic diseases, in hysteria, in spasmodic and flatulent colics, in suppression of the menstrual discharge, in the vomiting of puerperal women, and in the after pains, in gout, in podagra, in intermittents, and in typhus.

As chamomile excites the peristaltic motion, it is useful in dysentery, but is not admissible in all cases of diarrhœa. From its stimulating and somewhat unpleasant essential oil, chamomile is also capable of exciting vomiting, especially when given in warm infusion; and in this way it is often used to assist the action of other emetics.

Externally, chamomile flowers are applied as a discutient and emollient, in the form of clyster or embrocation, in colic, dysentery and strangulated hernia, &c.

Chamomile flowers are exhibited,

1. In substance, in the form of powder, or rather of electuary, in doses of from half a drachm to two drachms, either alone, or combined with Peruvian bark, as for the cure of intermittent fevers.

2. In infusion, in the form of tea. This may either be drunk warm, for promoting the action of emetics, or cold, as a stomachic.

3. In decoction or extract. These forms contain only the extractive, and therefore may be considered as simple bitters.

4. The essential oil may be obtained by distillation. This possesses the antispasmodic powers in a higher degree than the simple flowers, but on the contrary, does not possess the virtues depending on the presence of the bitter extractive. It is a most agreeable addition to many pills.

Officinal Preparations.

Decoctum anthemidis nobilis. E. L. D. *vide Decocta.*
Extractum anthemidis nobilis. E. L. D. *Extracta.*

ANTHEMIS PYRETHRUM. *Radix. Ed.* L. D.

Pellitory of Spain. The Root.

Willd. Sp. 125.

This plant, though a native of warm climates, as Barbary, bears the ordinary winters of England, and often flowers successively from Christmas to May: the roots also grow larger there than those with which the shops are usually supplied from abroad. They are seldom so big as the little finger, and the best are dry, compact, of a brown colour, and not easily cut with a knife.

Pellitory root has no sensible smell; its taste is very hot and acrid, but less so than that of arum; the juice expressed from it has scarce any acrimony, nor is the root itself so pungent when fresh as after it has been dried. Neumann obtained from 960 parts of the dry root, only 40 of alcoholic extract, and afterwards 570 of watery, and by a reverse procedure, 600 of watery, and 20 of alcoholic extract. Both the alcoholic extracts were excessively pungent. Its acrimony, therefore, is derived from a resin.

Medical use.—The principal use of pyrethrum in the present practice is as a masticatory, for promoting the salival flux, and evacuating the viscid humours from the head and neighbouring parts; by this means it often relieves the toothach, some kinds of pains of the head, and lethargic complaints. A vinous infusion is also useful in debility of the tongue.

ANTIMONIUM.

Stibium.

Antimony.

D.	*Spiesglas.*	P.	*Antimonio.*
DA.	*Spidseglas.*	POL.	*Spiszglas.*
F.	*Antimoine.*	R.	*Antimonia.*
G.	*Antimonium, Spiessglass.*	S.	*Antimonio.*
I.	*Antimonio.*	SW.	*Spitsglas.*

Antimony is white, very brilliant, lamellated; specific gravity 6.702; moderately hard; pulverizable; fusible at 809°; volatile when highly ignited; sensible taste and smell; unalterable in cold air; oxydizable by air and heat; oxyd fusible into a yellow brown glass; decomposes water when ignited; oxydized by the sulphuric, and nitric acids; combines with phosphorus and sulphur. Oxyds are black, brown, orange, yellow, white; and they colour glass yellow or hyacinthine.

Antimony is found,

I. In its metallic state, at Stahlberg in Sweden, and Allemont in France.

II. Mineralized with sulphur.

1. Grey antimony.
   a. Compact.
   b. Foliated.
   c. Striated.
   d. Plumose.
2. Red antimony.

III. Oxydized. Mongez.

IV. Acidified.

1. Muriated.
2. Phosphated.

The grey ore of antimony is the state in which it is officinal, and also that in which it is most commonly found.

SULPHURETUM ANTIMONII. E. L. D.

Sulphuret of Antimony.

WHATEVER opinion may be formed of the nomenclature adopted by the Edinburgh college in general, the propriety of the change which they have introduced in this and similar instances cannot be disputed: for while chemists, according to rational principles, designated simple substances by simple names, the same names continued to be given by pharmaceutical writers to compound states of these bodies. To have established, therefore, an uniformity of nomenclature in sciences so intimately allied, cannot fail to be considered as an improvement of the greatest importance.

Although sulphureted antimony be a natural production, yet it is commonly sold in the form of loaves, which have been separated from the stony, and other impurities of the ore by fusion, and a species of filtration. For the ore is melted in conical well-baked earthen pots, having one or more small holes in their apices. The fire is applied around and above these pots; and as soon as the sulphureted antimony melts, it drops through the holes into vessels placed beneath to receive it, while the stony and other impurities remain behind. As antimony is very volatile, the mouths and joinings of the pots must be closed and luted. The upper part of the loaves thus obtained is more spungy, lighter, and impure, than the lower, which is therefore always to be preferred. These loaves have a dark grey colour externally, but on being broken, they appear to be composed of radiated striæ, of a metallic lustre, having the colour of lead. The goodness of the loaves is estimated from their compactness and weight, from the largeness and distinctness of the striæ, and from their being entirely vaporizable by heat. Lead has been sold for antimony; but its texture is rather foliated than striated, and it is not vaporizable. The presence of arsenic, which renders the antimony useless for medical purposes, is known by its emitting the smell of garlic when thrown upon live coals, and by other tests mentioned under arsenic. The presence of manganese or iron is known by their not being volatilized by a red heat.

Antimony is obtained from its ores by gradually detonating in a large crucible four parts of sulphureted antimony, three of crude tartar, and one and a half of dry nitrat of potass, reduced to a fine powder, and intimately mixed. The detonated mass is then to be fused and poured into a heated mould, greased with a little fat, in which it is allowed to consolidate. It is then turned out, and the scoriæ are separated from the antimony, which will weigh about one-fourth part of the sulphuret employed. The scoriæ are a mixture of sulphuret of potass and of antimony, and may be preserved for other purposes.

Another method of obtaining antimony, is by melting three parts of sulphureted antimony, with one of iron. The sulphur quits the antimony, and combines with the iron.

Medical use.—Formerly antimony was given internally; but as its action depended entirely on the acid it met with in the stomach, its effects were very uncertain, and often violent. Cups were also made of antimony, which imparted to wine that stood in them for some time an emetic quality. But both these improper exhibitions of this metal are now laid aside.

Sulphureted antimony was employed by the ancients in collyria against inflammations of the eyes; and for staining the eye-brows black. Its internal use does not seem to have been established till towards the end of the fifteenth century; and even at that time it was by many looked upon as poisonous. But experience has now fully evinced, that it has no noxious quality, being often used, particularly in chronic eruptions; that some of its preparations are medicines of great efficacy; and that though many of them are most violently emetic and cathartic, yet even these, by a slight alteration or addition, lose their virulence, and become mild in their operation.

Officinal Preparations.

Antimony is at present the basis of many officinal preparations, to be afterwards mentioned. But besides those still retained, many others have been formerly in use, and are still employed by different practitioners. The following table, drawn up by Dr. Black, exhibits a distinct view of the whole.

DR. BLACK'S TABLE OF THE PREPARATIONS OF ANTIMONY.

Medicines are either prepared from crude antimony, or from the pure metallic part of it, called regulus.

FROM CRUDE ANTIMONY.

I. By trituration.
Antimonium præparatum. Lond.

II. By the action of heat and air.
Flores antimonii sine addito.
Vitrum antimonii. Ed.
Antimonium vitrificatum. Lond.
Vitrum antimonii ceratum. Ed.

III. By the action of alkalies.
Hepar antimonii mitissimum.
Regulus antimonii medicinalis.
Hepar ad kermes minerale. *Geoffroi.*
Hepar ad tinct. antimonii.
Kermes minerale.
Sulphur antimonii præcipitatum. Ed. et Lond.

IV. By the action of nitre.
Crocus antim. mitissimus, *vulgo*, *Regulus antim. medicinalis.*
Crocus antimonii. Ed. et Lond.
Antimonii emeticum mitius. Boerh.
Antim. ustum cum nitro, *vulgo*, Calx antimonii nitrata. Ed.
Antimonium calcinatum. Lond. *vulgo*, *Antimonium diaphoret.*
Antim. calcareo-phosphoratum, sive pulvis antimonialis. Ed.
Pulvis antimonialis. Lond.

V. By the action of acids.
Antim. vitriolat. Klaunig.
Antim. cathartic. Wilson.
Antimonium muriatum, *vulgo*, Butyrum antim. Ed.
Antimonium muriatum. Lond.
Pulvis algarothi, sive *Mercurius Vitæ.*
Bezoardicum minerale.
Antimonium tartarisatum, *vulgo*, Tartarus emeticus. Ed.
Antimonium tartarisatum. Lond.
Vinum antimonii tartarisati. Ed. et Lond.
Vinum antimonii. Lond.

FROM THE REGULUS.

This metal, separated from the sulphur by different processes, is called *Regulus antimonii simplex*, *Regulus martialis*, *Regulus jovialis*, &c. From it were prepared,

I. By the action of heat and air.
Flores argentei, sive nix antimonii.

II. By the action of nitre.
Cerussa antimonii.
Stomachicum Poterii.

Antihecticum Poterii.
Cardiacum Poterii.

PREPARATIONS which have their name from ANTIMONY, but scarcely contain any of it.

Cinnabaris antimonii.
Tinctura antimonii.

To this table of Dr. Black's, which is left unaltered, Dr. Duncan has added another, not taken from the mode of preparation, but from the nature of the product.

ANTIMONY is exhibited,

I. In its metallic state.
Combined with sulphur.
Sulphuretum antimonii. (Ed.) D. L.
———————— præparatum.

II. Oxydized.
a. Protoxyd,
Antimonii oxydum. L.
b. Protoxyd combined with sulphur,
1. Oxydum antimonii cum sulphure vitrificatum. E.
Melted with wax.
Oxydum antimonii vitrificatum cum cera. E.
2. Oxydum antimonii cum sulphure per nitratem potassæ. E.
3. Sulphuretum antimonii præcipitatum. E.
4. Sulphur antimoniatum fuscum. D.
c. Protoxyd combined with muriatic acid,
1. Murias antimonii. E.
2. Oxyd. antimon. nitro-muriaticum. D.
d. Protoxyd combined with tartaric acid and potash,
Tartris antimonii. E.
Antimonium tartarisatum. L.
Tartarum antimoniatum, sive emeticum. D.
Dissolved in wine,
Vinum tartritis antimonii. E.
Liquor antimonii tartarisati. L.
e. Protoxyd combined with phosphat of lime,
Oxydum antimonii cum phosphate calcis. E.
Pulvis antimonialis. L. D.

These are the principal preparations of antimony. In estimating their comparative value, we may attend to the following observations. All the metallic preparations are uncertain, as it entirely depends on the state of the stomach, whether they act at all, or operate with dangerous violence. The sulphuret is exposed, though in a less degree, to the same objections.

The preparations in which antimony is in the state of peroxyd, are perfectly insoluble in any vegetable or animal acid, and are also found to be perfectly inert when taken into the stomach.

The remaining preparations of antimony, or those in which it is in-the state of protoxyd, are readily soluble in the juices of the stomach, and act in very minute doses. Of its saline preparations, only those can be used internally which contain a vegetable acid; for its soluble combinations with the simple acids are very acrid and corrosive. In general, the surest and best preparations of antimony are those which contain a known quantity of the metal in the state of protoxyd.

The general effects of antimonials are, in small doses, diaphoresis, nausea: in large doses, full vomiting and purging. Some allege that antimonials are of most use in fevers when they do not produce any sensible evacuation, as is said to be the case sometimes with James's powder. They therefore prefer it in typhus, and emetic tartar in synochus, in which there is the appearance at first of more activity in the system, and more apparent cause for evacuation.

SULPHURETUM ANTIMONII PRÆPARATUM. *Ed.* L. D.

Prepared Sulphuret of Antimony.

Sulphuret of antimony is prepared in the same way as carbonat of lime. *Vide* Carbonas Calcis.

By reducing the sulphuret of antimony to the state of an impalpable powder, it is both rendered much more active than it would otherwise be, and it is prevented from irritating the stomach mechanically, of which there would be some danger from the sharpness of its spiculæ. Even in this state, however, it is not a very certain remedy. In general, it operates as a very mild sudorific or cathartic; but sometimes, if it meet with much acid in the stomach, it becomes more active, producing vomiting or hypercatharsis. Therefore, it seems prudent to evacuate the primæ viæ before it be exhibited, and to combine it with an absorbent earth.

It is principally given in scrofula, glandular obstructions, cutaneous diseases and rheumatism. Its dose is from 10 to 30 grains and upwards, and it is best exhibited in the form of a powder or bolus.

OXIDUM ANTIMONII CUM SULPHURE, PER NITRATEM POTASSÆ. *Ed.*

Olim, Crocus Antimonii.

Oxyd of Antimony, with Sulphur, by Nitrat of Potass, formerly *Crocus of Antimony.*

Take of
 Sulphuret of antimony,
 Nitrat of potass, equal weights.

After they are separately powdered and well mixed, let them be injected into a red hot crucible; when the deflagration is over, the reddish matter is to be separated from the whitish crust, and reduced to powder, which is to be edulcorated by repeated washings with hot water, till the water come off insipid.

In this process, the nitric acid of the nitre, and part of the sulphuret, are mutually decomposed: the sulphur is acidified, and combines with the potass of the nitre, while the antimony is converted into protoxyd, which combines with the undecomposed portion of the sulphuret, and forms a dark brown, opaque, vitrified mass; so that after the scoriæ and other saline matters have been removed by washing, the substance which remains, according to Proust, consists of three parts of oxyd of antimony, and one of sulphuret of antimony.

With regard to the mode of preparation, Bergmann observes, that by the common process of throwing the mixture into an ignited uncovered crucible, there is sometimes a loss of nearly one half; and therefore advises the mixture to be put into a cold crucible, which is to be covered and heated till the matter melts, by which means there is very little loss.

What is kept in the shops is almost universally prepared with less nitre than is here ordered. The consequence is, that too much sulphur remains not acidified, the antimony is scarcely oxydized, and the preparation is unfit for uses to which it ought to be applied. When nitre has been thus culpably economized, the crocus has a steel grey, instead of a liver brown colour.

The sulphureted oxyd of antimony is a very uncertain preparation, often operating with very great violence. Its internal use is therefore almost proscribed, or at least confined to maniacal cases, and veterinary practice. It is, however, useful in pharmacy, as the basis of other perparations. The London College reject it altogether.

OXYDUM ANTIMONII, CUM SULPHURE VITRIFICATUM. *Ed.*

Olim, VITRUM ANTIMONII.

Vitrified Oxyd of Antimony with Sulphur, formerly *Glass of Antimony*.

Strew sulphuret of antimony beat into a coarse powder like sand, upon a shallow unglazed earthen vessel, and apply a gentle heat underneath, that the antimony may be heated slowly: keeping it at the same time continually stirring, to prevent it from running into lumps. White vapours of a sulphurous smell will arise from it. When they cease with the degree of heat first applied, increase the fire a little, so that vapours may again arise; go on in this manner, till the powder, when brought to a red heat, exhales no more vapours. Melt this powder in a crucible with an intense heat, till it assumes the appearance of melted glass; then pour it out on a heated brass plate. (E.)

GLASS of antimony, according to Proust, consists of one part of sulphuret of antimony, combined with eight of oxyd of antimony; now, by this process, the greatest part of the antimony is deprived of its sulphur, and is at the same time converted into the protoxyd, which combines with the small portion of sulphuret which remains undecomposed. But as this preparation is not easily made in the manner here directed, unless in a furnace constructed on purpose, apothecaries may advantageously adopt the synthetical method of Bergmann, which consists in melting in a crucible, with one twelfth or eighth of its weight of sulphur, protoxyd of antimony prepared by deflagrating it with more than twice its weight of nitre. At the temperature necessary for melting it, part of the protoxyd of antimony loses its oxygen, and is converted into sulphuret and combines with the remaining protoxyd, in the proportions which form the glass of of antimony.

In whichever way prepared, the glass of antimony is transparent, and has a fine hyacinthine colour. On dissolving it in muriatic acid, it gives out sulphureted hydrogen gas. Its medical operation is so uncertain, that it is only used in making other preparations.

A glass of lead, within a few years, was fraudulently sold in London, for this preparation.

OXYDUM ANTIMONII VITRIFICATUM CUM CERA. *Ed.*

Olim, VITRUM ANTIMONII CERATUM.

Vitrified Oxyd of Antimony with Wax; formerly *Cerated Glass of Antimony.*

Take of
  Yellow wax, one part;
  Vitrified oxyd of antimony, with sulphur, eight parts.

Melt the wax in an iron vessel, and throw into it the powdered oxyd: roast the mixture over a gentle fire for a quarter of an hour, continually stirring it; then pour it out, and when cold grind it into powder. (E.)

THE glass melts in the wax with a very gentle heat; after it has been about twenty minutes on the fire, it begins to change its colour, and in ten more comes near to that of Scottish snuff; which is a mark of its being sufficiently prepared; the mixture loses about one-ninth of its weight in the process.

This medicine was for some time much esteemed in dysenteries. The dose is from two or three grains to twenty, according to the age and strength of the patient. In its operation, it makes some persons sick, and vomit; it purges almost every one; though it has sometimes effected a cure without occasioning any evacuation or sickness. It is now, however, much less used than formerly. It has been recommended of late in cases of cynanche trachealis, by Dr. Stearns, of the state of New York.*

* See Medical Museum.

SULPHURETUM ANTIMONII PRÆCIPITATUM.
Ed.

Precipitated Sulphuret of Antimony.

SULPHUR STIBIATUM RUFUM, D. *Orange Antimoniated Sulphur.*

Take of
Water of potass, four pounds;
Water, three pounds;
Prepared sulphuret of antimony, two pounds.

Boil them in a covered iron pot, over a slow fire for three hours, adding more water, if necessary, and frequently stirring the mixture with an iron spatula; strain the liquor while warm through a double cloth, and add to it when filtered as much diluted sulphuric acid as is necessary to precipitate the sulphuret, which must be well washed with warm water.

SULPHUR ANTIMONIATUM FUSCUM. D.

Olim, KERMES MINERALIS.

Brown Antimoniated Sulphur; formerly *Kermes Mineral.*

Take of
Prepared sulphuret of antimony,
Subcarbonat of potash, each one ounce.

Mix and melt them together in a crucible, and when cold reduce the substance to powder. Put this into a matrass with four pounds of pure water, and boil for one quarter of an hour. Then remove the vessel from the fire; let it stand at rest for a little, and as soon as the liquor becomes clear, pour it cautiously from the sediment. When the liquor grows cool, the brown antimoniated sulphur will separate, in part; add sufficient diluted sulphuric acid to precipitate the whole—agitate the mixture to combine the whole; when settled, pour off the supernatant liquor, and wash the sediment with cold water as long as it affects litmus paper, and dry on blotting paper.

In both these preparations, the result is an hydro-sulphuret of antimony with excess of sulphur. Formerly there were two officinal antimonials, one of which (*Kermes mineral*) contained no excess of sulphur, and the other (*Sulphur auratum antimonii*) much more than in those now officinal, which therefore hold a middle place between them.

ACCORDING to Thenard they consist of

	Kermes min.	Sulph. aur.
Brown oxyd of antimony, -	72.760	68.3
Sulphureted hydrogen, - -	20.298	17.877
Sulphur, - - - - -	4.156	12.
Water and loss, - - -	2.786	1.823
	100.	100.

Thenard considers the sulphur as only mechanically and accidentally mixed; and that the essential difference between this preparation and kermes mineral consists in the degree of oxydizement of the antimony.

But notwithstanding the great celebrity of Thenard as a chemist, and his having paid particular attention to the combinations of antimony, we may be allowed to doubt the accuracy of his opinion; for it must appear to every one an affected refinement of analysis, to discover in such substances a difference of only 2 *per cent.* of oxydizement; and as Proust has since shown that both preparations contain the protoxyd, the only difference between these bodies appears to be the proportion of sulphur they contain.

Hydro-sulphuret of antimony is prepared either in the dry way (Dublin), or in the humid, as by the Edinburgh and London Colleges. When sulphuret of antimony is boiled in a solution of potash, water is decomposed, the hydrogen combines with the sulphur and the antimony is oxydized; and as long as the solution boils, it contains a mixture of hydro-sulphuret of potash and hydro-sulphuret of antimony. But, on cooling, a great part of the latter precipitates in the form of a red powder (Kermes mineral).

In the dry way, when sulphuret of antimony and carbonat of potass are melted together, the carbonic acid is expelled with effervescence, and a sulphuret of antimony and potass is formed. On boiling this in water, water is decomposed, the antimony is oxydized, and the hydrogen combines with the sulphur. The sulphureted hydrogen thus formed, combines partly with the potass, and with the oxyd of antimony.

Such is the present theory for the formation of kermes mineral. With regard to the practice; Lemery melted sixteen parts of sulphuret of antimony, and one of sulphur, with eight parts of carbonat of potass. The last edition of the Prussian Pharmacopœia directs two parts of sulphuret of antimony, and one of exsiccated carbonat of soda, to be melted, and afterwards boiled fifteen minutes in six or eight parts of water, which on cooling deposits a considerable quantity of kermes. The fluid from which the kermes has been deposited may be again boiled in the residuum of the first decoction, and it will dissolve a fresh portion of kermes; and this process may be repeated as long as there remains any to dissolve. After this, the residuum, when melted, consists almost solely of antimony. It therefore appears, that the alkali renders almost all the sulphur soluble, and only disposes the oxydizement of as much antimony as is capable of combining with the sulphureted hydrogen. There appears to be no reason why the whole of the antimony should not be converted into kermes by employing a proper addition of sulphur and alkali.

Kermes is also made in the humid way. Fourcroy boils, in twenty parts of water, six parts of pure potass of commerce, and into the boiling solution throws about the twentieth part of the weight of the alkali, or 0.3 of a part of powdered sulphuret of antimony, and continues the boiling for seven or eight minutes, then filters, and allows the kermes to precipitate by cooling. Hermbstadt uses very different proportions; for he boils twelve parts of sulphuret of antimony, and three of salt of tartar, in ninety-six parts of water, down to sixty-four, and then filters, &c. Gren employs four parts of sulphuret of antimony, sixteen of carbonat of potass, and sixty-four of water, and boils for several hours. Göttling boils eight parts of sulphuret of antimony, and two of sulphur in a sufficient quantity of solution of potass down to one half.

The precipitated sulphuret of antimony, like the kermes, may be prepared either in the dry or in the moist way. The latter mode seems to be the most universally employed on the Continent. Göttling boils two parts of sulphuret of antimony, and three of sulphur, in a sufficient quantity of a recent solution of potass, filters the solution and precipitates with sulphuric acid, diluted with twelve times its weight of water. The Prussian college use equal parts of sulphuret of antimony and of sulphur. Wiegleb treats in the same manner two parts of sulphuret of antimony with one of sulphur. But to his proportions it has been objected, that the product resembles kermes more than sulphur auratum. If this objection be just, it must apply in a still stronger degree to the formula of the British colleges, in which no sulphur is added.

In the dry way, two parts of sulphuret of antimony and three of sulphur may be melted with five or six of pure carbonat of potass in a covered crucible, as quickly as possible, poured into an iron mortar, reduced to powder, and dissolved by boiling the powder in water. The solution is to be filtered warm, diluted with a sufficient quantity of water, and precipitated with diluted sulphuric acid. By some, the solution is allowed to remain at rest for twenty-four hours before it be filtered, and some precipitate with nitrous acid.

The processes for making the golden sulphuret of antimony, depend on the property which the hydrogureted sulphuret of potass possesses, of dissolving, and retaining dissolved, even at ordinary temperatures, a portion of orange oxyd of antimony; and as the attraction by which potass exists in this compound is weaker than its affinity for acids, on the addition of any acid, the potass unites with the acid; a portion of sulphureted hydrogen gas escapes; and the oxyd of antimony, combined with the rest of the sulphur and hydrogen, are precipitated in the form of a light orange powder. When the acid is added gradually, the proportion of oxyd of antimony always decreases, while that of the sulphur increases in each successive portion of precipitate. Hence in the old manner of preparing this substance from the scoriæ, formed in reducing antimony from its sulphuret, and which contained but little sulphur, the two first portions of precipitate, being dark coloured, were rejected, and only the product of the third precipitation retained for use. The want of economy in this process is sufficiently obvious, as well as the very great improvement in modern times, of adding a sufficient quantity of sulphur, and precipitating the whole at once.

Medical Use.—In its action on the body, the hydro-sulphuret of antimony is an active substance, and, according to its dose, acts as a diaphoretic, cathartic, or emetic. Its use is however, in Great Britain and America, in a great degree superseded by more certain preparations. To adults the dose is a grain to two or more.

Officinal Preparation.

Pulvis Stibii compositus. D.

MURIAS ANTIMONII. *Ed. Muriat of Antimony.*

Take of
Oxyd of antimony with sulphur, by nitrat of potass,
Sulphuric acid, each one pound;
Dried muriat of soda, two pounds.

Pour the sulphuric acid into a retort, gradually adding the muriat of soda and oxyd of antimony previously mixed. Then perform the distillation in a sand bath. Expose the distilled matter for several days to the air, that it may deliquesce, and then pour the liquid part from the fæces. (E.)

Muriat of antimony was originally prepared by distilling sulphuret of antimony with muriat of quicksilver. Muriat of antimony, or butter of antimony, as it was called from its appearance when recently prepared, passes over into the receiver, and black sulphuret of quicksilver remains in the retort, or, by increasing the heat, red sulphuret of mercury, which, when obtained by this process, was formerly termed Cinnabar of antimony, is sublimed. But this mode of preparation is both expensive, and dangerous to the health of the operator. To avoid these inconveniences, Scheele prepared a sulphureted oxyd of antimony, by deflagrating two parts of sulphuret of antimony with three of nitrat of potass in an iron mortar. The mass thus obtained is to be powdered, and one pound of it put into a glass vessel, on which is to be poured, first a mixture of three pounds of water and fifteen ounces of sulphuric acid, and afterwards fifteen ounces of powdered common salt. The whole is to be digested for twelve hours, and stirred all the while, and the solution, when cool, strained through linen. On the residuum one-third of the above menstruum is to be poured, and the mixture digested and strained. When diluted with boiling water, a copious precipitate of submuriat of antimony takes place from the decomposition of the muriat, while the other salts contained in the solution are not affected by it. Mr. Stott says, that the digestion need not be continued longer than two or three hours, and that the heat must be kept moderate, as the muriat of antimony begins to evaporate before it boils. This process furnishes an easy, if not the best, mode of preparing the submuriat of antimony, but it does not give us the solution of the muriat in a state of purity. But in consequence of its volatility, we may easily separate it from the other salts by distillation. This was first proposed by Gmelin, and improved by Wiegleb, who distilled a mixture of one part of sulphuret of antimony, four of muriat of soda, and three of sulphuric acid diluted with two of water; but in this process, the product is rendered impure by the admixture of sulphur, and there is great danger of the vessels bursting from the immense quantity of sulphureted hydrogen gas disengaged. In 1781, the process adopted by the Edinburgh college was first introduced into the London Pharmacopœia. The Prussian Dispensatory pours upon two ounces of crocus of antimony, and six of dried muriat of soda, in a retort, four ounces of sulphuric acid, previously diluted with two ounces of distilled water, and distils. But we have already observed, that the oxyd of antimony made use of in this preparation, is seldom sufficiently oxydized or deprived of its sulphur, which occasions the production of much sulphureted hydrogen gas; and from the concentrated state in which the materials are employed, the muriatic acid gas is sometimes disengaged, especially if the heat be improperly applied, so rapidly, that it has not time to act upon the oxyd of antimony. At last, in 1797, Göttling, by substituting the glass of antimony for the crocus, diluting the sulphuric acid, and using the muriat of soda crystallized, removed these inconveniences. He introduces into a retort a mixture of four ounces of glass of antimony in powder, with sixteen of muriat of soda, and then pours into it twelve ounces of sulphuric acid, diluted with eight of water. He lutes on a tubulated receiver with gypsum, and distils to dryness in a sand bath, with a heat gradually increased. By this process, he says, about twenty ounces of very strong fuming solution of muriat of antimony are obtained. The residuum in the retort is sulphat of soda, but unfit for internal use, on account of its being mixed with some antimony.

Butter of antimony* is crystallizable. It is remarkably deliquescent, and forms a permanent solution; but if more than a certain proportion of water be added, it is decomposed, a large quantity of submuriat of antimony being precipitated, in the form of white silky crystals, while a super-muriat remains in solution. It consists according to Mr. J. Davy of 56 antimony, and 44 chlorine, or 1 proportion of antimony to 2 of chlorine.

Medical use.—Chiefly as a caustic, though not much of late years from being very unmanageable.

OXYDUM ANTIMONII NITRO-MURIATICUM. *Dub.*

Nitro-Muriatic Oxyd of Antimony.

Take of
- Prepared sulphuret of antimony, two ounces;
- Muriatic acid, eleven ounces by measure;
- Nitrous acid, one drachm by measure.

Add the sulphuret gradually to the acids, previously mixed in a glass vessel, avoiding the vapours. Digest with a heat gradually increased, until the effervescence cease, and then boil for one hour. Filter the liquor when cold, and receive it when filtered in a gallon of water. The oxyd of antimony will fall to the bottom. Wash this repeatedly in a sufficiently large quantity of water, until the liquor

* Antimonane of Sir H. Davy.

poured off is perfectly free from acid, as known by the test of litmus; and, lastly, dry the oxyd upon bibulous paper.

HERE, the antimony oxydized by the nitric acid, is dissolved in the muriatic; the muriat of antimony thus formed, is decomposed by water. According to Sir H Davy, a portion of the water furnishes oxygen to the metal, and hydrogen to the chlorine, which are thus converted into protoxyd and muriatic acid, a supermuriat remains in solution, and an insoluble submuriat precipitates in white acicular or silky crystals, formerly known under the title of *Pulvis Algarothi*, the subject of the above prescription. That it is a submuriat, is proved by its yielding a small proportion of muriat on distillation, according to Bergmann. It is only used in the preparation of tartar emetic.

OFFICINAL PREPARATION.

Tartarum antimoniatum. D.

CALX STIBII PRÆCIPITATA.

Precipitated Calx of Antimony.

Take of
- Mild vegetable alkali,
- Caustic muriated antimony, each eight ounces;
- Water, forty pounds.

Dissolve the vegetable alkali in the water, and to the filtered liquor add the caustic muriated antimony. Dry the calx which subsides, after washing away the saline matters. (D.)

THIS process is intended to separate the protoxyd contained in the muriat of antimony, by means of the superior affinity which potass possesses for muriatic acid. It is absolutely necessary that the muriat of antimony be poured into the alkaline solution, and not the solution into the muriat; for the muriat is partially decomposed by water alone, which combines with part of the acid; and the salt, brought to the state of an insoluble submuriat, is precipitated. Therefore, if we pour the alkaline solution into the muriat of antimony, the muriat acts first upon the alkali, and immediately afterwards upon the water of each portion of the solution; and therefore we obtain a mixed precipitate of oxyd of antimony and submuriat of antimony. But if we pour the muriat into the alkaline solution, the whole acid of each portion of the muriat immediately finds a sufficient quantity of alkali to saturate it, and the whole or at least a much larger proportion of the antimony, is precipitated in the state of oxyd.

ANTIMONII OXYDUM. *Lond.*

Oxyd of Antimony.

Take of
- Tartarized antimony, one ounce;
- Subcarbonat of ammonia, two drachms;
- Distilled water, what is necessary.

Dissolve the salts separately in water, then mix the liquors, and boil until the oxyd of antimony be precipitated. Wash this with water, and dry it.

THIS process, which is now introduced by the London college as a substitute for the numerous impure oxyds of antimony in preceding Pharmacopœias, will furnish a very pure protoxyd of antimony, and does not seem liable to any objection. What its effects as a medicine are, are scarcely known, but we may think that they will be more uniform than those of the more uncertain products, and that therefore the introduction of the formula is a real improvement upon the pharmaceutical treatment of antimony.

OXYDUM ANTIMONII CUM PHOSPHAT CALCIS. *Ed.*

Oxyd of Antimony with Phosphat of Lime.

PULVIS ANTIMONIALIS, L. D.

Antimonial Powder.

Take of
Sulphuret of antimony, in coarse powder,
Shavings of hartshorn, equal weights.

Mix, and put them in a wide red-hot iron pot, and stir the mixture constantly, until it is burnt into a matter of grey colour, which is then to be removed from the fire, ground into powder, and put into a coated crucible. Lute to this crucible another inverted over it, and perforated in the bottom with a small hole, and apply the fire, which is to be raised gradually, to a white heat, and kept in that increased state for two hours. Lastly, grind the matter, when cold, into a very fine powder. (E. L. D.)

THIS is supposed to be nearly the same with the celebrated nostrum of Dr. James, the composition of which was ascertained by Dr. George Pearson, to whom we are also indebted for the above formula.

By burning sulphuret of antimony and shavings of hartshorn in a white heat, the sulphur is entirely expelled, and the antimony is oxydized, while the gelatin of the hartshorn is destroyed, and nothing is left but phosphat of lime, combined with a little lime. Therefore, the mass which results is a mixture of oxyd of antimony and phosphat of lime, which corresponds, at least as to the nature of the ingredients, with James's powder, which, by Dr. Pearson's analysis, was found to consist of 43 phosphat of lime, and 57 oxyd of antimony. M. Pulley also analysed some of James's powder, and found it composed of protoxyd of antimony 37, phosphat of lime 21, sulphat of potass 24, and potass combined with protoxyd of antimony 18. On which occasion, M. Cadet, ignorant that even quack-medicines were often imitated and adulterated, accuses Dr. Pearson of having sanctioned with his name a false analysis, in order to conceal a secret so profitable to his country! Mr. Chenevix, by considering the uncertainty of the application, and the precarious nature of the agency of fire, by which means a variable portion of the oxyd of antimony may be volatilized, and that which remains may be oxydized in various degrees, proposes to prepare a substitute for James's powder, by dissolving together equal weights of submuriat of antimony, and of phosphat of lime, in the smallest possible quantity of muriatic acid, and then pouring this solution gradually into water sufficiently alkalized with ammonia. As muriat of antimony is partially decomposed by water, it is absolutely necessary that the muriatic solution be poured into the alkaline liquor, for, by an opposite mode of procedure, a great part of the antimony would be precipitated in the state of submuriat, and the first portion of the precipitate would consist chiefly of antimony, and the last of phosphat of lime.

Phosphat of lime is most conveniently obtained pure by dissolving calcined bone in muriatic acid, and precipitating it by ammonia. If the ammonia be quite free from carbonic acid, no muriat of lime is decomposed. Mr. Chenevix also found, that this precipitate is entirely soluble in every acid which can dissolve either phosphat of lime or oxyd of antimony separately, and that about 0.28 of James's powder, and, at an average, 0.44 of the pulvis antimonialis of the late London Pharmacopœia, resist the action of every acid.

In the new edition, twice the proportion of hartshorn shavings is used, which is said to obviate the inconvenience of the vitrification of part of the antimony when too high a temperature was applied, to render the process more manageable, and to furnish a whiter product, but it does not correspond with Dr. Pearson's analysis of James's powder, for which it was intended as a substitute, and alters materially the strength of an established preparation.

Medical use.—The oxyd of antimony with phosphat of lime, howsoever prepared, is one of the best antimonials we possess. It is given as a diaphoretic in febrile diseases, in doses of from three to eight grains, repeated every third or fourth hour. In larger quantities, it operates as a purgative or emetic. From its being insoluble in water, it must be given either in the form of a powder, or made into a pill or bolus.

TARTRIS ANTIMONII; olim, TARTARUS EMETICUS, *Ed.*

Tartrite of Antimony, formerly *Tartar-Emetic.*

Syn. ANTIMONIUM TARTARISATUM, L. *Tartarised Antimony.*

TARTARUM ANTIMONIATUM SIVE EMETICUM. D.

Antimoniated or Emetic Tartar.

Take of

Nitromuriatic oxyd of antimony, two ounces;
Crystals of tartar, in very fine powder, two ounces and a half.
Distilled water, eighteen ounces by measure.

Boil the water in a glass vessel, then gradually throw into it the oxyd and tartar, previously mixed, and boil for half an hour; then filter the liquor through paper, and crystallize by slow cooling.

THE tartaric acid is capable of combining, in many examples, with two bases at the same time, forming with them triple crystallizable salts. In the present instance, it is combined with oxyd of antimony and potass; and as the potass is essential to its constitution, and the real tartrat of antimony is a different salt, its name, on chemical principles, should certainly have been tartrat of antimony and potass.

In the preparation of this salt, the different combinations of protoxyd of antimony have been employed. Any of them will afford a very pure salt. The crocus, precipitated oxyd, submuriat and glass, are all occasionally employed. The Edinburgh college uses the crocus. To this the principal objection is, that it is never found in the shops in a state fit for this purpose. Even when properly prepared, it is with difficulty acted upon by the supertartrat of potass, unless it be levigated and elutriated. Mr. Phillips found, that 100 parts of cream of tartar dissolved only six parts out of 100 of very finely powdered crocus, 16 when levigated but 75 when it was elutriated; and in the last case, the liquor assumed a deep green colour, which, though proceeding from the presence of iron, is a test that a sufficient proportion of the metallic oxyd is dissolved, as it does not occur until the tartar has taken up three fourths of its weight of the crocus. But, besides the expense of levigating and elutriating the crocus, it is liable to be mixed with carbonat of lime, derived probably from the stones employed in the levigation, and the crystals of tartarized antimony procured in this way, are consequently contaminated even with a larger proportion of tartrat of lime than is furnished by the tartar. The glass is more easily soluble than the crocus, as, when finely powdered, 78 parts were dissolved, and gave the solution a dark green colour. But this oxyd is very expensive, and glass of lead is sometimes fraudulently substituted for it. When the glass or crocus is used, Mr. Phillips recommends, that after being powdered or levigated, they should be boiled in dilute sulphuric acid to remove any carbonat of lime, and that a small quantity of sulphuric acid should be added to decompose the tartrat of lime. To the oxyd of antimony, as prescribed by the London college 1809, Mr. Phillips objected its great expense, its quantity being too small in proportion to the tartar, and that the crystals of tartar-emetic formed with it, as well as with the crocus or glass, are contaminated with the tartrat of lime usually contained in the tartar. To the use of the submuriat, as directed by the Dublin college, this last objection does not apply, because the muriatic acid retains the tartrat of lime in solution when the tartrat of antimony crystallizes. Having criticized the processes of all the colleges, Mr. Phillips proposed to substitute one of his own. The qualities requisite in an eligible method of preparing tartar-emetic, he says, are, the certainty of obtaining protoxyd of antimony unmixed with peroxyd or sulphureted oxyd, yet not absolutely pure, but mixed with a substance capable of preventing the crystallization of the tartrat of lime; moderate expense, and the possibility of using iron vessels, both in preparing the oxyd of antimony and the tartarized antimony. These requisites, Mr. Phillips thinks, he has found in employing the sulphat of antimony prepared by boiling powdered metallic antimony in twice its weight of sulphuric acid to dryness in an iron vessel over a common fire, and stirring it with an iron spatula. The greyish coloured product was thrown into water, and washed, till the uncombined sulphuric acid was removed. 100 parts of the subsulphat thus procured were boiled in a solution of an equal weight of tartar; about 76 parts of the subsulphat were readily dissolved, and the solution, when filtered, afforded at the first crystallization rather more than 90 parts of crystals of tartarized antimony, perfectly white and unmixed with any extraneous salt. The solution, by further evaporation, furnished an additional quantity of crystals of emetic tartar, slightly incrusted with sulphat of lime, from which, however, they were completely purified by solution, and repeating the crystallization. A considerable quantity of sulphat of lime was also deposited and separated during the evaporation. This process Mr. Phillips asserts to be neither tedious, difficult, uncertain nor unsafe. The process adopted in the present edition of the London Pharmacopœia is of the same nature, depending upon the formation of a sulphat of antimony, although in a more complicated way. Dr. Powell tells us that the new formula, which "has, after numerous trials, been adopted, is due to Mr. Hume of Long-Acre, to whose practical skill it is right to acknowledge great obligation. It is necessary that the whole of the supertartrat of potass should be combined with the oxyd, and therefore that there should be a full sufficiency of the latter, otherwise the first crystals, as it cools, will be of the supertartrat only; whilst, on the other hand, if a superabundance of oxyd of antimony be used, it will remain upon the filter, and not influence the crystals: the former inconvenience, therefore, is especially to be avoided, and for that purpose, more oxyd than may be strictly necessary is directed. The evaporation must not be carried too far, as there appears to be some tartrat of potass in the solution, whose crystals will, in that case, be mixed with the triple salt. The crystals ought always to be formed, for it is only when they are that the proportions of the salt can be considered as precise." But whatever form of protoxyd of antimony may be preferred, the quantity of water employed must be sufficient to dissolve the tartar-emetic formed. The time during which ebullition is to be continued, is stated differently by different pharmaceutists. No harm can arise from continuing it longer than is absolutely necessary; but it is certainly a waste of time and fuel to protract it for hours.

Another circumstance which renders tartar-emetic variable in its effects, is, the mode of crystallization. Some evaporate it to dryness; others to a pellicle, and set it aside to crystallize; and others again crystallize by slow evaporation. On account of the silica which is combined with the oxyd of antimony, and which, being held in solution by the potass, impedes the crystallization, and varies the nature of the product, Vauquelin recommends that the solution be first evaporated to dryness, and that the saline mass obtained should be redissolved in boiling water, and then crystallized; for towards the end of the first evaporation, the silica separates, and becomes totally insoluble. In this way, he says, that we obtain both a purer salt, and in larger quantity. If we employ an excess of supertartrat of potass, part of it will remain undecomposed, and will crystallize before, or along with the tartar-emetic. This source of impurity is easily avoided, by using an excess of the antimonial oxyd, which remaining undissolved, occasions no error, and prevents the necessity of throwing away the crystals which form on the filtering paper, if the solution be saturated.

The primitive form of the crystals of tartrat of antimony and potass seems to be the regular tetrahedron, but it assumes a variety of secondary forms. It has a styptic metallic taste. It is soluble in three times its weight of water at 212°, and in fifteen at 60°. As this statement of its solubility is very different from that of most writers, from Bergmann to Fourcroy, who say that it requires 80 parts of water at 60°, and somewhat less than 40 of boiling water, it is necessary to mention, that it was ascertained by careful experiment, with very fine crystals of tartar-emetic, more than half an inch in length, and perfectly free from the admixture of any foreign salt. The crystals, by exposure to the air, become white and opaque, but do not readily fall to powder. The property of deliquescing, ascribed to them by Götling, must have arisen from the presence of other salts, as he does not prepare his tartar-emetic by crystallization, but by evaporating the solution to dryness. The solution of tartar-emetic slightly reddens tincture of turnsole. It is decomposed by acids, alkalies, alkaline carbonats, sulphureted hydrogen and its compounds, vegetable juices, decoctions, and infusions, and many of the metals.

According to Thenard, tartar-emetic consists of tartrat of antimony 54, tartrat of potass 34, water 8, and loss 4; or, oxyd of antimony 38, tartaric acid 34, potass 16, water and loss 12; and by estimation from the analysis of tartrat of potass, and supertartrat of potass, by the same chemist, it appears, that to saturate 38 parts of protoxyd of antimony, 70.4 of supertartrat of potass are necessary: the whole of the superfluous acid, being 16, combines with the oxyd, while 34 of the tartrat of potass combine with the tartrat of antimony thus formed, and 20.4 of tartrat of potass remain in solution in the mother water. But Mr. Phillips found, that 100 parts of supertartrat of potass dissolve 70 of protoxyd of antimony.

From what has been said, it will appear, that without any fraudulent intention, tartar-emetic is often imperfect. Its goodness should be ascertained by taking a few crystals promiscuously from every fresh parcel, washing them in water, and then introducing each crystal separately into dilute solutions of sulphuret of potass, when, if the salt be perfect, a considerable orange precipitate will occur in each. But tartar-emetic is more commonly sold in the form of powder, to conceal its imperfections; this ought to be examined in the same way as the crystals; but as it may consist of a mixture of tartarized antimony and tartar, it ought to be rejected, if, in attempting to prepare with it the *liquor antimonii tartarizati*, it do not readily and totally dissolve in the water, and form a perfectly clear solution, previous to and after the addition of the wine.

We have been thus particular in the account of the preparation and chemical properties of tartar-emetic, because it is not only of all the preparations of antimony the most certain in its operation, but is almost indispensable for the successful practice of medicine.*

* Mr. Hume of Long Acre proposes the following method of making emetic tartar. Boil the common black sulphuret of antimony in nitric acid largely diluted with water. Wash the oxyd produced; then boil it with supertartrat of potass, filter, evaporate, crystallize. Tilloch. Ap. 1816.

Medical use.—In doses of from one to three grains it operates as an emetic, and sometimes as a cathartic. In smaller doses, it excites nausea, and proves a powerful diaphoretic and expectorant. As an emetic, it is chiefly given in the beginning of fevers and febrile diseases, in chincough, and, in general, whenever we wish to evacuate the stomach quickly. When great debility is present, and in the advanced stages of typhoid fever, its use is improper, and even sometimes fatal. As a diaphoretic, it is giving in small doses, or from an eighth to a quarter of a grain; and as an expectorant, in doses still smaller.

The only proper form for exhibiting it is in solution; and as the intensity of its action on the body is liable to variation, from differences in its own strength, and in the constitution of the patient, it should almost always be given in divided doses, at short intervals, if we wish to excite vomiting; and at longer intervals, if we wish it to act only on the skin or lungs.

Officinal Preparation.

Vinum Tartritis Antimonii, E. L. D. *vide Vina Medicata.*

ANTIMONIUM CALCINATUM. L.

Calcined Antimony.

Take of
Antimony, powdered, eight ounces;
Nitre, powdered, two pounds.
Mix them, and project the mixture by degrees into a red-hot crucible. Burn the white matter about half an hour; and, when cold, powder it; after which wash it with distilled water.

On touching the ignited crucible, this mixture deflagrates with a lively white flame; the antimony is oxydized to the maximum, the sulphur is acidified, and the nitre is decomposed and reduced to its base. The product of this deflagration is a lemon-coloured, scorified mass, which, after being washed with water, leaves the greater part of the oxyd of antimony united to about a fifth of its weight of potass; while the remainder of the oxyd, combined with a much larger proportion of potass, is dissolved in the water, along with the sulphat of potass formed, and a small quantity of nitre which has escaped decomposition. The peroxyd of antimony obtained by this process contains about 0.30 oxygen, is scarcely acted upon by acids, and is capable of forming, with the alkalies, crystallizable compounds, enjoying a determinate degree of solubility. It may therefore be considered as nearly approaching to the state of an acid, and the insoluble residuum of this process might be named super-antimonite of potass, and the dissolved portion, from its different proportions, antimonite of potass.

This is a preparation of no very great activity. It formerly bore the name of Diaphoretic antimony, from its supposed effect; but even that was doubted: and since the introduction of James's powder into general use, it has not been much employed. It may be given in doses of from five grains to half a drachm.

APIUM PETROSELINUM. *Radix. Ed.*

PETROSELINUM. *Radix, Semen.* L.

Parsley. The Root and Seed.

Willd. g. 63. *sp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

PARSLEY is a biennial plant, and a native of the South of Europe. It is very generally cultivated in this country for culinary purposes. The seeds have an aromatic flavour, and are occasionally made use of as carminatives. The taste of the root is somewhat sweetish, with a light degree of warmth and aromatic flavour, and it possesses gentle diuretic properties.

AQUA—*WATER.*

WATER does not enter the list of materia medica of any of the colleges, but it is so important an agent both in the cure of disease, and in the practice of pharmacy, that a brief account of its varieties and properties can scarcely be considered as superfluous.

Water consists of hydrogen, combined with oxygen in the proportion of 14.42, to 35.58, by weight, or 2 of hydrogen to one of oxygen, by volume. Water is transparent, colourless, inodorous, and insipid. As water is assumed as the standard, or unity, in all tables of specific gravity, it is necessary to know that a cubic inch of it weighs, at 30 inches of the barometer, and 60° thermometer, 252.422 grains. At 32° it exists in a solid form, and is crystallized. At 212° it expands to 2000 times its bulk, and is converted into a very elastic vapour. It absorbs small quantities of the simple gases, especially oxygen. It dissolves several of the salifiable bases, and in some degree all saline bodies, and is essential to their crystallization. It is composed and decomposed in many instances, and its chemical agency is almost universal. It is the only binary combination of hydrogen with oxygen,* at present known with certainty.

* Having already given an account of oxygen, it may be proper here to introduce the chemical properties of hydrogen, the other ingredient of water.

Hydrogen gas is often found collected in mines and caverns It is permanently elastic and compressible; 100 cubic inches weigh two and a quarter grains. Its specific gravity is 0.000094, being the lightest body with which we are acquainted. It is highly inflammable, and burns in contact with oxygen gas or atmospheric air, and detonates on the application of a burning body when mixed with them. It extinguishes flame, and is deleterious to animal life. It dissolves sulphur, phosphorus and carbon, and some of the metals, forming with them peculiar fetid gases. In estimating the specific gravity of the gases, it is assumed as unity.

PRIMARY COMPOUNDS OF HYDROGEN.

A. Binary,
- *a.* With oxygen; water.
- *b.* With nitrogen; ammonia.
- *c.* With sulphur, sulphureted hydrogen.
- *d.* With phosphorus; phosphureted hydrogen.

B. Ternary,
- *a.* With carbon and oxygen;
  1. Oxyds; hydro-carbonous oxyds, vegetable substances.
  2. Acids; vegetable acids.
- *b.* With sulphur and oxygen; sulphureted hydrogen.

C. Qua-

The purest natural water is snow, or rain water, collected in the open fields; that which falls in towns, or is collected from the roofs of houses, is contaminated with various impurities, although after it has rained for some time, the quantity of these diminishes so much, that Morveau says it may be rendered almost perfectly pure by means of a little barytic water, and exposure to the atmosphere. Rain water, after it falls, either remains on the surface of the earth, or penetrates through it until it meets with some impenetrable obstructions to its progress, when it bursts out at some lower part, forming a spring or well. The water on the surface of the earth either descends along its declivities in streams, which gradually wearing channels for themselves, combine to form rivers, which at last reach the sea; or remain stagnant in cavities of considerable depth, forming lakes or ponds; or on nearly level ground, forming marshes.

The varieties of spring water are exceedingly numerous; but they may be divided into the *soft*, which are sufficiently pure to dissolve soap, and answer the purposes of pure water in general; the *hard*, which contain earthy salts and decompose soap, and are unfit for many other purposes, both in domestic economy and in manufactures; and the *saline*, which are strongly impregnated with soluble salts. When spring waters possess any peculiar character, they are called mineral waters. River water is in general soft, as it is formed of spring water, which by exposure becomes more pure, and running surface water, which although turbid from particles of clay suspended in it, is otherwise very pure. Lake water is similar to river water. The water of marshes on the contrary is exceedingly impure, and often highly fetid, from the great proportion of animal and vegetable matters which is constantly decaying in them.

Mineral waters derive their peculiarity of character in general, either from containing carbonic acid, or soda, not neutralized, sulphureted hydrogen, purging salts, earthy salts, or iron, or from their temperature exceeding in a greater or less degree that of other surrounding bodies. The following are the most celebrated:

a. Warm springs.—Bath, Bristol, Buxton, Matlock, in England. Barege, Vichy, &c. in France. Aix-la-Chapelle, Borset, Baden, Carlsbad, and Toeplitz, in Germany; and Pisa, Lucca, Baia, and many others in Italy.

b. Carbonated springs.—Pyrmont, Seltzer, Spa, Cheltenham, Scarborough. *Saratoga*, *Ballston*.*

c. Alkaline.—Carlsbad, Aix-la-Chapelle, Barege, Toeplitz.

d. Sulphurous.—Engheim, Lu, Aix-la-Chapelle, Kilburn, Harrowgate, Moffat, and many in Italy.

e. Purging.—Sea water, Lemington Priors, Harrowgate, Lu, Carlsbad, Moffat, Toeplitz, Epsom, Sedlitz, Kilburn, and all brackish waters.

C. Quaternary,
With carbon, nitrogen, and oxygen:
1. animal oxyds.
2. ——— acids.

* Vide Dr. Meade's Experimental Enquiry into the chemical properties and medicinal qualities of the principal mineral waters of Ballston and Saratoga, in the state of New York.

f. Calcareous.—Matlock, Buxton, and all hard waters.
g. Chalybeate.—Hartfell, Denmark, Cheltenham, Pyrmont, Spa, Tunbridge, Bath, Scarborough, Vichy, Carlsbad, Lemington Priors.

Medical Use.—Water is an essential constituent in the organization of all living bodies; and as it is continually expended during the process of life, that waste must be also continually supplied, and this supply is of such importance that it is not left to reason or to chance, but forms the object of an imperious appetite. When taken into the stomach, water acts by its temperature, its bulk, and the quantity absorbed by the lacteals. Water at about 60° gives no sensation of heat or cold, between 60° and 45° it gives a sensation of cold followed by a glow and increase of appetite and vigour; below 45 the sensation of cold is permanent and unpleasant, and it acts as an astringent and sedative; above 60 it excites nausea and vomiting, probably by partially relaxing the fibres of the stomach, for when mixed with stimulating substances it has not these effects. In the stomach and the intestines it acts also by its bulk, producing the effects arising from the distention of these organs, and as the intestinal gases consist of hydrogen gas, either pure, or carbonated, or sulphureted, or phosphureted, it is probably in part, decomposed in them. It likewise dilutes the contents of the stomach and intestines, thus often diminishing their acrimony. It is absorbed by the lacteals, dilutes the chyle and the blood, increases their fluidity, lessens their acrimony, and produces *plethora ad molem*. Its effects in producing plethora and fluidity are however very transitory, as it at the same time increases the secretion by the skin and kidneys. Indeed the effects of sudorifics and diuretics depend in a great measure on the quantity of water taken along with them.

Mineral waters have also a specific action depending on the foreign substances which they contain. It is however necessary to remark that their effects are in general much greater than might be expected from the strength of their impregnations, owing probably to the very circumstance of their great dilution, by which every particle is presented in a state of activity, while the lacteals admit them more readily than they would in a less diluted state.

Carbonic acid gas gives to the waters which are strongly impregnated with it a sparkling appearance, and an agreeable degree of pungency. In its effects on the body it is decidedly stimulant, and even capable of producing a certain degree of transient intoxication. It is of great service in bilious complaints, atony of the stomach, nausea, and vomiting, and in all fevers of the typhoid type.

Alkaline waters produce also a tonic effect on the stomach, but they are less grateful. They are particularly serviceable in morbid acidity of the stomach, and in diseases of the urinary organs.

Sulphurous waters are chiefly used in cutaneous and glandular diseases. Their effects are stimulant and heating, and they operate by the skin or bowels.

Purging waters derive their effects from the neutral salts they contain, especially the muriats of soda, lime and magnesia, and the sulphats of soda and magnesia. They are much more frequently used for a length of time to keep the bowels open by exciting the natural action, than to produce full purging. Used in this way, instead of debilitating the patient, they increase his appetite, health and strength.

Chalybeate waters are used as tonics. They stimulate considerably, and increase the circulation, but as they also generally contain neutral salts, they act as gentle laxatives. They are used in all cases of debility, cachexia, chlorosis, fluor albus, amenorrhœa, and in general in what are called nervous diseases.

The external use of water depends almost entirely on its temperature, which may be

1. Greater than that of the body, or above 97° F. The hot bath.
2. Below the temperature of the body.
   a. From 97 to 85, the warm bath.
   b. From 85 to 65, the tepid bath.
   c. From 65 to 32, the cold bath.

The hot bath is decidedly stimulant in its action. It renders the pulse frequent, the veins turgid, the skin red, the face flushed, the respiration quick, increases animal heat, and produces sweat. If the temperature be very high, the face becomes bathed in sweat, the arteries at the neck and temples beat with violence, anxiety and a sense of suffocation are induced, and if persisted in, vertigo, throbbing in the head, and apoplexy, are the consequences. It is very rarely employed in medicine, except where there are hot springs, as at Baden in Switzerland. The Russians and some other nations use the hot bath as an article of luxury.

The effects of the affusion of hot water have not been ascertained, and it is probable that when the heat is not so great as to destroy the organization of the skin, the very transient application of the water would be more than counteracted by the subsequent evaporation.

With regard to the action arising from their temperature, all baths below 97° differ only in degree, as they all ultimately abstract caloric from the surface, but with a force inversely as their temperature.

The warm bath excites the sensation of warmth, partly because our sensations are merely relative, and partly because its temperature, though less than that of the internal parts of the body, is actually greater than that of the extremities which are the chief organs of touch. But as water being a much better conductor of caloric than air, and especially than confined air, as much caloric is abstracted from the body by water, which is only a few degrees lower than the internal temperature of the body, as by air of a much lower temperature. The warm bath diminishes the frequency of the pulse, especially when it has been previously greater than natural, and this effect is always in proportion to the time of immersion. It also renders the respiration slower, and lessens the temperature of the body, relaxes the muscular fibre, increases the bulk of the fluids by absorption, removes impurities from the surface, promotes the desquamation and renewal of the cuticle, and softens the nails and indurations of the skin.

The stimulant power of the warm bath is therefore very inconsiderable, and its employment in diseases will be chiefly indicated by preternatural heat of the surface and frequency of the pulse, rigidity of the muscular fibre, and morbid affections of the skin. It has accordingly been found serviceable in many cases of pyrexia, both febrile and exanthematous, in many spasmodic diseases, and in most of the impetigines. It is contra-indicated by difficulty of breathing, and internal organic affections, and should not be used when the stomach is full.

The affusion of warm water very generally produces a considerable diminution of heat, a diminished frequency of pulse and respiration, and a tendency to repose and sleep; but its effects are not very permanent, and its stimulus is weak. It is recommended in febrile diseases depending on the stimulus of preternatural heat, and in those attended with laborious respiration, and in the paroxysms of hectic fever.

As the tepid bath and affusion produce effects intermediate between those of warm and cold water, it is unnecessary to enumerate them.

The cold bath produces the sensation of cold, which gradually ceases, and is succeeded by numbness. It excites tremors in the skin, and shivering. The skin becomes pale, contracted, and acquires the appearance termed cutis anserina. The fluids are diminished in volume; the solids are contracted, the caliber of the vessels is lessened, and therefore numbness and paleness are induced, and the visible cutaneous veins become smaller. There is a sense of drowsiness and inactivity, the joints become rigid and inflexible, and the limbs are affected with pains and spasmodic contractions. The respiration is rendered quick and irregular; the pulse slow, firm, regular, and small; the internal heat is at first diminished, but gradually and irregularly returns nearly to its natural standard, the extremities, however, continue cold and numb, or swollen and livid; the perspiration is suppressed, and the discharge of urine is rendered more frequent and copious. If the cold be excessive on its application, long continued violent shiverings are induced, the pulse ceases at the wrist, the motion of the heart becomes feeble and languid, there is a sensation of coldness and faintness at the stomach, and a rapid diminution of animal heat; and at last delirium, torpor, and death, are the consequences. If the application of the cold bath be not carried to an excessive length, on emerging from the water, the whole body is pervaded by an agreeable sensation of warmth, and the patient feels refreshed and invigorated.

The primary action of the cold bath is stimulant, and the degree of this action is in proportion to the lowness of its temperature. This opinion is indeed directly opposite to a theory of cold which has been advanced with the confidence of demonstration. "Heat is a stimulus; cold is the abstraction of heat; therefore cold is the abstraction of stimulus, or is a sedative." To this we might oppose another theory, equally syllogistic, and nearer the truth: Free caloric is a stimulus, cold is the sensation excited by the passage of free caloric out of the body, therefore, cold is a stimulus.* But in fact the action of cold is by no means so simple, but is complicated, and varies according to its intensity, duration, and the state of the system to which it is applied. It acts, at first, as a stimulant in exciting sensation, then as a tonic in condensing the living fibre, and lastly, however paradoxical it may appear, as a sedative, by preventing that distribution of blood in the minute and ultimate vessels, which is necessary for the existence of sensibility and irritability.

The cold bath may be therefore so managed as to procure any of these effects, by regulating the length of time for which it is applied. It may be employed in fevers, and febrile paroxysms, when the heat is steadily above the natural standard, and in many diseases arising from relaxation and debility. It is contra-indicated when the heat of the body is below 97°, when there is any notable perspiration from the surface, when there is general plethora, and when any internal organ is diseased. Irritable habits should be defended from the violence of its action, by covering the body with flannel.

Cold affusion, or the pouring of cold water over the body, is a very convenient way of applying the cold bath in many cases. In this way cold is very suddenly applied to the surface, its operation is instantaneous and momentary, but may be continued by repeated affusions for any length of time, and so as to produce its extreme effects. Where the effects of cold affusion may be thought too severe, spunging the body with cold water, or water and vinegar, may be substituted.†

Pharmaceutical Preparation.

Aquæ Destillatæ, E. L. D. *vide Aquæ Destillatæ.*

It also enters into the composition of the greatest number of preparations.

AQUÆ DESTILLATÆ.

DISTILLED WATERS.

Substances which differ in volatility may be separated from each other by applying a degree of heat capable of converting the most volatile into vapour, and by again condensing this vapour in a proper apparatus. Water is converted into vapour at 212°, and may be separated by distillation from the earthy and saline matters which it

* This is certainly a syllogism of a very extraordinary nature! The question turns, it seems to me, on the proposition, Is cold material? According to our present ideas, we must say, no. It is incumbent then on the advocates of the stimulant effects of cold, to point out in what manner a *non-entity* can prove stimulating. They may, no doubt, evince their ingenuity in the explanation; but their arguments must be sophistical, whilst they admit the immateriality of cold.

† For a particular account of the medical use of the cold bath, &c. see the valuable work of Dr. Currie of Liverpool, on that subject.

always contains in a natural state. But it is evident, that if any substances which are as volatile as water, be exposed to the same degree of heat, either by immersing them in boiling water, or exposing them to the action of its steam, they will rise with it in distillation. In this way the camphor and volatile oils of vegetable substances are separated from the more fixed principles; and as water is capable of dissolving a certain quantity of these volatile substances, it may be impregnated with a great variety of flavours by distilling it from different aromatic substances. If the subject of our distillation contain more volatile oil than the water employed is capable of dissolving, it will render the water milky, and afterwards separate from it. It is in this way that essential oils are obtained.

Essential oils are obtained only from odoriferous substances; but not equally from all of this class, nor in quantity proportional to their degree of odour. Some, which, if we were to reason from analogy, should seem very well fitted for this process, yield extremely little oil, and others none at all. Roses and chamomile flowers, whose strong and lasting smell promises abundance, are found to contain but a small quantity of oil; the violet and jessamine flower, which perfume the air with their odour, lose their smell upon the gentlest coction, and do not afford any oil on being distilled, unless immense quantities are submitted to the operation at once; while savin, whose disagreeable scent extends to no great distance, gives out the largest proportion of oil of almost any vegetable known.

Nor are the same plants equally fit for this operation, when produced in different soils or seasons, or at different times of their growth. Some yield more oil if gathered when the flowers begin to fall off than at any other time. Of this we have examples in lavender and rue; others, as sage, afford the largest quantity when young, before they have sent forth any flowers; and others, as thyme, when the flowers have just appeared. All fragrant herbs yield a larger proportion of oil, when produced in dry soils and in warm summers, than in opposite circumstances. On the other hand, some of the disagreeable strong-scented ones, as wormwood, are said to contain most oil in rainy seasons, and when growing in moist rich grounds.

Several chemists have been of opinion, that herbs and flowers, moderately dried, yield a greater quantity of essential oil, than if they were distilled when fresh. It is, however, highly improbable, that the quantity of essential oil will be increased by drying; on the contrary, part of it must be dissipated and lost. But drying may sometimes be useful in other ways; either by diminishing the bulk of the subject to be distilled, or by causing it to part with its oil more easily.

The choice of proper instruments is of great consequence for the performance of this process to advantage. There are some oils which pass freely over the swan-neck of the head of the common still: others, less volatile, cannot easily be made to rise so high. For obtaining these last, we would recommend a large low head, having a rim or hollow canal round it: in this canal, the oil is detained in its first ascent, and thence conveyed at once into the receiver, the advantages of which are sufficiently obvious.

With regard to the proportion of water to be employed; if whole plants, moderately dried, are used, or the shavings of wood, as much of either may be put into the vessel as, lightly pressed, will occupy half its cavity; and as much water may be added as will fill two-thirds of it. When fresh and juicy herbs are to be distilled, thrice their weight of water will be fully sufficient; but dry ones require a much larger quantity. In general, there should be so much water, that after all intended to be distilled has come over, there may be liquor enough left to prevent the matter from burning to the still. The water and ingredients, altogether, should never take up more than three-fourths of the still; there should be liquor enough to prevent any danger of an empyreuma, but not so much as to be apt to boil over into the receiver.

The subject of distillation should be macerated in the water until it be perfectly penetrated by it. To promote this effect, woods should be thinly shaved across the grain, or sawn, roots cut transversely into thin slices, barks reduced into coarse powder, and seeds slightly bruised. Very compact and tenacious substances require the maceration to be continued a week or two, or longer; for those of a softer and looser texture, two or three days are sufficient; while some tender herbs and flowers not only stand in no need of maceration, but are even injured by it. The fermentation which was formerly prescribed in some instances, is always hurtful.

With regard to the fire, the operator ought to be expeditious in raising it at first, and to keep it up during the whole process, to such a degree only, that the oil may freely distil; otherwise the oil will be exposed to an unnecessary heat; a circumstance which ought as much as possible to be avoided. Fire communicates to all these oils a disagreeable impregnation, as is evident from their being much less grateful when newly distilled, than after they have stood for some time in a cool place: and the longer the heat is continued, the greater alteration it produces in them.

The greater number of oils require for their distillation the heat of water strongly boiling: but there are many also which rise with a heat considerably less; such as those of lemon and citron peel; of the flowers of lavender and rosemary, and of almost all the more odoriferous kinds of flowers. We have already observed, that these flowers have their fragrance much injured, or even destroyed, by beating or bruising them; it is impaired also by the immersion in water in the present process, and the more so in proportion to the continuance of the immersion and the heat; hence oils, distilled in the common manner, prove much less agreeable in smell than the subjects themselves. For the distillation of substances of this class, another method has been contrived; instead of being immersed in water, they are exposed only to its vapour. A proper quantity of water being put into the bottom of the still, the odoriferous herbs or flowers are laid lightly in a basket, of such a size that it may enter into the still, and rest against its sides, just above the water. The head being then fitted on, and the water made to boil, the steam, percolating through the subject, imbibes the oil, without impairing its fragrance, and carries it over into the receiver. Oils thus obtained, possess the odour of the subject in an exquisite degree, and have nothing of the disagreeable scent preceivable in those distilled by boiling them in water in the common manner.

Plants differ so much, according to the soil and season of which they are the produce, and likewise according to their own ages, that it is impossible to fix the quantity of water to be drawn from a certain weight of them to any invariable standard. The distillation may always be continued as long as the liquor runs well flavoured off the subject, but no longer.

In the distillation of essential oils, the water, as was observed in a foregoing section, imbibes always a part of the oil. The distilled liquors here treated of, are no other than water thus impregnated with the essential oil of the subject; whatever smell, taste, or virtue, is communicated to the water, or obtained in the form of watery liquor, being found in a concentrated state in the oil.

All those vegetables, therefore, which contain an essential oil, will give over some virtue to water by distillation: but the degree of the impregnation of the water, or the quantity of water which a plant is capable of saturating with its virtue, are by no means in proportion to the quantity of its oil. The oil saturates only the water that comes over at the same time with it: if there be more oil than is sufficient for this saturation, the surplus separates, and concretes in its proper form, not miscible with the water which arises afterwards. Some odoriferous flowers, whose oil is in so small quantity that scarcely any visible mark of it appears, unless fifty or a hundred pounds or more are distilled at once, give nevertheless as strong an impregnation to water as those plants which abound most with oil.

Many have been of opinion, that distilled waters may be more and more impregnated with the virtues of the subject, and their strength increased to any assigned degree, by *cohobation*, that is, by re-distilling them repeatedly from fresh parcels of the plant. Experience, however, shows the contrary. A water skilfully drawn in the first distillation, proves on every repeated one not stronger but more disagreeable. Aqueous liquors are not capable of imbibing above a certain quantity of the volatile oil of vegetables; and this they may be made to take up by one, as well as by any number of distillations: the oftener the process is repeated, the ungrateful impression which they generally receive from the fire, even at the first time, becomes greater and greater.

Those plants, which do not yield at first waters sufficiently strong, are not proper subjects for this process.

The mixture of water and oil which comes over, may either be separated immediately by means of a separatory, or after it has been put into large narrow-necked bottles, and placed in a cool place, that the portion of oil which is not dissolved in the water may rise to the top, or sink to the bottom, according to its specific gravity. It is then to be separated, either by a separatory; by means of a small glass syringe; a filter of paper, or, lastly by means of a woollen thread, one end of which is immersed in the oil, and the other lower end in a phial: the oil will thus pass over into the phial by capillary attraction, and the thread is to be squeezed dry.

Most distilled waters, when first prepared, have a somewhat unpleasant smell, which, however, they gradually lose: it is therefore advisable to keep them for some days after their preparation in vessels but slightly covered; and not to cork them up until they lose that smell.

That the waters may keep the better, about one-twentieth part their weight of proof spirit may be added to each after they are distilled. A respectable apothecary informed Dr. Duncan, that if the simple distilled waters be rectified by distilling them a second time, they will keep for several years without the addition of any spirit, which always gives an unpleasant flavour, and is often objectionable for other reasons.

Distilled waters are employed chiefly as grateful diluents, as suitable vehicles for medicines of greater efficacy, or for rendering disgustful ones more acceptable to the palate and stomach: few are depended on, with any intention of consequence, by themselves.

To the chapter on Simple Distilled Waters, the London college has annexed the following remarks.

THE waters are to be distilled from the dried herbs, because fresh are not ready at all times of the year. Whenever the fresh are used, the weights are to be doubled.

To every gallon of these waters add five ounces, by measure, of proof spirit, to preserve them.

The Edinburgh and Dublin colleges order half an ounce of proof spirit to every pound of the water, which is nearly the same.

AQUA DESTILLATA. E.L.D.

Distilled Water.

Let water be distilled in very clean vessels, until about two-thirds have come over. (E.)

WATER is never found pure in a state of nature; and as it is absolutely necessary, particularly for many chemical operations, that it should be perfectly so, we must separate it from all heterogeneous matters by distillation. The first portion that comes over should be thrown away, not so much from the possibility of its being impregnated with volatile matters contained in the water, as from the probability that it will be contaminated with impurities it may have contracted in its passage through the worm in the refrigeratory. The distillation is not to be pushed too far, lest the water should acquire an empyreumatic flavour.

AQUA CITRI AURANTII. *Ed.*

Orange-Peel Water.

Take of

Fresh orange-peel, two pounds.

Pour upon it as much water as shall be sufficient to prevent any empyreuma, after ten pounds have been drawn off by distillation. After due maceration, distil ten pounds.

AQUA FOENICULI DULCIS. *Dub.*

Fennel Water.

Take of
The bruised seeds of sweet fennel, one pound;
Water, as much as may be sufficient to prevent empyreuma.
Distil one gallon.

In the same manner, and in the same quantity, prepare

Aqua	Water of
Anethi. *Lond.*	Dill, *from one pound of the seeds bruised.*
Carui. *Lond.*	Caraway, *from one pound of the seeds bruised.*
Citri Aurantii. *Ed.*	Orange-peel, *from two pounds fresh.*
Citri Medicæ. *Ed.*	Lemon-peel, *from two pounds of the fresh peel.*
Foeniculi Dulcis. *Dub.*	Sweet Fennel, *from one pound of the seeds bruised.*
Lauri Cassiæ. *Ed.*	Cassia, *from one pound of the bark bruised.*
Cinnamomi. *Lond.*	Cinnamon, *from one pound of the bark bruised, and macerated for twenty-four hours in a pint of water.*
Menthæ Piperitæ. *Ed.*	Peppermint, *from three pounds of the herb in flower.*
Menthæ Pulegii. *Ed.*	Pennyroyal, *from three pounds of the herb in flower.*
Menthæ Sativæ. *Dub.* ——— Viridis. *Lond.*	Spearmint, *one pound and a half.*
Pimentæ. *Lond.*	Pimento, *from half a pound bruised, and macerated for twenty-four hours in a pint of water.*
Rosæ Centifoliæ. *Ed.*	Rose, *from six pounds of the recent petals.*

The virtues of all these waters are nearly alike; and the peculiarities of each will be easily understood by consulting the account given of the substance from which they are prepared. Mr. Nicholson mentions, that as rose water is exceedingly apt to spoil, the apothecaries generally prepare it in small quantities at a time from the leaves, preserved by packing them closely in cans with common salt. This we understand is not the practice in Edinburgh, and indeed cannot succeed with the petals of the damask rose, for they lose their smell by drying. The London apothecaries, therefore, probably use the red rose. The spoiling of some waters is owing to some mucilage carried over in the distillation; for, if rectified by a second distillation, they keep perfectly.

ARALIA SPINOSA.

Angelica tree, Prickly Ash, Tooth-ach tree.

"This is a native of Virginia, and other southern states. The height to which this tree will grow, when the soil and situation wholly agree with it, is about twelve feet. It is a very ornamental shrub, and the stem, which is of a dark brown colour, is defended by sharp prickly spines."

In the second volume of the Philadelphia Medical Museum, p. 161, Dr. Mease recommends a watery infusion of the inner bark and root to remove the pains of chronic rheumatism. It is considerably acrimonious, and affects the salivary glands. A weak infusion proves sudorific, and does not nauseate, which a strong one generally does.

The berries, and a tincture of them, have been successfully applied to obviate the aching of decayed teeth. A spiritous infusion of the berries is employed in Virginia in violent colic.

ARALIA NUDICAULIS.

Dr. Mease, in the second volume of the Philadelphia Medical Museum, recommends the roots as a substitute for sarsaparilla.

A watery infusion, he tells us, is employed in some parts of this country for the shingles.

It is useful also as a tonic, in a relaxed state of the stomach with loss of appetite.

ARBUTUS UVA URSI. *Folia. Ed.*

Uva Ursi. *Folia.* L. D.

Bearberry—Whortleberry. Red-berried trailing Arbutus.
The leaves.

Willd. g. 871. *sp.* 7. *Smith, g.* 203. *sp.* 3.—*Decandria Monogynia.*—
Nat. ord. *Bicornes.*

This is a very small evergreen shrub. The leaves are oval, not toothed, and their under surface is smooth and pale green. It grows wild in the woods, and on sand hills in Scotland, and in almost every country in Europe. It is also abundant in America. The taste of the leaves is astringent, followed by bitterness. Digested in alcohol they give out a green tincture, which is rendered turbid by water, and when filtered, passes transparent and yellow, while a green resin remains on the filter. They are powerfully astringent, approaching in the deepness of the colour which they give to red sulphat of iron, more nearly to nutgalls than any substance Dr. Duncan tried. Indeed in some parts of Russia they are used for tanning.

Medical use.—The medical effects of this medicine depend entirely on its astringent and tonic powers. It is therefore useful in various fluxes arising from debility, menorrhagia, fluor albus, cystirrhœa, diabetes, enuresis, diarrhœa, dysentery, &c. It has been strongly recommended in diseases of the urinary organs by De Haen, particularly in ulcerations of the kidneys and bladder. It certainly alleviates the dyspeptic symptoms accompanying nephritic complaints. It is commonly given in the form of powder, in doses of from 20 to 60 grains, three or four times a day.

Dr. Barton thinks it is peculiarly adapted to cases of nephritis depending upon gout, and he says he has known it to be useful even when it was ascertained that a calculus was present. Its use he thinks facilitates the expulsion of calculous granules through the urethra. In some cases of nephritis, however, he adds, uva ursi seems to increase the irritation which it so generally relieves.* It has of late been recommended in phthisis.

ARCTIUM LAPPA. *Radix. Ed.*

BARDANA. *Radix.* L. D.

Burdock. Clit-Bur. The root and seeds.

Willd. g. 1429. *sp.* 1. *Smith, g.* 352. *sp.* 1. *Syngenesia Polygamia Æqualis.* Nat. ord. *Compositæ Capitatæ.*

THIS is a perennial plant, which grows wild in uncultivated places. The seeds have a bitterish subacrid taste: they are recommended as very efficacious diuretics, given either in the form of emulsion, or in powder, to the quantity of a drachm. The roots taste sweetish, with a slight austerity and bitterishness: they are esteemed aperient, diuretic and sudorific; and are said to act without irritation, so as to be safely ventured upon in acute disorders. Decoctions of them have of late been used in rheumatic, gouty, venereal, and other disorders: and are preferred by some to those of sarsaparilla.

* For further observations, see Dr. John S. Mitchell's inaugural dissertation on the Arbutus Uva Ursi, &c. published at Philadelphia in 1803.

ARGENTUM—*ARGENTUM. E.L. Silver.*

ARGENTUM IN LAMINAS EXTENSUM. D.

Silver.—Silver Leaf.

D.	*Zilver.*	P.	*Prata.*
DA.	*Zölv.*	POL.	*Srebro.*
F.	*Argent.*	R.	*Screbro.*
G.	*Silber.*	S.	*Plata.*
I.	*Argento.*	SW.	*Silfver.*

SILVER is very brilliant, white, insipid, inodorous; specific gravity 10.474 to 11.091; hardness between iron and gold; elasticity between gold and copper; has a strong acute sound; of considerable ductility and tenacity; hardening much under the hammer; a good conductor of electricity, caloric, and galvanism, fusible at 28° Wedgwood; crytallizable by cooling; unalterable in the air; changed into a greenish oxyd by long and violent heat, burning with a greenish flame, and instantly by the electric shock. Its phosphuret is granulated, brittle and fusible; its sulphuret grey, black, lamellated or striated and fusible; it unites but slightly with the acidifiable metals and iron; is hardened by gold, bismuth, antimony, tin, lead, and copper, and amalgamates with mercury. It is oxydized, and dissolved by the sulphuric, sulphurous, nitric, and oxy-muriatic acids. Its oxyd is olive; reducible by light and heat, hydrogen, and the other metals; it colours some glasses of an olive green, and is very soluble in ammonia.

Silver is found,

I. In its metallic state:
1. Pure.
2. Alloyed with gold. Auriferous silver ore.
3. ———— antimony.
4. ———— iron and arsenic.
5. ———— bismuth.

II. Combined with sulphur:
1. Sulphureted silver. Vitreous silver ore.
2. ———— with antimony, iron, arsenic and copper. Black or brittle silver ore.
3. ———— with copper and antimony. Black silver ore.
4. ———— with lead and antimony. White silver ore.

III. Oxydized:
1. Combined with carbonic acid and antimony.
2. ———— muriatic acid.
a. Corneous silver ore,
b. Earthy silver ore,
c. Sooty silver ore.

3. Combined with sulphur and oxyd of antimony. Red silver ore.
4. ———— molybdic acid.

Officinal Preparation.
Nitras Argenti, E. L. D.

NITRAS ARGENTI; olim, Causticum Lunare. *Ed.* L. D.

Nitrat of Silver, formerly *Lunar Caustic.*

Take of
Purest silver, flatted into plates, and cut in pieces, four ounces;
Diluted nitrous acid, eight ounces;
Distilled water, four ounces.

Dissolve the silver in a phial with a gentle heat, and evaporate the solution to dryness. Then put the mass into a large crucible and place it on the fire, which should at first be gentle, and afterwards increased by degrees till the mass flows like oil; then pour it into iron-pipes, previously heated and anointed with tallow. Lastly, keep it in a glass-vessel well shut. (E.)

The acid employed must be very pure. If it contain, as the acid of commerce always does, sulphuric or muriatic acid, these re-act upon the nitrat as soon as it is formed, and a white precipitate, consisting of sulphat and muriat of silver, falls to the bottom.

The method which the refiners employ for examining the purity of their aquafortis (the name they gave to diluted nitrous acid,) and purifying it if necessary, is to let fall into it a few drops of a solution of nitrat of silver already made: if the liquor remain clear, and grow not in the least turbid or whitish, it is fit for use; otherwise, they add a small quantity more of the solution, which immediately turns the whole to a milky white colour; the mixture being then suffered to rest for some time, deposits a white sediment; from which it is cautiously decanted, examined again, and, if necessary, farther purified by a fresh addition of this solution.

It is necessary to employ very pure water in this process, for the muriats and earthy salts which common water generally contain, precipitate part of the silver in a state of a muriat or oxyd. If distilled water be not used, the water should be added to the acid before it be tried and purified by the nitrat of silver.

The solution will go on the more speedily, if the silver, flatted into thin plates, be rolled loosely up, so that the several surfaces do not touch each other. By this management, a greater extent of the surface is exposed to the action of the menstruum, than when the plates are cut in pieces and laid above each other. If the silver be alloyed with copper, the solution will have a permanent greenish blue colour, and acquire a bright blue on the addition of ammonia. If it contain gold, the gold is not dissolved, but is found at the bottom of the solution, in the form of a black or deep purple powder.

The crucible ought to be of porcelain; as, with the common crucibles, the loss arising from the nitrat of silver sinking into their substance is too great. It ought also to be large enough to hold five or six times the quantity of the dry matter; for it bubbles and swells up greatly, so as otherwise to be apt to run over. During this time, also, little drops are now and then spirted up; whose causticity is increased by their heat, against which the operator ought therefore to be on his guard. The fire must be kept moderate till this ebullition ceases, and till the matter becomes consistent in the heat that made it boil before: then quickly increase the fire till the matter flows thin at the bottom like oil, on which it is to be immediately poured into the mould; for if the heat be continued after this, the nitrat of silver begins to be decomposed, and the silver is reduced.

In want of a proper iron mould, one may be formed of tempered tobacco pipe clay, not too moist, by making, in a lump of it, with a smooth stick, first greased, as many holes as there is occasion for: pour the liquid matter into these cavities, and when congealed take it out by breaking the mould. Each piece is to be wiped clean from the grease, and wrapt up in soft dry paper, not only to keep the air from acting upon it, but likewise to prevent its corroding or discolouring the fingers in handling.

Nitrat of silver is crystallizable. Its crystals are brilliant plates, having a variable number of sides. Their taste is austere, and intensely bitter. They are very soluble in water, but permanent in the air, and not deliquescent. They are decomposed by heat, light, phosphorus, charcoal, many metals, all the alkalies and earths, sulphuric, muriatic, phosphoric and fluoric acids, and by the salts they form. When deprived of water, and melted according to the directions of the colleges, it forms a black or dark grey coloured mass, which, when broken, appears to consist of radii, diverging from the centre. It is not deliquescent when free from copper, which is seldom the case. It may, however, be prepared perfectly pure, even from a solution containing copper, by evaporating and crystallizing it as long as it furnishes firm tabular crystals. These are then to be washed with a little distilled water, and melted with a gentle heat. The nitrat of copper remains in the mother water, and the silver, which it contains, may be precipitated with muriatic acid.

Medical use.—A strong solution of nitrat of silver corrodes and decomposes animal substances; in a more diluted state it stains them of an indelible black; and for this purpose it is now much used as an indelible marking ink.* The fused nitrat of silver is the strongest and most manageable caustic we posses, and is employed to remove fungous excrescences, callous edges, warts, strictures in the urethra, and the like. It is also used to destroy the venereal poison in chancres, before it has acted on the system. A weak solution of it may be applied as a stimulus to indolent ulcers, or injected into fistulous sores.

Notwithstanding its causticity, it has been given internally. Boerhaave, Boyle, and others, commend it highly in hydropic cases. The

* See a preparation of one, by professor Woodhouse. Philadelphia Medical Museum, vol. I.

former assures us, that made into pills with crumb of bread and a little sugar, and taken on an empty stomach (some warm water sweetened with honey being drank immediately after,) it purges gently without griping, and brings away a large quantity of water, almost without the patient's perceiving it: that it kills worms and cures many inveterate ulcerous disorders. He nevertheless cautions against using it too freely, or in too large a dose; and observes, that it always proves corrosive and weakening to the stomach.

It has been more recently employed, and with success, in epilepsy and angina pectoris. On account of its very great activity, each pill should not contain above one-eighth or one-fourth of a grain.

This article has been employed with considerable advantage in epilepsy, according to the accounts of many respectable physicians. It has been given to the extent of eight grains in twenty-four hours to a child of eight years old. It might deserve inquiry whether it does not meet with muriatic acid, in some form or other, in the stomach, and thereby become decomposed.—Quere? What effect would the muriat of silver have as a medicine? has it ever been tried? and if the above surmise of its decomposition in the stomach is true, is it not the muriat that produces the effect?

ARISTOLOCHIA SERPENTARIA. *Radix. Ed.* L. D.

Virginia Snake-root. The Root.

Willd. g. 1609. *sp.* 27. *Gynandria Hexandria.*—Nat. ord. *Sarmentosæ.*

This is a small, light, bushy root, consisting of a number of strings or fibres matted together, issuing from one common head; of a brownish colour on the outside, and paler or yellowish within. It has an aromatic smell, like that of valerian, but more agreeable: and a warm bitterish, pungent taste, very much resembling that of camphor. Treated with alcohol, it affords a bright green tincture, which is rendered turbid by water; by filtration a small portion of a green matter is separated, but its transparency is not restored. It neither precipitates tannin or gelatin, nor affects the salts of iron or tincture of turnsole. When the diluted tincture is distilled, the spirit and tincture pass over milky, strongly impregnated with its peculiar flavour.

Medical use.—Its virtues are principally owing to the essential oil with which it abounds. Its general action is heating and stimulant; its particular effects, to promote the discharge by the skin and urine. In its effects it therefore coincides with camphor, but seems to be a more permanent stimulus.

It is recommended,

1. In intermittent fevers, especially when the paroxysms do not terminate by sweating; and to assist the action of Peruvian bark in obstinate cases.
2. In typhus, and in putrid diseases, to support the *vis vitæ*, and to excite gentle diaphoresis.
3. In exanthematous diseases, when the fever is of the typhoid

type, to support the action of the skin, and keep out the eruption.

4. In grangrene. Externally it is used as a gargle in the putrid sore throat.

It is exhibited,

1. In powder, which is the best form, in doses of twenty or thirty grains.
2. In infusion with wine or water. By decoction its powers are entirely destroyed.

It is often combined with Peruvian bark, or with camphor.*

Officinal Preparations.

Tinctura Aristolochiæ Serpentariæ, E. L. D.		*vide Tincturæ.*
Cinchonæ compositæ, L. D.	-	*Idem.*
Electuarium Opiatum, E.	- - - -	*Electuaria.*
Cataplasma Cumini, L.	- - - -	*Castaplasmata.*

ARNICA MONTANA. *Flores, Radix.* E. D.

German Leopards-bane. The flowers, and root.

Willd. g. 1491. *sp.* 1. *Syngenesia Polygamia superflua.*—Nat. ord. *Compositæ radiatæ.*

Leopard's-bane is a very common perennial plant in the alpine parts of Germany, Sweden, Lapland, and Switzerland. The flowers, which are of a yellow colour and compound, consisting entirely of tubular florets, are distinguished from similar flowers, with which they are often mixed, from ignorance or fraud, by the common calyx, which is shorter than the florets, and consists entirely of lancet-shaped scales, lying parallel and close to each other, of a green colour, with purple points. The calyx of the different species of Inula are composed of bristle-shaped scales, reflected at the points, and beset with hairs. The florets of the genus Hypochæris are strap-shaped.

These flowers have a weak bitterish taste, evidently combined with a degree of acrimony, and when rubbed with the fingers, have a somewhat aromatic smell. Their active constituents are not sufficiently ascertained. They evidently contain a great deal of resin, and some essential oil, and Bouillon Lagrange says, uncombined gallic acid.

Medical use.—In their effects they are stimulating, and supposed to be discutient. In small doses, and properly administered, they possess very beneficial effects, in raising the pulse, in exciting the action of the whole sanguiferous system, in checking diarrhœas, in promoting expectoration, and, most particularly, in removing paralytic affections of the voluntary muscles; but their use is frequently attended with no sensible operation, except that in some cases of para-

* Professor Barton says the root of the aristolochia sipho of L'Heritier, which grows in various parts of the United States, is, for certain purposes, perhaps preferable to the common snake root.

lysis, the cure is said to be preceded by a peculiar prickling, and by shooting pains in the affected parts. When given improperly, or in too large doses, they excite an insupportable degree of anxiety, shooting and burning pains, and even dangerous hæmorrhages, vomiting, vertigo, and coma. For these dangerous symptoms, vinegar is said to be the best remedy.

They have been recommended,

1. In paralytic disorders, in chronic rheumatism, in retention of the urine from paralysis of the bladder, in amaurosis.
2. In intermittent fevers, combined with Peruvian bark.
3. In dysentery and diarrhœa, but in some cases they have had bad effects.
4. In putrid diseases.
5. In typhoid inflammations.
6. To promote the uterine discharge.
7. And in internal pains, and congestions from bruises. In the countries where they are indigenous, the flowers of the leopards-bane have long been a popular remedy in these accidents.

They are contra-indicated by an inflammatory diathesis, a predisposition to hæmorrhagies, and internal congestions.

They are best exhibited in the form of infusion. One or two scruples may be infused with half a pound of water, and drunk at proper intervals. The flowers should be wrapt up in a piece of linen, as otherwise their down is apt to be diffused in the liquid, and to cause violent irritation of the throat.

The dried root of this plant is about the thickness of a small quill, and sends out fibres along one side. Externally it is rough, and of a red-brown colour, internally of a dirty white. Its taste is acrid, and slightly bitter. Neumann extracted from 960 parts, 840 watery extract, and 5 alcoholic, and inversely 270 alcoholic, and 540 watery.

Medical use.—It is exhibited in the same manner and circumstances as the flowers, but it is more apt to excite vomiting. In powder its dose is from five to ten grains.

ARSENICUM—*ARSENIC.*

D.	*Arsenik, Rottekruid.*	P.	*Arsenico.*
DA.	*Arsenik, Rottekrud.*	POL.	*Arsenik.*
F.	*Arsenic, Poudre aux rats.*	R.	*Müschjak.*
G.	*Arsenik.*	S.	*Arsenico.*
I.	*Arsenico.*	SW.	*Arsenik, Rotpulver.*

Arsenic consists of gray plates of a lively brightness; friable; specific gravity between 8.310 and 5.703; vaporizable at 540°; emitting a smell like garlic; crystallizable; oxydizable in the cold air; inflammable at a red heat, and sublimed in the form of a white oxyd or acid; farther oxydizable by the nitric and nitrous acids; combines with phosphorus, sulphur, and many of the metals; soluble in hydrogen gas.

Arsenic is found,

I. In its metallic state:
 1. Alloyed with iron. Native arsenic.
 2. ———— iron and gold.
 3. ———— cobalt.
 4. Combined with iron and sulphur. Arsenical pyrites.
 5. Combined with iron, sulphur and silver. White arsenical pyrites.

II. Oxydized:
 1. Uncombined. White oxyd of arsenic. Arsenous acid.
 2. Combined with sulphur:
  a. Oxyd of arsenic 90, sulphur 10, Orpiment. Yellow sulphureted arsenic.
  b. Oxyd of arsenic 84, sulphur 16, Realgar. Red sulphureted arsenic.

III. Acidified and combined,
 1. With lime.
 2. With copper.
 3. With iron.
 4. With lead.
 5. With nickel.
 6. With cobalt.

OXYDUM ARSENICI. *Ed. L.*

Arsenicum. Oxydum Album. *Dub.*

Oxyd of Arsenic. (*Arsenous acid, Fourcroy.*)

This substance, which was formerly named, improperly, arsenic, is most generally obtained in the process of roasting the ores of cobalt in Saxony. The roasting is performed in a kind of reverberatory furnace, with which a very long chimney is connected, lying in a horizontal direction. The arsenous acid is condensed in it in the form of a loose grey powder, which, by a second sublimation with a little potass, and in a great degree of heat, coalesces into a firm vitreous sublimate, which gradually becomes opaque by exposure to the air. In this state it is the white arsenic of commerce, or, as it should be termed, the arsenous acid. For internal use, the lumps of a shining appearance and dazzling whiteness should be chosen; but it is generally offered for sale in the form of powder, which is very often mixed with chalk or gypsum. The fraud is easily detected by exposing it to heat. The arsenous acid is entirely sublimed, and the additions remain behind.

As this substance is one of the most virulent poisons, we shall give a full account of its properties. It is white, compact, brittle, and of a glassy appearance. Its taste is sweetish, but acrid, and slow in manifesting itself. Its specific gravity 3.706. It sublimes entirely when exposed to 283° Fahrenheit. When the operation is performed in close vessels, the arsenous acid assumes a glassy appearance, which it soon loses on exposure to the air. Its specific gravity now becomes 5.000.

It consists of 75 of arsenic, and 25 of oxygen. In open vessels it sublimes in dense white fumes, smelling strongly of garlic. If a plate of copper be exposed to the fumes, it is whitened. Arsenous acid is soluble in 80 parts of water at 60° and in 15 at 212°. This solution has an acrid taste, and reddens vegetable blues. It is also soluble in 80 parts of boiling alcohol. From either solution it may be obtained regularly crystallized in tetrahedrons. From its solutions a white precipitate is thrown down by lime-water, a yellow precipitate by sulphureted hydrogen, or water impregnated with it, or by any alkaline sulphuret or hydro-sulphuret, and, still more characteristically, a fine green precipitate by a solution of sulphat of copper, and a copious yellow precipitate by a solution of nitrat of silver. But as the addition of an alkali, in order to saturate the acid, is necessary to the success of these metallic tests, the liquid ammoniarets of copper and of silver are preferable, and indeed the best fluid tests we possess. Mixed with a little sulphur, it sublimes of an orange or red colour. When treated with nitric acid, the arsenous acid is converted into arsenic acid. But by far the surest test of the presence of arsenic, is its reduction by carbonaceous substances. With this view, a small quantity of any suspected substance may be mixed with some carbonaceous or fatty or oily matter, and introduced within a tube closed at the bottom, and exposed to a red heat; if arsenic be present in any state, it will be sublimed in the form of brilliant metallic scales. By means of a small tube and a blowpipe, a very small quantity may be detected in this way. If arsenic be reduced between copper plates, or in contact with copper-filings, it whitens them, and, lastly, the fumes of reduced arsenic have a strong alliaceous smell.

Arsenous acid is used by the dyers; as a flux in glass-making, in docimastic works, and in some glazes. Arsenous sulphurets are much used by painters, but these advantages are not able to compensate for its bad effects. In mines, it causes the destruction of numbers who explore them; being very volatile, it forms a dust, which affects and destroys the lungs, and the unhappy miners, after a languishing life of a few years, all perish sooner or later. The property which it possesses of being soluble in water, increases and facilitates its destructive power; and it ought to be proscribed in commerce, by the strict law which prohibits the sale of poisons to unknown persons.* Arsenous acid is every day the instrument by which victims are sacrificed, either by the hand of wickedness or imprudence. It is often mistaken for sugar; and these mistakes are attended with the most dreadful consequences. The symptoms which characterize this poison are, a great constriction of the throat, the teeth set on edge, and the mouth strongly heated, an involuntary spitting, with extreme pains in the stomach, vomiting of glareous and bloody matter, with cold sweats and convulsions.

On dissection, the stomach and bowels are found to be inflamed, gangrenous and corroded, and the blood is fluid. Soon after death,

* It appears to be a very useless provision of the law to prohibit the sale of arsenic or other poisonous substances; a person intent on suicide, or on the destruction of others, can never be at a loss for means to carry his designs into execution, even if he is shut out from obtaining the poison above adverted to.

livid spots appear on the surface of the body, the nails become blue, and often fall off along with the hair, the epidermis separates, and the whole body becomes very speedily putrid When the quantity is so very small as not to prove fatal, tremors, palsies, and lingering hectics succeed.

Mucilaginous drinks have been long ago given to persons poisoned by arsenic. Milk, fat, oils, and butter, have been successively employed. Mr. Navier has proposed a more direct counterpoison. He prescribes one drachm of sulphuret of potass to be dissolved in a pint of water, which the patient is directed to drink at several draughts: the sulphur unites to the arsenic, and destroys its causticity and effects. When the first symptoms are alleviated, he advises the use of sulphurous mineral waters. He likewise approves the use of milk, but condemns oils. Vinegar which dissolves arsenic, has been recommended by M. Sage, but upon what grounds we know not.

According to Hahneman a solution of soap is the best remedy. One pound of soap may be dissolved in four pounds of water, and a cupful of this solution may be drunk lukewarm every three or four minutes.

The experiments however, detailed by Orfila in his treatise on poisons, seem to evince that little confidence is to be placed in the above treatment; and indeed unless the arsenic is discharged from the stomach, the only change ensuing is the formation of a sulphuret of arsenic in place of the oxyd, but which is also a poison of great activity. It has been of late asserted by Mr. Bertrand that charcoal was capable of arresting the deleterious action of both arsenic and corrosive sublimate: but this is fully disproved by the experiments of Orfila on the subject. See his Toxicology, Vol. I. p. 497, &c.

Medical use.—Notwithstanding, however, the very violent effects of arsenous acid, it has been employed in the cure of diseases, both as applied externally, and as taken internally. Externally it has been chiefly employed in cases of cancer.

Justamond used an ointment composed of four grains of white oxyd of arsenic, ten grains of opium, and a drachm of cerate, and spread very thin upon linen. But its action is tedious. He also fumigated cancerous sores with sulphuret of arsenic, with a view to destroy their intolerable fetor, with great success. Le Febure washed cancerous sores frequently in the course of the day, with a solution of four grains of arsenous acid in two pounds of water. Arneman recommends an ointment of one drachm of arsenous acid, the same quantity of sulphur, an ounce of distilled vinegar, and an ounce of ointment of white oxyd of lead, in cancerous, and obstinate, ill-conditioned sores, and in suppurated scrofulous glands. The arsenous acid has even been applied in substance, sprinkled upon the ulcer. But this mode of using it is excessively painful, and extremely dangerous. There have been even fatal effects produced from its absorption *

The principal thing to be attended to in arsenical applications, is

* It appears by experiments of Brodie and others, that it is even more fatal when externally applied to a wounded surface, than when taken into the stomach.

to diminish their activity to a certain degree. They then cause little irritation or pain, but rather excite a gentle degree of inflammation, which causes the diseased parts to slough off; and it has the peculiar advantage of not extending its operation laterally.

No other escharotic possesses equal powers in cancerous affections; but unfortunately its good effects often do not go beyond a certain length, and if in some cases it effects a cure, in others it must be allowed it does harm. While it has occasioned very considerable pain, it has given the parts no disposition to heal, the progress of the ulceration becoming even more rapid than before.

Arsenical preparations have been also used internally.

ARSENIAS KALI. *Dub.*

Arseniat of Kali.

Take of

White oxyd of arsenic,

Nitrat of kali, of each one ounce.

Reduce them separately to powder; and, after mixing them, introduce them into a glass retort, placed in a sand bath, which is to be gradually heated, until the bottom of the retort becomes obscurely red. It is of advantage to transmit the vapours issuing from the retort, by means of a proper apparatus, through distilled water, that the nitrous acid extricated by the heat may be condensed. Dissolve the residuum in four pounds of boiling distilled water; and, after due evaporation, set it aside to crystallize.

The use of this medicine in the cure of diseases has been lately extended to certain cases of protracted rheumatism, where the vital powers are much diminished, and the ends of the bones, periosteum, capsules, and ligaments, affected. It has been thus used for some time in Dumfries-shire, and has lately been recommended to further trials by Dr. Bardsley. The dose he uses is five drops of Fowler's solution (arsenite of potass) three times a day.

Arsenic may be exhibited in the form,

1. Of arsenous acid dissolved in distilled water, in the proportion of four grains to a pint. A table spoonful of this solution, mixed with an equal quantity of milk, and a little syrup of poppies, is directed to be taken every morning fasting, and the frequency of the dose gradually increased until six table-spoonfuls be taken daily. M. Le Febure's method of curing cancer.
2. Of arsenite of potass. Sixty-four grains of arsenous acid, with an equal quantity of carbonat of potass, are to be boiled together until the arsenous acid is dissolved, when as much water is to be added as will increase the solution to one pound. Of this, from two to twelve drops may be given once, twice, or oftener, in the course of a day. Dr. Fowler's method of curing intermittent fever.*

* Arsenic has been highly spoken of by some practitioners of the United States in the cure of Tetanus.—It has been given in the form of pills and of Fowler's solution.

3. Of arseniat of potass. Mix well together equal quantities of nitrat of potass, and of pure arsenous acid; put them into a retort, and distil it first with a gentle heat, but afterwards with so strong a heat as to redden the bottom of the retort. In this process the nitric acid is partly decomposed, and passes over into the receiver in the state of nitrous acid. The arsenous acid is at the same time converted into arsenic acid, and combines with the potass. The product, which is arseniat of potass, is found in the bottom of the retort, which may be obtained in the form of crystals of a prismatic figure, by dissolving it in distilled water, filtering the solution through paper, evaporating and cystallizing. Mr. Macquer.
4. Arsenous acid, in substance, to the extent of an eighth of a grain for a dose, combined with a little of the flowers of sulphur, has been said to be employed internally in some very obstinate cases of cutaneous diseases, and with the best effect.
5. Combined with six times its weight of black pepper, it is given by the native physicians in the East Indies for the cure of the Persian fire (syphilis), and a species of elephantiasis, called juzam.

The internal use of arsenic has been lately much extended, in consequence of the observations of Dr. Fowler, Mr. Jenkinson, Dr. Bardsley, Dr. Kellie, Mr. Hill, &c. Before Dr. Fowler wrote, it was indeed in use empirically, for the cure of cancers, and even as a popular remedy, in various countries; as in the East Indies, against cutaneous affections; and in the fens of Hungary and Lincolnshire, against the ague. But Dr. Fowler first, by that inductive method of ascertaining its effects which he so successfully practised, recommended it to the notice of regular practitioners. He confined himself to the advantages derived from it in periodical diseases; and Mr. Jenkinson has, more recently, extended the use of it to certain painful affections of the bones, cases of "very long standing, attended with great debility, and local affections, not of the muscles and integuments, but of the ends of the bones, cartilages, or ligaments, or of all three together." He thinks it hurtful in recent affections, except where there are regular intermissions, and in the disease described by Dr. Haygarth, under the title of nodosity of the joints. For a complete list of the diseases in which it has been tried, Mr. Hill's paper in the Edinburgh Medical Journal may be consulted.

The great difficulty attending the exhibition of so very active a remedy, is regulating the dose so as to produce the full effect, without carrying it farther than is absolutely necessary. Dr. Kellie has accurately pointed out the precautions to be observed with this view. He always gives arsenic immediately after meals, under the idea that it will be less apt to affect the stomach when full than when empty. "From all I have observed, I have little apprehension of risk in a guarded and judicious use of the arsenical solution. It will always be proper to begin with the smallest doses, in order to ascertain how it agrees with the stomach. Having suited the dose to this, the feeling of swelling and stiffness of the palpebræ and face, heat, soreness, and itching of the tarsi, or tenderness of the mouth, are proofs that the medicine is exerting its specific effects on the constitution; that the dose has been carried to a sufficient length; and that it is time to decrease the dose, and attentively to watch its future effects. On the appearance of erythema, or salivation, it is time to interrupt altogether, for a while, the exhibition of arsenic; if necessary, it may be resumed when these symptoms have vanished. If pain of the stomach, nausea, or vomiting supervene; if the head be affected with pain or vertigo; or should a cough, with any signs of irritation of the pulmonary organs, be observed, the use of arsenic should be totally and for ever abandoned."

ARTEMISIA.

Willd.g. 1743. *Syngenesia Polygamia superflua.*—Nat. ord. *Compositæ discoideæ.*

ARTEMISIA ABROTANUM.

ABROTANUM. *Folium.* D. *Southernwood. The leaves.*

THIS is a perennial shrub, which grows readily in our gardens, though a native of the south of Europe.

Southernwood has a strong smell, which, to most people is not disagreeable; it has a pungent, bitter, and somewhat nauseous taste, These qualities are very completely extracted by alcohol, and the tincture is of a beautiful green colour. They are less perfectly extracted by watery liquors, the infusion being of a light brown colour.

Medical use.—Southernwood, as well as other species of the same genus, particularly the absinthium and santonica, has been recommended as an anthelmintic, and it has also been sometimes used as a stimulant, detergent, and sudorific. Externally, it has been employed in discutient and antiseptic fomentations; and under the form of lotion and ointment for cutaneous eruptions, and for preventing the hair from falling off. But it is at present very rarely used in any way.

OFFICINAL PREPARATION.

Decoctum pro fomento, L. - *vide Decocta.*

ARTEMISIA MARITIMA.

ABSYNTHIUM MARITIMUM. *Cacumina.* D. *Sp.* 42. *Sea Wormwood. The Tops.*

THIS species of artemisia is perennial and herbaceous. It grows wild in salt marshes, and in several parts about the sea-coasts. In taste and smell it is weaker and less unpleasant than the common wormwood, and is now almost rejected from practice.

OFFICINAL PREPARATIONS.

Decoctum pro fomento, L. - *vide Decocta.*
Conserva Absinthii Maritima, L. - *Conservæ.*

ARTEMISIA SANTONICA. *Cacumen. Ed.* D.

Wormseed. Semina. The tops. The seeds.

ALL the British colleges have given this species as the plant which produces these seeds, but it is by no means ascertained. They have been ascribed by different writers to other species of the same genus, the Judaica, the Contra, and the Austriaca, and are even said by Saunders to be the produce of a species of Chenopodium.

The seeds themselves are small, oblong, smooth, and of a greenish or greyish yellow colour. As the whole head is gathered after the seeds are ripe, they are mixed with the scales of the calices and bits of stalks. Their taste is bitter, and somewhat acrid; their smell strong and disagreeable. Those which come from Aleppo are esteemed the best, and those from Barbary the worst. When they have no smell, and a less intensely bitter taste, and are discoloured, and mixed with a longer kind of seed, they are to be rejected. They are also adulterated with the seeds of tansy and wormwood. The latter are easily known, by having a light yellow colour, and resembling powdered hay more than seeds. Neumann obtained from 480 parts, 213 of alcoholic extract, and 110 watery, and inversely 260 watery, and 28 alcoholic. It gave a slight flavour to water distilled from it, but no oil.

Medical use. Wormseed now rejected by the London College, is one of the oldest and most common anthelmintics, especially in the lumbrici of children. On account of their essential oil, they are heating and stimulating.

They are given to children

1. In substance, to the extent of ten grains, or half a drachm, finely powdered, and strewed on bread and butter; or made into an electuary with honey or treacle; or candied with sugar; or diffused through milk, and taken in the morning when the stomach is empty.
2. In infusion or decoction, but to these forms their bitterness is a strong objection.

After they have been used for some days, it is customary to give a cathartic, or they are combined from the beginning with rhubarb, jalap, calomel, sulphat of iron, or muriat of ammonia.

ARTEMISIA ABSINTHIUM. *Folia et summitates florentes.* E.L.D. *Sp.* 63.

Common wormwood. The herb, leaves, and flowering heads.

THIS perennial herb grows by the road-sides and on rubbish in many parts of Britain; and about London it is cultivated for medical use. Its smell is strong and disagreeable; its taste intensely bitter. Its active constituents are bitter extractive and essential oil. It is used in stomach complaints, and is of great service to hypochondrists. It is also employed in intermittent fevers, in cachectic and hydropic affections, in jaundice, and against worms. Many persons cannot suffer the disagreeable smell of wormwood, which is apt to occasion headach, but it may be freed from it in a great measure by decoction, The extract is a pure and simple bitter. The essential oil is of a dark green colour, and contains the whole flavour of the plant. It is stimulating, and is supposed to be a powerful antispasmodic and anthelmintic. It was formerly much used for the preparation of medicated wines and ales.

ARUM AMERICANUM. *Cates.*

DRACONITUM FÆTIDUM. *Linn.*

Scunk Cabbage. The root and seeds.

THIS singular plant abounds in the swamps and meadows throughout New-England, and is found native in North America only. The vulgar name by which it is here generally known is taken from its very rank, and disagreeable smell, nearly resembling that of a scunk, or pole cat, and from its leaves resembling those of the cabbage. It is considered as a species of arum; the roots and seeds when fresh, impart to the mouth a sensation of pungency and acrimony. But according to Dr. Cutler the fructification so essentially differs from all the genera of the order, it must undoubtedly be considered as a new genus. This plant has no stem, and the flower is the first part that appears in April and May. The leaves next appear at a small distance from the flower stalk in a conic form, very closely rolled together, expanding nearly ovate as they rise, supported on foot stalks. The calix consists of a very large, permanent *spatha*, of a thick porous substance, approaching to an ovate form; open on one side and bellied out on the opposite; the margin auriculated at the base, and somewhat twisted at the apex. The *spadix* within the *spatha*. The florets numerous, placed around the receptacle in an oval form; and are so compact as to appear like a solid body, thick set with small regular protuberances on its surface. Corolla four erect, very thick, narrow obtruncated petals. *Stamen* four flattish filaments rising from the receptacle; longer than the corolla. *Antheræ* oblong. *Germen* convex. Style cylindrical; rather longer than the stamina. Stigma bifid. Seeds large, roundish; single; inclosed within the receptacle. The globe of flowers is nearly of the colour of the spatha, which is beautifully variegated with scarlet and yellow.

This valuable domestic article is found to be well deserving of a place in our Materia Medica, and may be ranked high in the class of antispasmodics. The roots dried and powdered have proved of excellent use in asthmatic cases, and often afforded relief in this distressing disease when other means were ineffectual. It should be exhibited during the paroxysm, and repeated as circumstances may require, in doses of thirty or forty grains. It will be proper to persevere in the use of it for some time after the paroxysm has gone off, or till the patient is perfectly recovered, which is said to have been the method pursued by the Indians for the cure of this disease. The Rev. Dr. Cutler has announced his opinion of its efficacy as experienced in his own particular case after other remedies had disappointed his expectations. The antispasmodic powders of the scunk cabbage root have been displayed when prescribed in other diseases.

In one of the most violent hysteric cases I ever met with, says a correspondent, where the usual antispasmodics and even musk had failed, two tea-spoons full of the powdered root in spirits and water procured immediate relief, and on repeating the trials with the same patient, it afforded more lasting benefit than any other medicine. In those spasms frequently affecting the abdominal muscles in parturition, he adds, it produces the desired effect in doses of one tea-spoon full repeated occasionally. In numerous other instances of spasmodic affection, and also in chronic and acute rheumatism, this root either in powder or decoction has evinced its efficacy, and performed important cures. Two instances have been stated in which this medicine has been supposed to be remarkably efficacious in the case of dropsy; two tea-spoons full of the powdered root being taken every morning successively till the cure was effected. The seeds of this plant are said by some to afford more relief in asthmatic cases than the root. A caution is suggested by Dr. Cutler, that in collecting the roots, the *white hellebore* or *poke root*, which some people call scunk weed, be not mistaken for this plant, as the consequence might be fatal. There is an obvious distinction; the hellebore has a stalk, but the scunk cabbage has none; and the roots of the latter are much larger than those of the former.

ARUM MACULATUM. D.

Radix Recens.

Wake-robin, Cuckow Pint or Dragon root.

The recent root and leaves.

Willd. g. 1705, *sp.* 17. *Smith, g.* 402, *sp.* 1. *Monœcia Polyandria.*— Nat. ord. *Piperitæ.*

This is a perennial, solid, bulbous-rooted plant, which grows wild in shady situations, and by the sides of banks, in many parts of Britain. The root is knotty, roundish and white. When collected in spring before the leaves shoot, or in autumn after flowering, it contains a milky juice of very great acrimony. Applied to the tongue, it causes a burning heat, which last for many hours, and excites considerable thirst. These disagreeable symptoms may be relieved by butter-milk or oily fluids. Rubbed between the fingers, it blisters and excoriates them; it is therefore a corrosive vegetable poison. In the state of dry powder, it is perfectly inert, but the roots may be preserved fresh for a year by burying them in a cellar in sand. It is also rendered perfectly mild by frequent washing with water. Its acrimony is therefore easily destructible; and as it does not arise from the presence of an essential oil, it depends upon a vegetable principle, different from all others, and not well understood.* It does not rise in distillation either with alcohol or with water, and is not contained in

* *Acrid principle*, soluble in alcohol, water, acids and alkalies, rises in distillation, and is with water and alcohol, volatile, not neutralized by alkalies or acids.

its extract, although the root is thereby deprived of it. Neumann obtained from 480 of the dry root 20 of alcoholic extract, and about 180 watery. The former had some slight pungency, and the latter none.

Medical use.—Arum is doubtless a very powerful stimulant, and by promoting the secretions, may be advantageously employed in cachectic and chlorotic cases, in rheumatic affections, and other complaints of phlegmatic and torpid constitutions; but particularly in a relaxed state of the stomach, occasioned by a prevalence of viscid mucus. In chronic rheumatism, and other disorders requiring the full effect of this medicine, great care should be taken, that the root be fresh and newly dried; and to cover its intolerable pungency, Dr. Lewis advises it to be administered in the form of emulsion, with gum arabic and spermaceti, increasing the dose from ten grains to upwards of a scruple two or three times in a day. In the recent root, the degree of acrimony is so very uncertain, and often so excessive, that its effects, as an internal remedy, cannot be depended on. The dried root is perfectly inert, so much so, that the French prepare from it the harmless but high-priced cosmetic, called *Cypress powder;* but the fresh root may be kept in a state fit for medical use for a year, by burying it in a cellar in sand. It is given in chlorotic cachectic cases, and in a relaxed state of the stomach supposed to arise from an accumulation of phlegm, and in some rheumatic affections, in the dose of ten or fifteen grains, three times a-day, in the form of a conserve or bolus.

Officinal Preparation.

Conserva Ari, L. - *vide Conservæ.*

ARUM TRIPHYLLUM. *Indian Turnip.*

The acrimony of the recent root of this plant is well known. By drying, much of this is lost. It has been very beneficial in asthma, especially in old people—in the croup and hooping cough. The recent root boiled in lard to the consistence of an ointment has been found useful in tinea capitis. The fresh root, boiled in milk, has been advantageously employed in consumption. Dr. Mease recommends the following as the best form for exhibiting it. "Grate one dried root, and boil it in a half a pint of milk." Some acrimony should be perceptible to the tongue and throat in its exhibition. He says, it never affects the general circulation, but acts solely on the parts just named; to the glands of which it is a powerful stimulus, causing a copious secretion of mucus.

A fine sago has been prepared from the root in the proportion of one part, to four of the root, freed from its exterior coat.*

* See Barton's Collections, Part I. p. 21, 49. Part II. p. 29. Philadelphia Medical and Physical Journal, Vol. II. p. 84. Philadelphia Medical Museum, Vol. II. p. 162.

ASARUM EUROPÆUM. E. L. D.

Asarabacca. Folia. The leaves.

Willd. g. 925. *sp.* 1. *Smith, g.* 222. *sp.* 1.—*Dodecandria Monogynia.* Nat. ord. *Sarmentaceæ.*

This is a perennial plant, which is a native of some places of England, although the dried roots are generally brought from the Levant. It grows in moist and shady situations. It produces only two leaves, which are uniform and very obtuse. The root is fibrous, of a grey brown colour externally, but white within. Both the roots and leaves have a nauseous, bitter, acrimonious, hot taste; their smell is strong, and not very disagreeable.

In its analysis, it is said by Neumann to agree with ipecacuanha, but it seems to contain, besides its odorous principle, which is probably camphor, a portion of the same acrid principle which has been noticed when speaking of arum. Upon this its virtues depend; and as this principle is volatile, we find accordingly that asarabacca loses much of its activity by decoction and long keeping.

Medical use.—Given in substance from half a drachm to a drachm, it evacuates powerfully both upwards and downwards. It is said, that tinctures made in spiritous menstrua possess both the emetic and cathartic virtues of the plant: that the extract obtained by inspissating these tinctures acts only by vomiting, and with great mildness: that an infusion in water proves cathartic, rarely emetic: that aqueous decoctions made by long boiling, and the watery extract, have no purgative or emetic quality, but prove good diaphoretics, diuretics, and emmenagogues.

The principal use of this plant is as a sternutatory. The root of asarum is perhaps the strongest of all the vegetable errhines, white hellebore itself not excepted. Snuffed up the nose, in the quantity of a grain or two, it occasions a large evacuation of mucus, and raises a plentiful spitting. The leaves are considerably milder, and may be used to the quantity of three, four, or five grains. Geoffroy relates, that after snuffing up a dose of this errhine at night, he has frequently observed the discharge from the nose to continue for three days together; and that he has known a paralysis of the mouth and tongue cured by one dose. He recommends this medicine in stubborn disorders of the head, proceeding from viscid tenacious matter, in palsies, and in soporific distempers.

Officinal Preparation.

Pulvis Asari Compositus, E. L. D. - *vide Pulveres.*

ASARUM CANADENSE.

Wild Ginger. Coltsfoot.

Doctor Barton says both the root and leaves may be used. The expressed juice of the fresh leaves is a powerful emetic. The leaves are errhine.*

* Barton's Collections, Part I. p. 26.

ASCLEPIAS DECUMBENS.

Pleurisy-root. Flux-root. Butterfly-weed, &c. The root.

This species of swallow-wort is one of our most beautiful perennial plants, flourishing best in a light sandy soil, by the way side, under fences, and near old stumps in rye fields, &c. It abounds in the southern states. There are sometimes fifteen or twenty, or more stalks, the size of a pipe stem, proceeding from one root, rising from one to two feet in height, and spreading to a considerable extent, generally in a decumbent position. The stalks are round and woolly, of a reddish brown colour on the sun side; the leaves stand irregularly, and are spear, or tongue shaped, with a short foot stalk, and covered with a fine down on the under surface. The umbels are compact at the extremities of the branches, and formed like the common silkweed, but differing from it in the colour of the flowers, being of a beautiful bright orange colour, while those of the silkweed are of a pale purplish hue. The flowers appear in July and August, and are distinguished by their size and brilliancy from all the flowers of the field. These are succeeded by long slender pods, containing the seeds, which have a delicate kind of silk attached to them. This is probably the only variety of asclepias that is destitute of a milky juice. The root is spindle, or carrot shaped, of a light brownish colour on the outer surface, white, coarse and striated within. The root of this plant is a valuable addition to our Materia Medica, having been found to possess medicinal virtues of no inconsiderable importance. It has been long celebrated in Virginia and the Carolinas, as a remedy in pleurisy, and in pneumonic affections in general. It is said to display a remarkable power of affecting the skin, inducing general and plentiful perspiration without heating the body. In the form of decoction it often induces a diaphoresis when other medicines have failed to produce that effect. We have the testimony of Professor Barton in favour of the great efficacy of this medicine in pulmonic affections. He corroborates the account published by Mr. Thompson Mason, of Virginia, whose experience of its virtues in pleurisy has been so extensive as to establish its reputation. After the use of an antimonial emetic and the loss of some blood, he gives his patients about half a drachm of the root finely powdered in a cup of warm water, and repeats the dose every two hours until the patient is perfectly recovered, which happens frequently in three days. Mr. Mason asserts that by those simple means he has cured hundreds, and never failed in a single instance. The powdered root frequently acts as a mild purgative, but it is particularly valuable for its virtues as an expectorant, diaphoretic, and febrifuge, and in this respect its efficacy is amply confirmed by the testimony of Dr. Benjamin Parker, of Bradford, Massachusetts, from his own observation during an extensive practice of many years in Virginia. From the successful employment of the pleurisy root for twenty-five years, this respectable physician has imbibed such confidence, that he extols it as possessing the peculiar, and almost specific quality of acting on the organs of respiration, powerfully promoting suppressed expectoration, and thereby relieving the breathing of pleuritic patients in the most advanced stage of the disease; and in pneumonic fevers, recent colds, catarrhs and diseases of the breast in general, this remedy has in his hands proved equally efficacious. He directs it to be given in the form of strong infusion, a tea-cup full every two or three hours. By many families in the country this root has long been esteemed as a domestic medicine, resorted to for the relief of pains of the stomach from flatulence and indigestion, hence the vulgar name of *wind root*, by which it is known in some parts of the country, and from its colour it is by some called white root. It is said that by a preseverance for several weeks in the use of about one drachm of the powdered root every day, the lost tone of the stomach and digestive powers has been restored.

This plant is well deserving a place in every garden, its ornamental appearance and medicinal utility, will richly compensate the cultivator.

Other species of swallow-wort, it is highly probable, as suggested by Professor Barton, will be found on trial to possess medicinal virtues, and they ought to arrest the attention of physicians in the country, until they become familiarized to the specific character, and properties of this valuable class of American plants.

Dr. Cutler describes another species, *asclepias syriaca*, or common silkweed, often called also milkweed, from its abundance of milky juice. The leaves are spear or tongue shaped, larger than the preceding, and in August its aggregate, reddish, or purple blossoms, are exhibited at the extremities of the branches, and axillæ of the leaves. The seeds are contained in large oblong pods, and are crowded with down extremely fine and soft, resembling silk, which has occasioned the name of silkweed. This substance has been mixed with cotton and spun into candle-wicks. The stalk of this species is from three to six feet high, the leaves large, standing on short foot stalks. A milky juice exudes from the stems or leaves when broken. The root, as soon as it penetrates the earth, shoots off horizontally, and often sends out other stalks. The large roots are cortical and ligneous. It abounds near fences on the road side in all parts of the country.

Dr. Abijah Richardson, of Medway, Massachusetts, has been induced to try the effects of this species. He gave the cortical part of the root in powder, one drachm in a day, in divided doses, and also in strong infusion. An asthmatic patient was much benefited by its use. In one case of typhus fever with catarrhal affection of the throat and bronchiæ, it rendered the expectoration more copious, and the matter thicker and more digested. In both cases it had an anodyne effect, the patients were relieved from pain, from dyspnœa and cough, and expectoration became easier and sleep more refreshing.

ASSA FŒTIDA. *vide Ferula.*

ASTRAGALUS TRAGACANTHA. *Gummi. Ed.* D.

ASTRAGALUS VERUS. L. *Gum-Tragacanth. Goats-thorn.*

Willd. g. 1379. *sp.* 154. *Diadelphia Decandria.*—Nat. ord. *Papilionaceæ.*

TRAGACANTH is opaque and white, not sweetish, very sparingly soluble in water, but absorbing and forming a paste with a large quantity. Its solution is adhesive, but cannot be drawn out into threads. It moulds readily and acquires a fetid smell. It is precipitated by nitrat of mercury. It is insoluble in alcohol, and seems to contain more nitrogen and lime than gum does.

Gum-Tragacanth is the produce of a very thorny shrub, which grows on the island of Candia, and other places in the Levant. According to Olivier (Travels, 5th vol.) it is the produce of a species of astragalus not before known; he describes it under the name of *astragalus verus*. It grows in the north of Persia. His words are, "This gummy substance is formed from the month of July to the end of September, on the trunks of several species of Astragalus, which grow in Natolia, Armenia, Curdistan, and all the north of Persia. Tournefort has described one of these, which also furnishes tragacanth, which he found on Mount Ida in Crete; and La Billardiere has described and figured another which he saw in Syria. The Astragalus, which appears to us the most common, and that from which almost all the Tragacanth of commerce is derived, has not been described by any botanist. It differs essentially from the two species which we have mentioned, in its habits and its flowers." In a note upon the description, which it is unnecessary to insert, he characterises it as "*Astragalus verus*, fruticosus, foliolis villosis, setaceis, subulatis; floribus auxillaribus, aggregatis, luteis." After finishing the description, he continues, "Tragacanth exudes naturally, either from wounds made in the shrub by animals, or from fissures occasioned by the force of the *succus proprius*, during the great heats of summer. According as the juice is more or less abundant, tragacanth exudes in tortuous filaments, which sometimes assume the form of a small worm, or of a pretty thick worm, elongated, rounded, or compressed, rolled up upon itself, or twisted. The finest and purest tragacanth assumes this form. It is almost transparent, whitish, or of a yellowish white. It also exudes in large tears, which preserve more or less of the vermicular form. This is more of a reddish colour, and more contaminated with impurities. It sometimes adheres so strongly to the bark, as to bring part of it with it in gathering it. The quantity of tragacanth furnished by Persia is very considerable. Much is consumed in that country in the manufacture of silk, and the preparation of comfits. It is exported to India, Bagdad, and Bussorah. Russia also gets some by the way of Bakou."

About the end of June a fluid exudes from the stem and larger branches, which dries in the sun, and is collected by the shepherds, on mount Ida, from whence it is sent to Europe, under the title of Tragacanth.

It consists of whitish semi-transparent vermiform pieces, scarcely a line in thickness, without taste or smell.

There is also a dirty yellow, or brownish kind, which is not fit for medical purposes.

Tragacanth is difficultly pulverizable, unless when thoroughly dried, and the mortar headed, or in frost. According to Neumann, it gives nothing over in distillation, either to water or alcohol: alcohol dissolves only about 10 parts of 480, and water the whole. Lewis, however, more accurately observes, that it cannot be properly said to be dissolved. for, put into water, it absorbs a large proportion of that fluid, increasing immensely in volume, and forming with it a soft, but not fluid, mucilage; and although it is easily diffused through a larger proportion of water, after standing a day or two, the mucilage subsides again, the supernatant fluid retaining little of the gum.

Besides these remarkable differences from gum arabic in regard to brittleness, insolubility, and the quantity of water which it thickens; tragacanth is not precipitated by silicized potass, and is precipitated by sulphat of copper and acetat of lead.

In pharmacy it is employed for forming powders into troches, and rendering tough cohesive substances, such as colocynth, pulverizable by beating them with mucilage of tragacanth, and then drying the mass. For electuaries it is improper, as it renders them slimy on keeping.

Officinal Preparations.

Pulvis Tragacanthæ compositus, L. -	*vide Pulveres.*
Cerussæ compositus, L. -	*Idem.*
Mucilago Astragali Tragacanthæ, E. L. D. -	*Mucilagines.*
Trochisci Glycyrrhizæ, L. D. - -	*Trochisci.*
Nitri, L. - - -	*Idem.*

ATROPA BELLADONNA. *Folia. Ed. L. D.*

Deadly Nightshade. Folia. The leaves.

Willd. g. 381. *sp.* 2. *Smith g.* 100. *sp.* 1.—*Pentandria Monogynia.*—Nat. ord. *Solanaceæ.*

The deadly Nightshade is a perennial plant, with an herbaceous stem, which is indigenous both in mountainous and woody situations in Great Britain, and is often cultivated in gardens. The whole plant is poisonous, and the berries, from their beautiful appearance, have sometimes proved fatal to children. The symptoms excited, are, a dryness of the mouth; a trembling of the tongue; a very distressing thirst; a difficulty of swallowing; fruitless efforts to vomit; and great anxiety about the præcordia. Delirium then comes on, with gnashing of the teeth and convulsions. The pupil remains dilated, and is not sensible even to the stimulus of light. The face becomes tumid, and of a dark red colour. The jaws are frequently locked. Inflammation attacks the œsophagus, stomach, and intestines, sometimes extending to the mesentery, lungs and liver, accompanied with violent pains in the abdomen. The stomach is very insensible to stimulus, and the peristaltic motion of the intestines is destroyed. General relaxation, palsy, especially of the lower extremities, convulsions, vertigo, blindness, coma, and death, succeed. The body soon putrefies, swells, and becomes marked with livid spots; blood flows from the nose, mouth and ears, and the stench is insufferable. On dissection, the blood is found to be fluid, the intestines are inflated and inflamed, or eroded and gangrenous. The best method of cure is to excite vomiting as soon as possible, by emetics and tickling the fauces; to evacuate the bowels by purgatives and clysters; and to give, largely, vinegar, honey, milk, and oil. In some children who recovered by this treatment, the delirium was succeeded by profound sopor, accompanied with subsultus tendinum; the face and hands became pale and cold, and the pulse small, hard and quick. Their recovery was slow, and the blindness continued a considerable time, but at last went off.

By distillation in the vapour bath, Geoffroy procured from the recent leaves a slightly acrid liquor, and the residuum by destructive distillation yielded a suitable quantity of carbonat of ammonia.

Medical use.—Yet this virulent poison, under proper management, may become an excellent remedy. Besides a very remarkable narcotic power, it possesses considerable influence in promoting all the excretions, particularly by sweat, urine, and it is also said by saliva; but its exhibition requires the greatest caution; for it is apt, when continued for any length of time, even in small doses, to cause dryness and tension of the throat and neighbouring parts, vertigo, dimness of sight, and even temporary blindness. When any of these symptoms occur, its use must be suspended for some time, and afterwards resumed in smaller doses.

Deadly nightshade has been exhibited,

1. In several febrile diseases; in obstinate intermittents; and in the plague.
2. In inflammations; the gout.
3. In comatose diseases; in palsy and loss of speech from apoplexy.
4. In spasmodic diseases; in chorea; epilepsy; chincough; hydrophobia; melancholy, and mania.
5. In cachectic affections; in dropsies and obstinate jaundice.
6. In local diseases; in amaurosis; in ophthalmia; in scirrhus, and cancer.

Deadly nightshade is best exhibited in substance, beginning with a very small dose of the powdered leaves or root, such as the fourth or eighth part of a grain for children, and one grain for adults, to be repeated daily, and gradually increased. In hydrophobia, Münch gave the powdered root every second morning, to the extent of from one to five grains to children, and fourteen or fifteen grains to adults.

The watery infusion is also a powerful remedy. One scruple of the dried leaves are infused in ten ounces of warm water, and strained after cooling. At first, two ounces of this may be given daily to adults, and gradually increased, until the tension of the throat shows that it would be imprudent to go farther.

The watery extract is not a judicious preparation.

Externally, the powdered leaves are applied as a narcotic to diminish pain, and to cancerous and ill-conditioned sores. From its effect in permanently dilating the pupil, Professor Reimarus proposed, and tried with success, the dropping a little of the infusion into the eye, a few hours before performing the operation for the cataract, with the view of facilitating the operation.

Officinal Preparation.

Succus spissatus Atropæ Belladonnæ, E. *vide Succus Spissati.*

AURUM. *Gold.*

Gold is of a brilliant yellow colour, insipid, and inodorous; specific gravity between 19.258 and 19.300; soft and flexible; little elasticity or sonorousness; so ductile, that its surface may be extended more than 650,000 times; of very great tenacity; easily hammer hardened; a good conductor of caloric, electricity, and galvanism; fusing at 32° of Wedgwood; brittle when cooled too quickly; crystallizing in octohedrons; unalterable in the air; converted by a long and violent heat into a vitrified violet oxyd; oxydized and dispersed by electricity; soluble in alkaline sulphurets; rendered brittle by phosphorus, arsenic, bismuth, tin, and antimony; less brittle by lead; soluble in mercury; hardened by zinc, copper, iron, steel, and silver; oxydizable, of a purple colour, and slightly soluble in nitrous acid; readily oxydized and dissolved by nitro-muriatic acid. Its oxyd is easily reduced by light and heat, colours glasses purple or topaz yellow, and forms a fulminating compound with ammonia.

This metal was formerly supposed to possess medicinal properties, but its preparations were expunged from modern pharmacopœias as being considered unfriendly to the human constitution, or devoid of efficacy as a remedy in disease.

In a publication printed at Paris in 1811 by Dr. J. A. Chrestien of Montpellier, the medical faculty are again invited to investigate the properties of gold. The author proposes a preparation of this metal as a new remedy for the treatment of venereal and lymphatic disorders. His numerous experiments on the anti-syphilitic powers of the preparations of gold, have greatly elated his hopes, and rendered him so sanguine as to affirm, that their efficacy is equal if not superior to that of mercury; that they are capable of effecting a radical cure of the varied forms of this disease, without producing salivation, or any derangement of the functions of the body, and that no season, no temperament, and no complication of the disease can create any obstacle to their efficacy.

Of the above assertion we are not left destitute of corroborative evidence.

Doctors Seaman and Pascalis of New-York have experienced the anti-syphilitic virtues of the preparations of this metal, and their observations, so far as they have extended, are in confirmation of the opinion of Dr. Chrestien.

Gold may be employed, for this purpose, in the state—1. Of minute division. 2. Of oxyd. 3. Of oxyd in combination with ammonia. 4. Of oxyd in combination with oxyd of tin. 5. Of muriat.

The first of these, denominated by the author, "*Or devise*," was prepared by forming an amalgam of gold and quicksilver, and afterwards withdrawing the latter by exposing the compound to the rays of the sun concentrated by a convex lens, to the heat of a fire, or to the action of nitric acid. The gold remained in the form of an impalpable powder.

The yellow oxyd of gold was obtained by precipitating it from its solution in nitro-muriatic acid by potash. The manner of effecting this he has not mentioned, and, as it will be seen below, there are some difficulties in the way of preparing it of an uniform strength. The oxyd precipitated from its solution by ammonia was soon laid aside from the danger of its spontaneous explosion.

The compound oxyd of gold and tin, may be obtained by mixing the solutions of these metals, or by adding metallic tin in filings to a diluted solution of gold. He prefers the latter.

The muriat of gold, says Dr. Chrestien, procured by evaporating the solution to dryness, was so deliquescent, and caustic, that I made but little use of it; but supposing a muriat with two bases might obviate these inconveniences, I combined the muriat of soda with the solution of gold, and obtained the desired product.

Numerous detailed cases are given in the subsequent part of his work on the effects of each of these preparations, in syphilis. They differ much from each other in activity, the oxyds producing more speedy effects than the powdered gold, and the muriat more powerful action than the oxyds. They were all administered by friction on the tongue, cheeks, or gums. The *or devise* was thus prescribed to the extent of three grains in a day; the oxyd precipitated by potash in a dose of half a grain gradually augmented to two grains; the compound oxyd of tin and gold in rather smaller doses; and lastly, the muriat of gold in the quantity of from one-fifteenth to one-tenth of a grain. On account of the superior activity of the latter, he found it necessary to mix it with certain substances which were capable of diminishing its energy, without abstracting its oxygen. He employed for this purpose *starch*, *charcoal*, and *painter's lac*.

From the variety of cases brought forward by the author, to prove the activity, and the anti-syphilitic virtues of gold, it appears that within a moderate time it cures chancres, warts, secondary ulcers, sore throats, and other forms of inveterate lues. This favourite remedy of Dr. Chrestien is said also to have effected important cures in cases of diseases of the uterus, of goitre, and other lymphatic diseases or obstructions.

Gold, in a state of minute division, may be procured with facility, by pouring into a diluted solution of this metal a solution of green sulphat of iron; a brown or bluish brown powder will be precipitated, which is metallic gold minutely divided. The best proportions of the acids to dissolve this metal, according to Vauquelin are, two parts of muriatic to one of nitric acid. Potash and soda, and their carbonats, do not decompose the solution at common temperatures; they merely give it a deep red colour with a little turbidness. The red substance when dried has the appearance of dried blood. It has a styptic metallic taste, and is slightly soluble in water. It is inferred to be a compound of oxyd of gold with a minute portion of muriat of gold.

To precipitate the greatest quantity of oxyd from its solution, by means of the alkalies, we must manage so that no useless acid shall remain in the solution, in order that less of the triple salt may be formed; this is effected by evaporation to dryness, very cautiously conducted, the product being again dissolved in distilled water.

The compound oxyd of gold and tin, or the purple powder of Cassius, may be formed either by adding the solutions of tin and gold much diluted to each other, or by immersing metallic tin in a diluted solution of gold. It is so difficult properly to prepare the solution of tin, so as always to produce the same colour and the same relative proportions in the component parts of the precipitate, that the latter method is preferable; the neutral solution of gold being diluted with one hundred parts of distilled water, and metallic tin being added to it. The formation and preservation of the muriat of gold is a work of some difficulty. The evaporation of the solution must be very carefully conducted; for the affinity between this metal and oxygen is so slight, that a moderate degree of heat is sufficient to overcome it. When therefore the temperature is high, the muriat will be decomposed, part of the gold will appear in the form of purple oxyd, and part in its metallic state. When properly prepared, it has a strong attraction for moisture, it soon deliquesces, and becomes soft and even liquid.

The preparations of this metal were administered by Dr. Chrestien, by friction; but if we reason from analogy, more positive effects might be supposed to follow from its being taken internally. No difficulty would be experienced in preparing the oxyd for this purpose; and the muriat might, with equal facility, be exhibited either by forming a triple muriat in the liquid form, or by dissolving the muriat of gold in a given portion of distilled water.—*Med. Repos Hex. 3. vol. 3. N. Eng. Med. Journal, No. 3.*

It may be very proper to state, that some reports are current, of most of those cases said to be cured in New-York, having been under the necessity of returning to the hospital, in consequence of the return of the syphilitic symptoms. Of this fact I know but little; yet it is my duty to mention it, for the purpose of enforcing attention to the subject, that we may as soon as possible be acquainted with the real value of gold as an article of the materia medica.

AVENA SATIVA. *Semen. Ed.*

Oats. The seed.

Willd. g. 142. *sp.* 13.—*Triandria Digynia.*—Nat. ord. *Gramina.*

D.	*Haver.*	P.	*Avea.*
DA.	*Havre.*	R.	*Owes.*
F.	*Avoine.*	S.	*Avena.*
G.	*Haber, Hafer.*	SW.	*Hafre.*
I.	*Vena, Avena.*		

This is a well-known annual plant, which is very generally cultivated in northern countries, and in many places furnishes the principal subsistence. When simply freed from the husks, this grain gets the name of *groats*, but it is more frequently ground into meal. Groats are made into broths. Oat-meal is baked with salt and water into cakes, or with the same additions, is boiled to form porridge. An infusion of the husks in water, allowed to remain till it becomes acidulous, is boiled down to a jelly, which is called sowins. In all these forms it is nutritious, and easy of digestion.

Medical use.—Gruels or decoctions, either of groats or oat-meal, either plain or acidified, or sweetened, form an excellent drink in febrile diseases, diarrhœa, dysentery, &c. and from their demulcent properties, prove useful in inflammatory disorders, coughs, hoarseness, roughness, and exulcerations of the fauces. Porridge is also frequently applied to phlegmonous swellings, to promote their suppuration.

B.

BALSAMUM.—*BALSAM.*

D.	*Balsem.*	P.	*Balsamo.*
DA.	*Balsam.*	POL.	*Balsam.*
F.	*Baume.*	R.	*Balsam.*
G.	*Balsam.*	S.	*Balsamo.*
I.	*Balsamo.*	SW.	*Balsam.*

BALSAMUM CANADENSE, *vide Pinus Balsamea.*
BALSAMUM COPAIBA, *Copaifera officinalis.*
BALSAMUM PERUVIANUM, *Myroxylon peruiferum.*
BALSAMUM TOLUTANUM, *Toluifera balsamum.*

BARIUM.

Barium, the base of barytes, a dark grey-coloured solid; lustre less than cast-iron, heavier than sulphuric acid, decomposes water, and is oxygenized by exposure to the air.

BARYTA.—*BARYTA.*

Baryta is obtained in small, grey, porous masses, of a tolerable solidity; its taste is acrid, urinous, and pungent; applied to the skin, it proves caustic, and it is deleterious when swallowed; its specific gravity is 4.; it is soluble in twenty times its weight of cold water, and in twice its weight of boiling water; depositing, on cooling, transparent, white, prismatic crystals; when slaked, it boils up with violence, becomes very hot, increases in bulk, and is changed into a spongy white mass. It changes vegetable blues to green: it is fusible; it combines with all the acids, sulphur, sulphureted hydrogen, and phosphorus. It is the basis of some of the heavy spars. It is a metallic oxyd, and is classed by some writers amongst the alkaline earths; Fourcroy, however, places it at the head of the alkalies themselves; and I think with great propriety, as it possesses their properties in a most eminent degree.

CARBONAS BARYTÆ. *Ed.*

Carbonat of Baryta.

Carbonated Baryta is rarely found in nature, and as it was first discovered by Dr. Withering, Mr. Werner gave it the name of

Witherite. Its colour is greyish-white, sometimes inclining to milk-white, and sometimes with a slight tinge of yellow from a mixture of iron, seldom greenish, often invested with a red ochry crust. It is found in solid masses, sometimes filling an entire vein, sometimes interspersed with sulphated baryta, frequently rounded or affecting that form, seldom crystallized. Texture, fibrous; fracture, conchoidal; fragments, long splinters; specific gravity, 4.3 to 4.338. Although it has no sensible taste, it is poisonous. In medicine it is only used for preparing the muriat of baryta. It is found at Anglesark in Lancashire, at Alstoon-moor in Cumberland, in Scotland, and in Sweden, but is not common.

According to different analysis, its constituents are,

	Acid.		Baryta.		Water.
Withering,	20	+	80		
Pelletier,	22	+	62	+	16
Kirwan,	22	+	78		
Fourcroy,	10	+	90		

SULPHAS BARYTÆ. *Sulphat of Baryta. Ponderous Spar.*

This salt has been omitted in the list of the materia medica of the Edinburgh college, for they afterwards employ it for the preparation of the muriat of baryta.

It is found in great abundance in many countries, either in a loose earthy form, or compact, or foliated, or striated, or acicular. The foliated is in general the purest. Its specific gravity is from 4.4 to 4.865. It is insoluble in water. It is soluble in boiling concentrated sulphuric acid. It decrepitates when suddenly heated. By being formed into a thin cake with flour and water and being afterwards heated to redness, it becomes phosphorescent. Heated to redness with charcoal, it is converted into a sulphuret, and it may be decomposed either by boiling, or in a crucible, with the carbonats of potass or of soda. It contains about 84 of baryta, and 16 sulphuric acid and water.

Officinal Preparation.

Murias Barytæ, E.

MURIAS BARYTÆ. *Ed.*

Muriat of Baryta.

Take of
Carbonat of baryta,
Muriatic acid, one part;
Water, three parts.

Add the carbonat, broken into little bits, to the water and acid, previously mixed. After the effervescence has ceased, digest for an hour, strain the liquor, and set it aside to crystallize. Repeat the evaporation as long as any crystals are formed.

If the carbonat of baryta cannot be procured, the muriat may be prepared in the following manner from the sulphat.

Take of

Sulphat of baryta, two pounds;

Charcoal of wood, in powder, four ounces.

Roast the sulphat with fire, that it may be more easily reduced to a very fine powder, with which the charcoal is to be intimately mixed. Put the mixture into a crucible, and having fitted it with a cover, heat it with a strong fire for six hours. Then triturate the matter well, and throw it into six pounds of water in an earthen or glass vessel, and mix them by agitation, preventing as much as possible the action of the air.

Let the vessel stand in a vapour bath until the part not dissolved shall subside, then pour off the liquor. On the undissolved part pour four pounds more of boiling water, which, after agitation and deposition, are to be added to the former liquor. Into the liquor, when still warm, or if it shall have cooled, again heated, drop muriatic acid as long as it excites any effervescence. Then strain it and evaporate it so as to crystallize. (E.)

In the materia medica of the Edinburgh college, the carbonat of baryta is introduced, for the purpose of forming the muriat: but as that mineral is not very common, and sometimes not to be procured, it became necessary to describe the manner of preparing the muriat from the sulphat. This is, however, attended with considerable difficulties, on account of the very strong attraction which subsists between the sulphuric acid and baryta.

The sulphat of Baryta may be decomposed,

1. By compound affinity; by means of carbonat of potass or muriat of lime.

Carbonat of potass is capable of effecting this decomposition, either in the dry or humid way. Klaproth boils sixteen ounces of finely powdered sulphat of baryta with thirty-two ounces of purified carbonat of potass, and five pounds of water, for an hour in a tin kettle, constantly agitating the mixture, and renewing the water as it evaporates. He then allows it to settle, pours off the fluid, which is a solution of sulphat of potass, and edulcorates the precipitate with plenty of water. He next dissolves the carbonat of baryta, which it contains, in muriatic acid. The portion of sulphat which is not decomposed, may be treated again in the same manner.

On the other hand, Van Mons mixes equal parts of sulphat of baryta and carbonat of potass with one-fourth of their weight of charcoal all in powder, and heats the mixture to redness in a crucible. When it cools he washes out the sulphat and sulphuret of potass with water, then boils the residuum with a little potass, and washes it again. The carbonat of baryta thus obtained, he dissolves in muriatic acid.

But by these methods of decomposing the sulphat of baryta, we do not get rid of the metallic substances which it often contains, and which often render the muriat thus prepared unfit for medical use.

But the metalline muriats may be expelled, according to Westrumb, by heating the salt to redness as long as any fumes arise. The pure muriat of baryta is then to be dissolved in water and crystallized. Göttling, with the same intention of getting rid of metallic substances, chooses sulphat of baryta, perfectly colourless, and treats it with muriatic or nitro-muriatic acid before he proceeds to decompose it.

La Grange has proposed a new method of decomposing the sulphat of baryta, by means of muriat of lime, which he prepares from the residuum of the decomposition of muriat of ammonia by lime,* by dissolving it in a small quantity of hot water, and evaporating it to dryness. He mixes equal parts of this muriat with sulphat of baryta in powder, and projects it by spoonfuls into a crucible previously heated to redness. When it is all in complete fusion, he pours it out upon a polished stone previously heated. The matter, which cracks as it cools, has a whitish-grey colour, is very hard, sonorous, and deliquescent, is now to be boiled in about six times its weight of distilled water, its solution filtered, and the residuum boiled in a smaller quantity of water. The mixed solutions are then evaporated to a pellicle, and on cooling furnish beautiful crystals of muriat of baryta, which are to be washed with cold water, and purified by a second solution and crystallization. The mother water of the first crystallization still contains muriat of baryta, which may be separated from the muriat of lime, with which it is mixed, by repeated solutions and crystallizations. La Grange thinks that this process not only saves time, fuel, and muriatic acid, but that it furnishes a purer muriat of baryta than the following process.

2. By decomposing its acid; by means of charcoal.

The acid of the sulphat of baryta is decomposed at a very high temperature by charcoal. At such a temperature charcoal has a greater affinity for oxygen than sulphur has; it therefore decomposes sulphuric acid, by depriving it of its oxygen, and flies off in the state of carbonic oxyd or acid gas, while the sulphur combines with the baryta. On adding water to the sulphuret thus formed, new combinations take place. A portion of sulphat of baryta is regenerated, while hydroguretted sulphuret, and sulphureted hydroguret of baryta remain in solution. This solution is exceedingly prone to decomposition, and must therefore be preserved from the action of the air as much as possible. It also crystallizes by cooling, and therefore should be kept at a boiling heat. On the addition of muriatic acid, there is a violent effervescence and disengagement of sulphureted hydrogen gas, which must be avoided as much as possible, by performing the operation under a chimney, while very pure muriat of baryta remains in solution. When prepared in this way, it cannot be contaminated with any of the noxious metals, as their compounds with sulphur and hydrogen are not soluble. On this account, therefore, it is the process adopted by the Edinburgh college.

Muriat of baryta commonly crystallizes in tables. It has a disagree-

* An excellent mode of obtaining the muriat of lime, as large quantities of this salt in solution may be readily procured from those who prepare ammonia.

able bitter taste; is soluble in five parts of water at 60°, and in less boiling water. It is scarcely soluble in alcohol; and its solution burns with a yellow flame. It crystallizes by evaporation: its crystals are permanent; and by the action of heat decrepitate, dry, and melt. When crystallized, it contains 20 acid, 64 baryta, and 16 water; when dried, 23.8 acid, and 76.2 baryta. It is decomposed by the sulphats, nitrats, and sulphites; and by the alkaline phosphats, borats, and carbonats. It is also decomposed by succinat of ammonia, nitrat of silver, acetat, nitrat and phosphat of mercury, acetat of lead, tartrats of iron and antimony, burnt sponge, and Hermbstadt's antimonial tincture, antimonial wine, soap, &c., extracts of gentian, marsh trefoil, and the inspissated juices of aconite, hemlock and hyoscyamus.

It is not decomposed by muriat of iron, or corrosive sublimate, and bears the addition of aromatic distilled waters, simple syrups, gum arabic mucilage, some simple extracts, pure opium, and similar substances, when they do not contain astringent matter. When pure it has no colour; does not deliquesce; does not burn with a red or purple flame, when dissolved in alcohol; and is not precipitated by gallic acid, prussiat of potass and iron, or hydro-sulphuret of ammonia. By washing with alcohol muriat of baryta, rendered impure by the presence of muriat of iron, the latter alone is dissolved.

It is commonly given in solution.

SOLUTIO MURIATIS BARYTÆ. *Ed.*

Solution of Muriat of Baryta.

Take of

Muriat of baryta, one part;

Distilled water, three parts. Dissolve. (E.)

The proportion of water directed here for the solution of muriat of baryta, is considerably less than what is stated to be necessary by the writers on chemistry. It is however sufficient, even at the lowest ordinary temperatures; a circumstance which should be attended to in making saturated solutions of saline bodies.

Medical use.—Muriat of baryta is generally said by writers on the materia medica to be a *stimulant* deobstruent; and yet Hufeland, one of its greatest supporters, says, that it succeeds better in cases attended with inflammation and increased irritability than with atony and torpor. When given in large doses, it certainly produces nausea, vomiting, diarrhœa, vertigo, and death. Barytes is very poisonous, not only in its pure state, but likewise in its saline combinations. It is indeed asserted that the sulphat is not so; and this arises probably from its great insolubility. If then, by accident or design, dangerous symptoms occur from its exhibition, the best mode of obviating them, would be, to give diluted sulphuric acid, or any of the sulphats, as Glauber's salt, by which the insoluble sulphat would be formed, and by purgatives may be removed from the stomach or intestines.

Its effects on a morbid state of the body are also disputed. Some assert that it is of advantage in no disease; while others bestow upon it the most unqualified praises. By the latter it is principally celebrated,

1. In all cases of scrofula.
2. In obstructions and tumours.
3. In cases of worms.
4. In cutaneous diseases.

The dose of the solution at first, is five or ten drops twice or thrice a-day, to be gradually and cautiously increased to as much as the patient can bear.

The solution is also used externally as a stimulating and gently-escharotic application in cutaneous diseases, fungous ulcers, and specks upon the cornea.

BENZOE. *Vide Styrax Benzoin.*

BERBERIS VULGARIS. Berberis. *Fructus.* D.

Barberry. The fruit.

Willd. g. 677. *sp.* 1.—*Hexandria Monogynia.*—Nat. ord. *Trihilatæ.*

The barberry is a small tree, or rather a large bush, covered with an ash coloured bark, under which is contained another of a deep yellow: the berries are of an elegant red colour, and contain each two hard brown seeds. It grows wild on chalky hills in several parts of England; and is frequently planted in hedges and in gardens.

The outward bark of the branches and the leaves have an astringent acid taste; the inner yellow bark a bitter one. This last is said to be serviceable in the jaundice; and by some to be an useful purgative.

The berries contain a very acid red juice, which consists chiefly of malic acid. This juice forms an useful and pleasant addition to antiphlogistic drinks, in fluxes and in malignant fevers, for abating heat, quenching thirst, raising the strength, and preventing putrefaction. They also form a very elegant syrup or preserve, which may be employed with advantage in the same diseases.

BETULA ALBA. *Succus.* D. *The birch tree. The juice.*

Monoecia Tetrandria.—Nat. ord. *Amentaceæ.*

This tree grows wild in most woods: its bark is astringent.

Upon deeply wounding or boring the trunk of the tree in the beginning of spring, a sweetish juice issues forth, sometimes, it is said, in so large a quantity, as to equal in weight the whole tree and root: one branch will bleed a gallon or more in a day. This juice is chiefly recommended in scorbutic and similar disorders: its most sensible effect is to promote the urinary discharge.

BISMUTHUM. *Bismuth.*

This metal is of a white colour with a shade of yellow, has a foliated fracture, is brittle, very fusible, capable of being volatilized, and easily susceptible of oxydization. Though it has not been received into the pharmacopœias it has a claim to a place in the materia medica, as its oxyd, or rather sub-nitrat, has been employed with considerable advantage in gastrodynia, pyrosis, and other affections connected with debility of the digestive organs. This preparation is obtained by decomposing the solution of bismuth in nitric acid by the affusion of water; the sub-nitrat is precipitated, and is washed and dried. It is given in a dose from two to six grains, two grains being given twice or thrice a day, or in more severe cases, five grains given at once. In these doses it scarcely produces any other sensible effect than a remission of pain, and ultimately, a removal of the morbid state from which this has arisen.

The introduction of this remedy into practice is of recent date, but we are possessed of the most convincing proofs of its having been successfully employed by several eminent practitioners both in Europe and the United States.

Dr. Odier, of Geneva, first introduced this mineral into practice, and Dr. Marcet, physician to Guy's hospital, London, and Dr. Bardsley of the Manchester infirmary, have experienced its medicinal powers; and Drs. Post, Osborn and Stringham of New-York, have added their testimony in favour of its efficacy, as an antispasmodic, particularly in cramps and other painful affections of the stomach.

In an inaugural dissertation by Dr. Samuel W. Moore, of New-York, it is the object of the author to present a knowledge of the medicinal powers of the white oxyd of bismuth, and to recommend its use in gastrodynia, pyrosis, cardialgia, and other affections of the stomach connected with dyspepsia. He relates several cases of the successful employment of the remedy, and from the most unquestionable authority furnishes decisive evidence of its efficacy in the complaints above mentioned. In those affections of the stomach whether from intemperance or other cause, which proceed from a want of tone in its muscular fibres, and where there is a disposition in that organ to generate acid, the oxyd of bismuth, it is said, effects a permanent cure, when alkalies and absorbent earths afford but temporary relief.

The reviewers of Dr. Moore's dissertation in the New-England Medical Journal, after duly applauding the author, thus express their opinion of the utility of the oxyd of bismuth.

" The action of this substance on the stomach is that of a mild and effectual tonic; and from our own experience of its virtues, we do not hesitate to affirm with Odier, Marcet, Bardsley, and Moore, that in pyrosis, cardialgia, and more particularly gastrodynia, it operates more speedily, and with more certainty, than any other article of the materia medica. In the course of the last five years, we have frequently prescribed it in these forms of dyspepsia with almost uniform success; and although a medicine possessing such active properties might be supposed occasionally to produce some unpleasant effects on the system, we have never known any injurious consequences to result from its exhibition. A substance which discovers such qualities ought to be more generally known and more frequently administered; for even on the supposition that it is capable of producing no greater effects than those of the medicines usually prescribed in these complaints, its use will be attended with the advantage of discarding in some measure from practice the long continued employment of alcohol and bitters, which ultimately lessen the activity of the digestive organs, and either prolong or perpetuate the diseases they were intended to relieve."

The oxyd of bismuth is prepared, as recommended by Dr. M. according to the following process.

The bismuth to be dissolved should be previously reduced to powder in an iron mortar. Let three parts of nitric acid for one of bismuth be diluted with an equal weight of pure water. To this menstruum, contained in a glass vessel, add the bismuth at intervals, and let it stand till it is all dissolved. Let the clear solution be decanted from the sediment, and a few ounces of it be poured into a glass vessel, capable of containing half as many gallons as there have been measured ounces put in; the vessel is then filled with pure (distilled) water, when a copious and perfectly white precipitate will be instantaneously formed, giving to the liquid the appearance of milk. After this has subsided, the clear fluid must be decanted, and fresh water thrown on the precipitate to wash it. This operation must be repeated several times, till no acid taste is discoverable in the decanted water. This precipitate, which is pure white oxyd of bismuth, should be suffered to dry without heat, or indeed light, for the attraction between oxygen and bismuth, is so weak, that if the oxyd, while drying, be exposed either to a moderate artificial heat, or the direct rays of the sun, it parts with a portion of its oxygen, and loses its whiteness.

The usual dose in which this substance is prescribed is five or six grains twice or thrice a day, mixed with any convenient vehicle, such as the powder of gum Tragacanth, gum Arabic, sugar, or starch, in the proportion of one grain of the oxyd to four or five of the powder of either of these substances. It is extremely probable that other medical properties of this valuable article are yet to be ascertained by more extensive research and experiment.

BITUMEN PETROLEUM. *Ed.*

PETROLEUM BARBADENSE. D.

PETROLEUM. L. *Rock oil. Barbadoes tar.*

D.	*Steenöli.*	I.	*Petroleo.*
DA.	*Steenolje.*	POL.	*Skalney oley.*
F.	*Petrole.*	R.	*Kamennoe masslo.*
G.	*Steinöl.*	SW.	*Stenolja.*

BITUMEN is now employed as the generic name for several inflammable bodies of different degrees of consistency, from perfect fluidity to that of a brittle but very fusible solid, and of little specific gravity. They are insoluble in alcohol or in water, combine with essential oils and sulphur, decompose only a small proportion of nitrat of potass by deflagration, and on inflammation leave little or no residuum.

Sp. 1. NAPHTHA. It is nearly as colourless, transparent, and fluid as water. Specific gravity 0.729 to 0.847, of a highly penetrating, yet not disagreeable smell, somewhat like that of rectified oil of amber, very volatile, and remaining fluid at 0° Fahrenheit.

Sp. 2. PETROLEUM. Not so fluid, transparent, or colourless, as the former; smell less pleasant. Specific gravity 0.878.

Sp. 3. MINERAL TAR. Viscid; of a dark colour: smell sometimes strong, but often faint. Specific gravity 1.1.

Sp. 4. MINERAL PITCH; maltha. Brittle in cold weather; of a dark colour; opaque. Specific gravity probably 1.07.

Sp. 5. ASPHALTUM. Very brittle; fracture conchoidal; glassy lustre; no smell, unless when melted or heated. Specific gravity 1.07 to 1.65. Fusible and inflammable.

According to Mr. Kirwan and Mr. Hatchett, the first species, by exposure to the air, and gradual decomposition, passes successively through the intermediate states, till at last it is converted into asphaltum. When partially decomposed, the remaining naphtha may be separated by distillation from the superabundant charcoal.

The first species, which is no longer officinal, is found abundantly in Persia; but what we receive comes from the dutchy of Modena in Italy. It is very rarely met with in the shops; the second, mixed with a little of the third, and some subtile oil, is usually sent us instead of it.

Medical use.—Petroleum is at present very rarely employed as a medicine, though if the finer kinds could be procured genuine, they seem to deserve some notice: they are more agreeable than the oil of amber, and milder than that of turpentine; of the virtues of both of which they participate. They are principally recommended by authors for external purposes, against pains and achs, in paralytic complaints, and for preventing chilblains. For these intentions, some of the more common mineral oils have been made use of with good success; an oil extracted from a kind of stone-coal has been extolled among the common people, under the name of British oil, for rheumatic pains &c.; even this is often counterfeited by a small portion of oil of amber added to the common expressed oils. The Seneka oil of our own country is equal to any foreign article for the above purpose.

The Barbadoes tar is found in several of the West India islands, where it is esteemed by the inhabitants of great service as a sudorific, and in disorders of the breast and lungs; though in cases of this kind, attended with inflammation, it is certainly improper; they likewise apply it externally as a discutient, and for preventing paralytic disorders.

Officinal Preparations.

Oleum Petrolei, L. -	*Vide Olea volat. empyreumatica.*
Petroleum Sulphuratum, -	*Olea præparata.*

BOLETUS IGNIARIUS. Agaricus. *Ed.*

Female agaric, or agaric of the oak, called, from its being very easily inflammable, Touchwood, or Spunk.

Cryptogamia Fungi.—Nat. ord. *Fungi.*

F. *Agaric.* G. *Lärchenschwamm.*

This fungus is frequently met with, on different kinds of trees, in Britain, especially the cherry, and the plumb; and is said to have been sometimes brought into the shops mixed with the true agaric of the larch: from this it is easily distinguishable by its greater weight, dusky colour, and mucilaginous taste void of bitterness. The medullary part of this fungus, beaten soft, and applied externally, has been much celebrated as a styptic; and said to restrain not only venal but arterial hemorrhagies, without the use of ligatures. It does not appear, however, to have any real styptic power, or to act any otherwise than dry lint, sponge, or other soft fungous applications. It is best when gathered in August or September.

It has been analyzed by Bouillon Lagrange, who found it to contain, 1. An extractive matter soluble in water, sulphat of lime, and muriat of potass. 2. The residuum incinerated gave phosphats of lime, magnesia, and iron. 3. Alcohol extracted very little resin. The alkalies also indicated the presence of an animal matter, but in less quantity than in the boletus agaricus, which also differed in containing a free acid and much resin.

BORAX, *vide Sub-boras Sodæ.*

BUBON GALBANUM, *Gummi-resina. Ed.* D. L.

Galbanum. *A Gum-resin.*

Willd. g. 546. *sp.* 2.—*Pentandria Digynia.*—Nat. Ord. *Umbellatæ.*

This plant is perennial, and grows in Africa. It abounds with a milky juice, which sometimes exudes from the joints of the old plants, but is more frequently obtained by cutting them across some inches above the root. The juice which flows from the wound soon hardens, and is the galbanum which is brought to us from Syria and the Levant.

The best sort of Galbanum consists of pale-coloured pieces, about the size of a hazel nut, which on being broken, appear to be composed of clear white tears, of a bitterish acrid taste, and a strong peculiar smell. But it most commonly occurs in agglutinated masses, composed of yellowish or reddish and clear white tears, which may easily be torn asunder, mixed with seeds and leaves, of the consistence of firm wax, softening by heat, and becoming brittle by cold. What is mixed with sand, earth, and other impurities, and is of a brown or blackish colour, interspersed with no white grains, of a weak smell, and of a consistence always soft, is bad.

Galbanum is almost entirely soluble in water, but the solution is milky; neither does wine nor vinegar dissolve it perfectly. Alcohol, according to Hagen, has very little action upon it. It is not fusible; but furnishes a considerable proportion of essential oil when distilled with water. Neumann obtained by distillation with water six drachms of oil, besides what was dissolved in the water. The watery extract amounted to about three ounces. It had somewhat of a nauseous relish, but could not have been recognized as a preparation of galbanum. From the same quantity alcohol extracted upwards of nine ounces and a half of a hard brittle insipid inodorous substance (resin?)

Medical use.—Galbanum agrees in virtue with gum ammoniacum; but is generally accounted less proper in asthmas, and more so in hysterical complaints. It is exhibited in the form of pills or emulsion, to the extent of about a drachm. Applied externally, it is supposed to resolve and discuss tumours, and to promote suppuration.

Officinal Preparations.

Galbanum purificatum, -	*vide Ammoniacum purificatum.*
Pilulæ galbani compositæ, L. -	*Pilulæ.*
assæ fœtida compositæ, E.	*Idem.*
Tinctura galbani, L. -	*Tincturæ.*
Emplastrum picis burgundicæ, D.	*Unguenta.*
assæ fœtidæ, E. -	*Idem.*
gummosum, E. -	*Idem.*
lithargyri compositum, L.	*Idem.*

BUTEA FRONDOSA. *Dub.*

Willd. sp. plant. t. 3, *p.* 917. *Diadelphia Monogynia. Roxburgh's Coromandel Plants, vol.* 1, *p.* 22. *t.* 21. *Plaso Rheed. Malab.* 6. *p.* 29, *tab.* 16, 17. *The* Maduga *of the Telingas.*

Leafy Butea.

Officinal. Kino.—Kino. *Dub.*

This article is introduced into the last edition of the Edinburgh Dispensatory, because the Dublin College have quoted it as furnishing the kino of the shops, though certainly erroneously; for not only is it well known that the greatest part of the kino of the shops is the product of the eucalyptus resinifera of Botany Bay, but Dr. Roxburgh, whom they quote as their authority, distinctly mentions that the concrete juice of the maduga differs from kino. To prevent the error from being repeated or propagated, and still more, as the article seems worthy of further examination, his own words are quoted.

"This is a middle-sized, or rather a large tree, not common in the low lands of this coast, but very common among the mountains; casts its leaves during the cold season, which come out again with the flowers about the months of March or April; seed ripe in June and July.

"From natural fissures and wounds made in the bark of this tree during the hot season, there issues a most beautiful red juice, which soon hardens into a ruby-coloured, brittle, astringent gum; but it soon loses its beautiful colour if exposed to the air. To preserve the colour, the gum must be gathered as soon as it becomes hard, and closely corked up in a bottle. This gum held in the flame of a candle swells, and burns away slowly, without smell or the least flame, into a coal, and then into fine light ashes; held in the mouth it soon dissolves; it tastes strongly, but simply astringent; heat does not soften it, but rather renders it more brittle. Pure water dissolves it perfectly, and the solution is of a deep, clear, red colour. It is in a great measure soluble in spirits, but the solution is paler, and a little turbid; the watery solution also becomes turbid when spirit is added, and the spiritous more clear by the addition of water; diluted vitriolic acid renders both solutions turbid; mild caustic (?) vegetable alkali changes the colour of the watery solution to a clear, deep, fiery blood red; the spiritous it also deepens, but in a less degree; *sal martis* changes the watery solution into a good durable ink."

"These are, I think, proofs that it contains a very small proportion of resin; in which *it differs from the gum resin called kino, or gummi rubrum astringens Gambiense*, which the Edinburgh College has taken into their materia medica. I have used the recent gum in making my experiments, which may make some difference; but as this can be most perfectly dissolved in a watery menstruum, it may prove of use, where a spiritous solution of kino (being the most complete) cannot be properly admitted: consequently it may prove a valuable acquisition."

The butea superba, a very large twining shrub, yields a similar juice.

C.

CALOMELAS. *Vide Hydrargyrum.*

CALX.—LIME.

CALX. L. CALX VIVA. *Ed.* CALX RECENS USTA. D.

Quicklime. Lime recently burnt.

a. Ex lapide calcareo.
b. Ex testis conchyliorum.

CALCIUM, the base of lime, is brighter and whiter than barium or strontium.

Lime is of a grey-white colour, warm, acrid and urinous to the taste; sp. gr. 2.33, soluble in 450 times its weight of water. It is apyrous; it changes vegetable blues to green; it combines with all the acids, sulphur, sulphureted hydrogen, and phosphorus; it is very abundant in the mineral kingdom, and forms the basis of animal bones and shells. The calcareous spars, marble, limestone, chalk and marl, consist chiefly of lime. *Officinal.*

Hydrat of lime. When a small quantity of water is thrown upon fresh burnt lime, it is absorbed rapidly, with the extrication of considerable heat, and some phosphorescent light; at the same time the lime crumbles down into a very fine, white, dry powder, augmented much in bulk, but less caustic than before. Lime, thus slaked, does not renew these phenomena, on a farther addition of water, but may be diffused or dissolved in it.

Lime is scarcely found in nature uncombined, but is easily prepared from any of its carbonats, either mineral or animal, by the action of fire, which first expels the water, and then destroys any animal matters which may be present, and, lastly, expels the carbonic acid. This process is improperly termed the burning of lime. The product is lime, or, as it is commonly called, quicklime.

If about half its weight of water be poured upon lime, a great increase of temperature takes place, steam is produced, and the lime crumbles down into a dry powder, somewhat increased in weight by the presence of part of the water, which has been solidified by the lime: and to the caloric of fluidity, which is expelled during the conversion of the water into a solid, the great increase of the temperature is owing. Lime in this state is said to be slacked. If more water be poured upon slacked lime, there is no new evolution of caloric; but if the water amount to 700 times the weight of the lime, the lime is completely dissolved. The solution is termed Lime-water.

As lime quickly attracts moisture and carbonic acid from the atmosphere, it should be always recently prepared; and when kept, it should be preserved in very close bottles. Lime should not effervesce with acids, and should be entirely soluble in water.

Medical use.—On the living body lime acts as an escharotic, and as such it was formerly applied to ill-conditioned and obstinate sores. Dissolved in water, it is sometimes given internally as a tonic or astringent in scrofula and various fluxes, and formerly it enjoyed considerable reputation as a lithontriptic.

OFFICINAL PREPARATIONS.

Aqua calcis, E. L. D.	-	*vide*,
Aqua potassæ, E. L. D.	-	*Potassa.*
ammoniæ, E. L. D.	-	*Ammonia.*

AQUA CALCIS. *Ed.* D. *Lime-water.*

LIQUOR CALCIS. L. *Solution of Lime.*

Take of

Fresh burnt lime, half a pound;

Put it into an earthen vessel, and gradually sprinkle on it four ounces of water, keeping the vessel shut, while the lime grows hot, and falls into powder. Then pour on it twelve pounds of water, and mix the lime thoroughly with the water by agitation. After the lime has subsided, repeat the agitation; and let this be done about ten times, always keeping the vessel shut, that the free access of the air may be prevented. Lastly, let the water be filtered through paper, placed in a funnel, with glass rods interposed between them, that the water may pass as quickly as possible. It must be kept in very close bottles. (E.)

WE have already had occasion to speak of the properties of lime, and shall therefore now confine our remarks to the solution of it in water, commonly called Lime-water. In making this, we should first add only so much water as is sufficient to slake the lime, which reduces it to a fine powder, easily diffused through water; for if we add more water at first, it forms a paste with the external part of the lime, and defends the internal from the action of the water. During the whole process, the air must be excluded as much as possible; as lime has a very strong affinity for carbonic acid, and attracts it from the atmosphere. The proportion of water used is scarcely able to dissolve one-tenth of the lime; but lime is of little value; and our object is to form a saturated solution quickly and easily. Lime is not more soluble in hot water than in cold; therefore it is unnecessary to use boiling water. The London college decant their solution from the undissolved lime; but in this way we are not so sure of a perfectly transparent solution as by filtration; and if we use the precautions directed by the other colleges, it may be performed without the lime absorbing a perceptible quantity of carbonic acid. The bottles in which lime-water is kept, should be perfectly full, and well corked.

Lime-water is transparent and colourless. It has an austere acrid taste, and affects vegetable colours as the alkalies do. It enters very readily into combination with all the acids, sulphur, and phosphorus;

and decomposed the alkaline carbonats, phosphats, fluats, borats, oxalats, tartrats, and citrats.

Medical use.—When applied to the living fibre, lime-water corrugates and shortens it; it therefore possesses astringent powers. It is also a powerful antacid, or at least it combines with, and neutralizes acids when it comes in contact with them. It also dissolves mucus, and kills intestinal worms. From possessing these properties, it is used in medicine, in diseases supposed to arise from laxity and debility of the solids, as diarrhœa, diabetes, leucorrhœa, scrofula, and scurvy; in affections of the stomach accompanied with acidity and flatulence; when the intestines are loaded with mucus; and in worms. Lime-water is scarcely capable of dissolving, even out of the body, any of the substances of which urinary culculi consists; it has therefore no pretensions to the character of a lithontriptic. It has also been recommended in crusta lactea, in cancer, and in chronic cutaneous diseases. Externally, it is applied to ill-conditioned ulcers, gangrenous sores; as a wash in tinea capitis and psora; and as an injection in gonorrhœa, fistulas, and ulcers of the bladder.

Lime combined with Milk is found very advantageous in relieving the obstinate vomiting occurring in bilious, remitting and yellow fever.

When taken internally, its taste is said to be best covered by lukewarm milk. Its dose is commonly from two to four ounces, frequently repeated; but when long continued it weakens the organs of digestion.

OFFICINAL PREPARATIONS.

Liquor cupri ammoniati, L. D. - *vide Cuprum.*
Oleum lini cum calce, E. - - *Olea præparata.*

AQUA CALCIS COMPOSITA. *Dub.*

Compound Lime-water.

Take of
Guaiac wood, in shavings, half a pound;
Liquorice root, sliced and bruised, an ounce;
Sassafras bark, bruised, half an ounce;
Coriander seeds, three drachms;
Lime-water, six pints.
Macerate, without heat, for two days, and filter.

THIS, notwithstanding the name, may be considered as an equivalent for the compound decoction of guaiac, as the lime-water cannot fail to be decomposed during the preparation.

CARBONAS CALCIS. *Ed.*

CRETA. L. D. *Carbonated lime, Chalk.*

THIS is the most common of all minerals, is found under a great variety of forms, and various names, as chalk, lime-stone, marble, spar. In form it is either amorphous, stalactical, or crystallized.

When amorphous, its texture is either foliated, striated, granular, or earthy. The primitive form of its crystals is a rhomboidal parallelopiped. Hardness, lustre and transparency, various; when transparent, it causes double refraction; specific gravity from 2.315 to 2.78; colour, when pure, white; effervesces violently with muriatic acid, and dissolves entirely or nearly so in it, forming a colourless solution.

Its officinal varieties may be arranged under,

1. Soft carbonat of lime. *Chalk. Creta alba.*
2. Indurated carbonat of lime. *Marble. Marmor album.*

They contain about 45 parts of carbonic acid, and 55 of lime.

In medicine it is given to correct acidity in the primæ viæ, especially when accompanied with looseness. Powdered chalk has been externally applied with success to scalds and burns.

In pharmacy it is employed for the preparation of carbonic acid gas, and of the muriat of lime.

Officinal Preparations.

Aqua aeris fixi, D. -	*vide,*	
super-carbonatis potassæ, E. D. -		*Potassa.*
Carbonas ammoniæ, E. L. D. -		*Ammonia.*
Aqua super-carbonatis ammoniæ, E. L. D.		*Idem.*
Carbonas calcis præparatus, E. L. D.		
Solutio muriatis calcis, E. - -		
Potio carbonatis calcis, E. L. D. -		*Mixturæ.*
Trochisci carbonatis calcis, E. L. -		*Trochisci.*

AQUA AERIS FIXI. D.

Water impregnated with Fixed Air.

Take of

White marble in powder, three ounces;

Diluted sulphuric acid and water, of each, a pound and an half.

Mix them gradually in a Nooth's apparatus, and let the air evolved pass through six pounds of pure spring water, placed in the upper part of the apparatus; and let agitation be occasionally employed until the water shall have acquired a sub-acid taste. (D.)

Carbonic acid may be separated from carbonat of lime

a. By the action of heat alone.

b. By an acid having a superior affinity for the lime.

In the former way the carbonic acid is perfectly pure, in the latter it carries over a little of the stronger acid, which gives a slight degree of pungency.

In this process the carbonic acid is separated from the carbonat of lime by the superior affinity of sulphuric acid. As it is disengaged, it assumes a gaseous form, and would be dissipated in the atmosphere, if it were not made to pass through water, which, at a medium temperature, is capable of absorbing about an equal bulk of this gas, and, by the assistance of pressure, a much greater proportion.

Various contrivances have been made for this purpose. Of these the most easily managed, and most convenient for general use, is the apparatus of Nooth; and, for larger quantities, that of Woulfe, or some modification of it. By the proper application of pressure, M. Paul of Geneva, now of London, is able to impregnate water with no less than six times its bulk of carbonic acid gas.

Medical use.—Water impregnated with carbonic acid, sparkles in the glass, has a pleasant acidulous taste, and forms an excellent beverage. It diminishes thirst, lessens the morbid heat of the body, and acts as a powerful diuretic. It is also an excellent remedy in increased irritability of the stomach, as in advanced pregnancy; and it is one of the best anti-emetics which we possess.

CARBONAS CALCIS PRÆPARATUS. *Ed.*

Olim; Creta Præparata, et Cancrorum Lapilli; vulgo, Oculi Cancrorum Præparati.

Prepared Carbonat of Lime; formerly *Prepared Chalk and Crabs Stones, commonly called Crabs Eyes.*

Carbonat of lime, whether the softer variety commonly called Chalk, or the harder variety called Crabs Eyes and Crabs Stones, after having been triturated to powder in an iron mortar, and levigated on a porphyry stone with a little water, is to be put into a large vessel, and water to be poured upon it, which after agitating the vessel repeatedly is to be again poured off, while loaded with minute powder. On allowing the water to settle, a subtile powder will subside, which is to be dried.

The coarse powder which the water could not suspend, may be levigated again and treated in the same manner. (E.)

In this manner are to be prepared,

Chalk—Coral—Crabs claws, first broken into small pieces, and washed with boiling water.

Oyster-shells and egg-shells, first cleaned from impurities;

And also amber, antimony, calamine, tutty, and verdigris.

The preparation of these substances merely consists in reducing them to an impalpable powder.

Medical use.—Carbonat of lime is commonly called an absorbent earth. It certainly is an antacid; that is, it combines with and neutralizes most acids, while its carbonic acid is expelled in the form of gas. It is therefore exhibited in affections of the stomach accompanied with acidity, especially when at the same time there is a tendency to diarrhœa. The fear of its forming concretions in the bowels, is probably imaginary; for it is not warranted either by theory or experience.

Applied externally, carbonat of lime may be considered as an absorbent in another point of view; for its beneficial action on burns and ulcers probably arises entirely from its imbibing the moisture or ichorous matter, as a sponge would do, and thus preventing it from acting on the abraded surfaces, and excoriating the neighbouring parts.

Officinal Preparations.

Hydrargyrum cum creta, L.	-	*vide Hydrargyrum.*
Pulvis carbonatis calcis compositus, E. L.		*Pulveres.*
opiatus, E.	- -	*Idem.*
Trochisci carbonatis calcis, E. L.	-	*Trochisci.*

CRETA PRÆCIPITATA. *Dub.*

Precipitated Chalk.

Take of

Water of muriat of lime, any quantity.

Add as much carbonat of soda, dissolved in four times its weight of distilled warm water, as is sufficient to precipitate the chalk. Wash the matter which falls to the bottom three times, by pouring on, each time, a sufficient quantity of water. Lastly, having collected it, dry it upon a chalk stone, or paper.

This preparation affords carbonat of lime in its purest state, and, although expensive, may be employed when it is intended for internal use. It is nevertheless a very unnecessary preparation; the preceding prepared carbonat being no ways inferior as a medicine, if proper attention is paid to its preparation.

Officinal Preparations.

Hydrargyrus cum creta. D.
Electuarium aromaticum. D.
Mistura cretacea. D.

SOLUTIO MURIATIS CALCIS. *Ed.*

Solution of Muriat of Lime.

Aqua Muriatis Calcis. D. *Water of Muriat of Lime.*

Take of

Chalk, in coarse powder, one ounce;
Diluted muriatic acid, two ounces.

Gradually add the chalk to the acid, and, after the effervescence is finished, filter.

From the difficulty of crystallizing this salt, it is directed by the Edinburgh college to be evaporated to the total expulsion of its water of crystallization, as being the surest way of obtaining a solution of uniform strength. With the same view, the Dublin college saturate muriatic acid of a given strength; and Dr. Wood directs, that the solution should always have a determinate specific gravity.

It may be economically prepared from the residuum in the decomposition of muriat of ammonia, by lime or chalk, according to the directions of the Berlin Pharmacopœia, now adopted by the London college, by watery fusion, solution, filtration, and crystallization. Its purity is ascertained by its remaining colourless and transparent, with infusion of galls and caustic ammonia; a brown colour indicating the presence of iron, and a precipitation that of alumina. But it may be purified by boiling it in solution an hour, with a sufficient quantity of pure chalk, or other carbonat of lime, filtrating it, evaporating it gently, till it acquire the specific gravity of 1.5, allowing it to stand some days in a corked bottle, decanting it carefully from the sediment, and duly evaporating it.

The crystals of this salt are prisms of six smooth and equal sides, but they are often so aggregated, that they can only be termed acicular. Its taste is pungent, bitter, and disagreeable. When heated, it melts, swells, and loses its water of crystallization, and, at a very high temperature, a small part of its acid. It is one of the most deliquescent salts known, and is so soluble, that water seems capable of dissolving twice its weight, or, at least, forms with it a viscid liquor; but as it is still capable of attracting moisture from the air, and of emitting caloric, when farther diluted, it can scarcely be considered as a true solution. It is soluble in alcohol, and its solution burns with a crimson flame. It is decomposed by the sulphuric, nitric, phosphoric, fluoric, and boracic acids; by baryta, potass, soda, and strontia; by most of the sulphats, sulphites, nitrats, phosphats, fluats, borats, and the alkaline carbonats. Crystallized, it contains 31 acid, 44 lime, and 25 water; dried at a red heat, 42 acid, 50 lime, and 8 water.

Medical use.—It was first proposed as a medicine by M. Fourcroy, and has been lately extolled in scrofulous and glandular diseases, and cases of debility in general, by several eminent practitioners of our own country, Dr. Beddoes, Dr. R. Pearson and Dr. Wood. Thirty drops of the solution are a sufficient dose for children, and a drachm for adults, repeated twice or thrice a-day. In an over-dose it has produced qualms and sickness; and three drachms and a half killed a dog, the stomach of which, upon dissection, had its villous coat bloodshot, and in many parts almost black, and converted into a gelatinous slime. Perhaps it is the muriat of lime which is the active ingredient in the lotions prepared by triturating calomel or corrosive sublimate in lime-water. The compound resulting is a solution of muriat of lime, with oxyd of mercury diffused through it. The property of this salt, of producing intense cold during its solution, might also be applied to medical use. For this purpose it might be economically prepared, by saturating with muriatic acid the residuum of the distillation of ammonia or of carbonat of ammonia. Its strong affinity for water and alcohol, fits it for the rectification of alcohol and ether.

Officinal Preparations.

Creta præcipitata. D.
Alcohol. D.

CAMPHORA. *Vide Laurus Camphora.*

CANCER.

The Crab. A genus of crustaceous insects.

Chelæ. L. *Calculi oculi dicti; Chelæ.* D.

CANCER ASTACUS. *Lapilli. Ed.*

The Craw-fish. Crabs stones, vulgarly called Crabs eyes.

Crabs stones are generally about the size of peas, or larger; of a spherical shape, but a little flatted on one side; of a white colour; but sometimes with a reddish or bluish cast, and internally of a laminated structure.

These concretions are found in the stomach, one on each side, at the time when the crab changes its shell, and also renews the inner membrane of the stomach, which commonly happens in the month of August. They afterwards gradually disappear, and no stones are found after the new shell has acquired its full degree of firmness. They therefore seem to furnish the materials for the induration of the new shell. They are brought in great numbers from Poland and Russia, especially from the province of Astracan, where the craw-fish are either bruised with wooden mallets, or laid up in heaps to putrefy, when the flesh is washed away with water, and the stones picked out.

They consist of carbonat of lime, combined with a little phosphat of lime and gelatine. The quantity of the two last is too small, and their action on the living body too inconsiderable to make any considerable difference in medical properties, between these concretions and soft carbonat of lime, as it occurs in the mineral kingdom.

Crabs stones are said by most writers on the materia medica to be frequently counterfeited with tobacco-pipe clay, or compositions of chalk with mucilaginous substances. This piece of fraud, if really practised, may be very easily discovered; the counterfeits wanting the leafy texture which is observed upon breaking the genuine; more readily imbibing water; adhering to the tongue; and dissolving in vinegar, or the stronger acids, diluted with water, either entirely, or not at all, or by piecemeal; whilst the true crabs stones, digested in these liquors, become soft and transparent, their original form remaining the same, as the organization of the gelatine is not altered by the acid.

Officinal Preparation.

Cancrorum lapilli præparati, E. *vide Carbonas calcis præparatus.*

CANCER PAGURUS. *Chelæ. Ed.*

The black-clawed crab. The claws.

This species of crab inhabits the sea, and is found especially in the North sea. Its claws are yellow, tipt with black, and in every respect they resemble the former article.

Officinal Preparations.

Cancrorum chelæ præparatæ, L. D. *vide Carbonas calcis præparatus.*
Trochisci cretæ, L. - *Trochisci.*
Pulvis chelarum cancri compositus, L. *Pulveres.*

CANELLA ALBA. *Cortex. Ed.* L. D.

Canella alba. The bark.

Willd. g. 942. *sp.* 1.—*Dodecand. Monogyn.*—Nat. ord. *Oleraceæ.*

The Canella alba is a tall tree, which is very common in Jamaica, and other West-India islands.

The canella is the interior bark, freed from an outward thin rough one, and dried in the shade. The shops distinguish two sorts of canella, differing from each other in the length and thickness of the quills: they are both the bark of the same tree, the thicker being taken from the trunk, and the thinner from the branches.

It is brought to us rolled up in long quills, thicker than cinnamon, and both outwardly and inwardly of a whitish colour, lightly inclining to yellow. It is a warm pungent aromatic, not of the most agreeable kind; nor are any of the preparations of it very grateful. Infusions of it in water are of a yellowish colour, and smell of the canella; but they are rather bitter than aromatic. Tinctures in rectified spirit have the warmth of the bark, but little of its smell. Proof spirit dissolves the aromatic as well as the bitter matter of the canella, and is therefore the best menstruum. It must not be confounded with the bark of the wintera aromatica.

Medical use—Canella alba is often employed where a warm stimulant to the stomach is necessary, and as a corrigent of other articles. It is useful as covering the taste of some other articles. It is considered by many as a powerful antiscorbutic.

Officinal Preparation.

Tinctura gentianæ composita, E. *vide Tincturæ.*

CANTHARIDES. *Vide Meloe.*

CAPSICUM ANNUUM. *Fructus. Ed.* E. D.

Cockspur pepper. The pod.

Willd. g. 384. *sp.* 1.—*Pentand. Monogyn.*—Nat. ord. *Solanaceæ.*

This is an annual plant, a native of South America, but cultivated in large quantities in the West-India islands; and it will even ripen its fruit in Great Britain.

The pods of these species are long, pointed, and pendulous, at first of a green colour, and afterwards of a bright orange red. They are filled with a dry loose pulp, and contain many small, flat, kidney-shaped seeds. The taste of capsicum is extremely pungent and acrimonious, setting the mouth as it were on fire.

The pungency of Cayenne pepper is soluble in water and in alcohol, is not volatile, reddens infusions of turnsole, and is precipitated by infusion of galls, nitrat of mercury, muriat of mercury, nitrat of silver, sulphat of copper, sulphat of zinc, red sulphat of iron, (but not blue or green,) ammonia, carbonat of potass, alum, but not by sulphuric, nitric, or muriatic, acid, or silicized potass.

Cayenne pepper is an indiscriminate mixture of the powder of the dried pods of many species of capsicum, but especially of the capsicum frutescens or bird pepper, which is the hottest of all. Cayenne pepper, as it comes to us from the West-Indies, changes infusion of turnsole to a beautiful green, probably owing to the muriat of soda, which is always added to it, and red oxyd of lead, with which it is said to be adulterated.

Medical use.—These peppers have been chiefly used as a condiment. They prevent flatulence from vegetable food, and have a warm and kindly effect in the stomach, possessing all the virtues of the oriental spices, without, according to Dr. Wright, producing those complaints in the head which the latter are apt to occasion. An abuse of them, however, gives rise to visceral obstructions, especially of the liver. But of late they have been employed also in the practice of medicine. There can be little doubt that they furnish us with one of the purest and strongest stimulants which can be introduced into the stomach; while at the same time they have nothing of the narcotic effects of alcohol or opium. Dr. Adair Makitrick, who first introduced them into the practice of medicine, found them useful, particularly in that morbid disposition which he calls *Cachexia Africana*, and which he considers as a most frequent and fatal predisposition to disease among the slaves. Dr. Wright says, that in dropsical and other complaints, where chalybeates are indicated, a minute portion of powdered capsicum forms an excellent addition, and recommends its use in lethargic affections. This pepper has been also successfully employed in a species of cynanche maligna, which proved very fatal in the West-Indies, resisting the use of Peruvian bark, wine, and the other remedies commonly employed. In tropical fevers, coma and delirium are common attendants; and in such cases, cataplasms of capsicum have a speedy and happy effect. They redden the parts, but seldom blister, unless when kept on too long. In ophthalmia from relaxation, the diluted juice of capsicum is a sovereign remedy. Dr. Adair gave six or eight grains for a dose, made into pills, or prepared a tincture, by digesting half an ounce of the pepper in a pound of alcohol, the dose of which was one or two drachms diluted with water.

CARBO.—*CARBON.*

Carbon, in a state of great purity and extreme aggregation, is well known by the name of *diamond*. It possesses a very high degree of lustre, transparency, hardness, and refractive power. It is crystallized, and generally colourless. Its specific gravity is about 3.5. It is insoluble in water, and can neither be melted nor vaporized by caloric. It is a non-conductor of electricity. It is not acted upon by any chemical agent, except oxygen, at very high temperatures. When exposed in oxygen gas to the rays of the sun, concentrated by a very powerful lens, its surface becomes sensibly blackened; it is ignited, and at last consumed. The result of this combustion is carbonic acid gas, which is exactly equal in volume to the oxygen gas consumed; and 100 parts of it consist, according to Messrs. Allen and Pepys, of 28.6 of carbon, and 71.4 of oxygen by weight. It combines with iron, forming steel. It is a constituent of almost all animal and vegetable substances; and is obtained from them by exposing them to heat in close vessels.

Plumbago and *incombustible coal* are carbon in a state of less aggregation and somewhat impure. In the former, it is combined with about $\frac{1}{21}$ of iron; in the latter with earthy matter. The most remarkable known property of these substances is the very high temperature necessary for their combustion.

Common *Charcoal* of wood, is another, and the commonest form of carbon. It is obtained in the form of solid masses, of a black colour, and more than twice as heavy as water. It has neither smell nor taste. It is brittle, and never crystallized; it rapidly attracts moisture, so as to acquire from 12 to 14 *per cent.* of weight. When dry, it also absorbs several times its bulk of any gas in which it is placed. It absorbs light strongly, is refractory in the fire, insoluble in water, and a bad conductor of caloric, but an excellent one of electricity. At a red heat, it burns rapidly in oxygen gas; 28.6 of charcoal, and 71.4 of oxygen, forming 100 of carbonic acid gas. It also burns in atmospheric air, but less vividly. In vacuo, and in gases on which it has no action, it is slowly volatilized by the highest power of galvanism. Common charcoal always furnishes a little water on its combustion; but charcoal from the decomposition of oil gives carbonic acid alone. *Officinal.*

Gaseous oxyd of carbon (carbonic oxyd gas) is carbon in its first degree of oxydation. It is invisible and elastic; 100 cubic inches weigh about 30 grains, or its specific gravity to hydrogen is 13.2. It does not support combustion or respiration. With oxygen gas it burns with a lambent blue flame, and is converted entirely into carbonic acid, without producing any moisture. It has no affinity for lime. It consists of about 4 carbon, and 56 oxygen. When mixed with an equal bulk of chlorine, and exposed to the direct rays of the sun, they unite, are condensed to one half, and form a peculiar gas discovered by Dr. John Davy.

Carbonic acid gas is transparent, colourless, without smell, irrespirable, and incapable of supporting combustion. 100 cubic inches weigh 47 grains, or its specific gravity to hydrogen is 20.7. Water at 41° absorbs an equal bulk of it, and acquires a specific gravity of 1.0015, an agreeable viscidity, and a sparkling appearance, especially if heated to 88°. It is separated from water by freezing or boiling. It is also absorbed by alcohol, volatile and fixed oils. It contains 28.6 carbon, and 71.4 oxygen. Its compounds are called carbonats.

Carbureted hydrogen gas is the gas evolved in stagnant waters. It has no taste, but a disagreeable empyreumatic smell. 100 cubic inches weigh about 17 grains, and its specific gravity is rather less than 8. It is incapable of supporting respiration or combustion. It burns with a bright yellowish flame, consuming two parts of oxygen gas. It detonates with two of chlorine by the electric spark, forming four of muriatic acid gas.

Supercarbureted hydrogen or *Olefiant gas*. 100 cubic inches weigh between 29 and 30 grains, or its specific gravity is 13. It does not support respiration or combustion. It burns with a splendid white flame, and detonates by the electric spark with great violence, with three volumes of oxygen. With an equal volume of chlorine, it forms a fluid resembling an oil.

Chloride of carbonic oxyd was discovered by Dr. John Davy, who called it phosgene gas. It consists of equal volumes of chlorine and carbonic oxyd gases; is colourless, has a suffocating smell like chlorine, affects the eyes. It reddens turnsole. 100 cubic inches weigh 111.91 grains. It does not support combustion, and is not decomposed by any of the simple combustibles, but is acted upon by zinc, antimony, arsenic, and other metals, which absorb the chlorine, and disengage the carbonic oxyd, while the oxyd disengages carbonic acid. It is decomposed by water, and alcohol dissolves twelve times its volume.

Carbo-chloride of ammonia. The preceding gas unites with four times its bulk of ammoniacal gas, forming a neutral salt, solid, white, volatile, pungent, deliquescent, and very soluble in water, which is decomposed by the sulphuric, nitric, muriatic and phosphoric acids.

CARBO LIGNI. *Charcoal of wood.* E. D. L.

Charcoal, as it is commonly prepared, is not a pure oxyd of carbon, but contains also a notable proportion of hydrogen; from which it may be purified by exposing it for some time to a strong heat. Münch directs, that for medical use it be reduced to fine powder, and heated in a covered crucible as long as any flame appears, on removing the cover, and until it be fully red. It is to be allowed to cool in the furnace, the upper layer of the powder to be removed, and the remainder to be sealed accurately up in ounce vials.

Medical use.—When the pneumatic pathology was in fashion, and phthisis and similar diseases were ascribed to hyper-oxygenation of the system, charcoal was strongly recommended as a powerful disoxygenizing remedy, and cases of its successful employment are even recorded.

In this place it will not be superfluous to notice the power ascribed to charcoal of purifying various fetid or discoloured fluids, Lowitz found that it destroyed the adventitious colour and smell of vinegar, carbonat of ammonia, tartaric acid, alcohol, super-tartrat of potass, and other salts, and that it prevented water from becoming putrid at sea, especially when assisted by a little sulphuric acid. Meat which has acquired a maukish, or even putrid smell, is also said to be rendered perfectly sweet by rubbing it with powdered charcoal.

From its acknowledged effects in correcting the putridity of animal substances, it is probable that the virtues ascribed to it of preventing the putrid eructations which take place in some kinds of dyspepsia are not unfounded. Ten grains may be given for a dose. A table spoonful taken two or three times a-day, with syrup of roses, is said to remove habitual costiveness. In the additions to the German translation of the third edition of this dispensatory, we are informed that Hahnemann and Juch found that charcoal taken to the extent of two drachms daily, completely took away the fetor of the stools of dysenteric patients. It is also said to be useful in the itch, worms, florid phthisis, scrofula, and other atrophys. The latest extension of the use of charcoal as a remedy, is for the cure of intermittent fevers, by Dr. Calcagno of Palermo, and his success has been corroborated by Dr. Calvert, and other army practitioners on that station. A scruple of the powder was given as a dose three times a-day, or every three hours, and the patients generally recovered before they had taken two ounces. It was also used with advantage in dysentery. Dr. Calvert says, its general effects seemed to be "to take away bitter and disagreeable tastes in the mouth, to allay sickness, wherever there is a tendency to vomit, and sometimes to stop the vomiting when it has occurred, to promote appetite, and to assist digestion. It has some tendency, however, to constipate the bowels, but it neither produces griping, nor any other unpleasant symptom." As an external application, powdered charcoal has been recommended in the cure of inflammation from external causes, gangrene, and all descriptions of fetid ulcers. The good effects of charcoal, or burnt bread, used as a tooth powder, in correcting the bad smell which the breath sometimes acquires from carious teeth, are well known. It is applied in powder to tinea capitis.

Pharmaceutical Preparation.

Murias barytæ. - - *vide Baryta.*

CARBONAS.—*CARBONAT.*

Carbonat is a generic name for the combinations of the carbonic acid with earths, alkalies, and metallic oxyds.

The nature of these substances was totally unknown, until the year 1756, when the genius of Dr. Black at once removed the veil, and displayed to his contemporaries a new and immense field, in which the most important discoveries might be made; and to their ardour in cultivating it, we are indebted for the present state of chemical knowledge.

Before the brilliant epoch we have mentioned, the carbonats were supposed to be simple bodies; and the fact of their acquiring new and caustic properties by the action of fire, was attempted to be explained by supposing that the particles of the fire combined with them. Dr. Black, however, demonstrated by proofs which carried universal conviction along with them, that these bodies in their caustic state are simple, and that their mildness is owing to their being combined with an acid, to which the name of carbonic is now given.

The *carbonats* always preserve their alkaline properties in some slight degree. They are decomposed by all the acids, forming a brisk effervescence, (which is colourless,) when any of the stronger acids are poured upon them. This phenomenon is owing to these acids displacing, by their greater affinity, the carbonic acid, which flies off in the form of a gas.

The carbonats may be also deprived of their carbonic acid, either by the action of heat alone, or by heating them when mixed with charcoal, which decomposes the carbonic acid by combining with part of its oxygen, so that both the acid and the charcoal are converted into carbonic oxyd gas.

The carbonats may be divided into three great families, the alkaline, the earthy, and the metallic.

Family 1. The alkaline carbonats have an urinous taste, tinge vegetable blues green, and are soluble in water, and insoluble in alcohol.

Family 2. The earthy carbonats are insipid, and insoluble in water, but soluble in water saturated with carbonic acid.

Family 3. The metallic carbonats scarcely differ in appearance from the metallic oxyds.

Officinal.

Carbonas barytæ,	- - -	*vide Baryta.*
calcis,	- - -	*Calx.*
magnesiæ,	- - -	*Magnesia.*
Potassæ,	- - - -	*Potassa.*
sodæ,	- - - -	*Soda.*
ammoniæ,	- - -	*Ammonia.*
zinci,	- - -	*Zincum.*
ferri,	- - - -	*Ferrum.*

CARDAMINE PRATENSIS. *Flores. Ed.* D. L.

Meadow Ladies smock. Flowers. Cuckow flower.

Willd. g. 1257. *sp.* 19. *Smith, Flor. Brit. g.* 304. *sp.* 4.—*Tetradyn. Siliquos.*—Nat. ord. *Siliquosæ.*

The Cardamine is a perennial plant, which grows in meadow-grounds, send forth purplish flowers in the spring; and in its sensible qualities resembles the *sisymbrium nasturtium.*

Medical use.—Long ago it was employed as a diuretic; and of late it has been introduced in nervous diseases, as epilepsy, hysteria, chorea, asthma, &c. A drachm or two of the powder is given twice or thrice a day. It has little sensible operation, except that it sometimes acts as a diaphoretic.

CARUM CARUI *Semina. Ed.* D. L.

Common Caraway. The Seeds.

Willd. g. 561. *sp.* 1.—*Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

D.	*Karwey, Veldkomyn.*	P.	*Alcaravia, Alchirivia, Chirivia.*
DA.	*Kummen, Dansk Kummen, Karve.*	POL.	*Karuy, Kmin polny.*
F.	*Carvi, Cumin des près.*	R.	*Dikii Timon.*
G.	*Kuemmel.*	S.	*Alcaravea.*
I.	*Carvi.*	SW.	*Kummin, Brodkumin, Karf.*

Caraway is a biennial umbelliferous plant, cultivated in gardens, both for culinary and medicinal use. The seeds have an aromatic smell, and warm pungent taste, and yield much essential oil.

Medical use.—They are employed as stomachic and carminative in flatulent colics.

Officinal Preparations.

Oleum volatile carui, L. D. - -	*vide Olea volatilia.*
Spiritus cari carui, E. L. D. - -	*Spiritus destillati.*
Decoctum anthemidis nobilis, E. - -	*Decocta.*
Tinctura cardamomi composita, L. D. -	*Tincturæ.*
sennæ, L. D. . - -	*Idem.*
Confectio opiata, L. - - -	*Electuaria.*
Emplastrum cumini, L. - -	*Unguenta.*

CASSENA.

Ilex Vomitoria *of Aiton.*

South-sea-tea; Evergreen Cassine; Cusseena—Yaupon, or Yopon.

This is a native of Carolina West Florida, &c. and is thought to be one of the most powerful diuretics hitherto discovered. It also vomits severely. It is much esteemed by the southern Indians.*

CASSIA.

CASSIA FISTULA. *Fructus. Pulpa. Ed.* D. L. *Sp.* 18.

Cassia tree. The fruit and its pulp.

Willd. g. 813. *Decandria Monogynia.*—Nat. ord. *Lomentaceæ.*

D.	*Kassie, Pypkassie, Rietkassie, Purgeerende Kassie.*	I.	*Cassia fistola.*
DA.	*Cassia, Roercassia.*	P.	*Cassia purgante, Cana fistula.*
F.	*Casse solutive, Casse en batons ou en canons, Canefice, Cassefistule.*	POL.	*Fistula.*
G.	*Kassia, Rochrenkassia, Purgier Kassia.*	R.	*Kassia.*
		S.	*Canafistola, Casia purgante, Casia fistola.*
		SW.	*Cassia, Rœrcassia.*

* Barton's Collections, part I. p. 36.

This tree is indigenous in India and Egypt, and is cultivated in Jamaica. It rises to about thirty feet high, and has long flower spikes, with yellow papilionaceous blossoms.

Its fruit is a cylindrical pod, a foot or more in length, and scarcely an inch in diameter: the outside is a hard brown bark; the inside is divided by thin transverse woody plates, covered with a soft black pulp, of a sweetish taste, with some degree of acrimony. There are two sorts of this drug in the shops; one brought from the East Indies, the other from the West, (Cassia Javanica?) the canes or pods of the latter are generally large, rough, thick-rined, and the pulp nauseous; those of the former are less, smoother, the pulp blacker, and of a sweeter taste; this sort is preferred to the other. Such pods should be chosen as are weighty, new, and do not make a rattling noise (from the seeds being loose within them) when shaken. The pulp should be of a bright, shining, black colour, and have a sweet taste, neither harsh, which happens from the fruit being gathered before it has grown fully ripe, nor sourish, which it is apt to become upon keeping, not at all mouldy, which, from its being kept in damp cellars, or moistened, in order to increase its weight, it is very subject to be. Greatest part of the pulp dissolves both in water and in alcohol; and may be extracted from the pod by either. The shops employ water, boiling the bruised pod therein, and afterwards evaporating the solution to a due consistence.

Vauquelin has analyzed this pulp, and found it to consist of parenchyma, gluten, gelatin, gum, extractive and sugar.

Medical use.—The pulp of Cassia, from its saccharine and extractive constituents, is a gentle laxative medicine, and is frequently given, in a dose of some drachms, in costive habits. Some direct a dose of two ounces or more as a cathartic, in inflammatory cases, where the more acrid purgatives are improper; but in these large quantities it generally excites nausea, produces flatulencies, and sometimes gripings of the bowels, especially if the cassia be not of a very good kind: these effects may be prevented by the addition of aromatics, and by exhibiting it in a liquid form.

Officinal Preparations.

Pulpa expressa, E. L.	- - -	*vide Suc. inspissati.*
Electuarium cassiæ fistulæ, E. L. D.	-	*Electuaria.*
sennæ, E. L.	- - -	*Idem.*

CASSIA SENNA. *Folia. Sp.* 24. *Ed.* L. D.

Senna. The leaves.

D.	*Senebladen.*	P.	*Sene, Senna.*
DA.	*Semsblader.*	POL.	*Sene, Senna.*
F.	*Sené, Sené en feuilles.*	R.	*Senetnüe listü.*
G.	*Senna, Senesblätter.*	S.	*Sen, Sena.*
I.	*Sena.*	SW.	*Sennetsblader.*

This species of cassia is annual, although in its mode of growth it resembles a shrub, and sends out hollow wooden stems, to the height of four feet. It grows principally in Upper Egypt, from whence the leaves are brought, dried, and picked from the stalks, to Alexandria in Egypt, and thence imported into Europe. They are of an oblong figure, sharp-pointed at the ends, about a quarter of an inch broad, and not a full inch in length, of a lively, yellowish green colour, a faint, not very disagreeable smell, and a sub-acrid, bitterish, nauseous taste. Some inferior sorts are brought from other places. These may easily be distinguished by their being either narrower, longer, and sharper pointed, from Mocha; or larger, broader, and round pointed, with small prominent veins, from Italy; or larger and obtuse, of a fresh green colour, without any yellow cast, from Tripoli.

It has been customary to reject the pedicles of the leaves of senna, as causing gripes and pains in the bowels; but this is a mere prejudice, for both leaves and pedicles act in the very same way. Neumann from 480 parts of senna got 143 alcoholic extract, and afterwards 140 watery; and inversely, 245 watery, and only 28 alcoholic, so that it seems to consist chiefly of mucilage and extractive.

Medical use.—Senna is a very useful cathartic, operating mildly and yet effectually; and, judiciously dosed and managed, rarely occasions the ill consequences which too frequently follow the exhibition of the stronger purges. The only inconveniences complained of in this drug are, its being apt to gripe, and its nauseous flavour.

These are best obviated by adding to the senna some aromatic substance, as ginger, cinnamon, &c. and by facilitating its operation by drinking plentifully of any mild diluent.

Senna may be given in substance to the extent of about a drachm, but it is rather too bulky, and it is therefore better to divide it into two doses, and to take the one half at night, and the other in the morning. It is more conveniently given in the form of infusion, which is generally made by pouring about six ounces of boiling water upon from two to six drachms of senna leaves in a tea-pot, and letting it stand about an hour. Senna ought never to be ordered in decoction, Gren says, because it becomes perfectly inert from the total dissipation of the nauseous and volatile principle on which its purgative effects depend. The tincture, on account of the menstruum, cannot be given in doses large enough to purge.

Officinal Preparations.

Infusum sennæ, L. D. - - - -	*vide Infusa.*
sennæ tartarisatum, L. - -	*Idem.*
tamarindi cum senna, E. - -	*Idem.*
Syrupus mannæ, D. - - - -	*Syrupi.*
Tinctura sennæ composita, E. L. D. -	*Tincturæ.*
Electuarium sennæ, E. L. D. - -	*Electuaria.*
Extractum cassiæ sennæ, E. L. D. - -	*Extracta.*
Pulvis sennæ compositus, L. - -	*Pulveres.*

CASSIA MARILANDICA.

This plant, which is abundant in America, is of the same genus with the senna of the shops, and it possesses nearly the same virtues as the eastern species * It is used as a purgative in different parts of the United States, and from the high price of foreign senna, certainly deserves to be more attended to.

CASTOR FIBER. *Ed.* L. D.

Materia in folliculis prope anum collecta.

The Beaver. Castor. The substance collected in the follicles near the anus.

Mammalia rodentia, Cuvier.

D.	*Bevergeil.*	P.	*Castoreo.*
DA.	*Bævergel.*	POL.	*Stroybobowry.*
F.	*Castoreum.*	R.	*Bobrowaja struja.*
G.	*Bibergeil.*	S.	*Castoreo.*
I.	*Castorio.*	SW.	*Bäfvergäll.*

a. Castoreum Rossicum, *Dub.*
b. ——— Canadense, *Dub.*

The beaver is strongly characterized by its flat, horizontal, scaly tail. It is an amphibious animal, and is found in the northern parts of Europe, Asia, and America, on the banks of lakes and rivers. In inhabited countries it is a solitary slothful animal, but in desert regions it lives in society; the remarkable manners of which, and the immense works effected by the united labours of all the individuals of their republic, have rendered the natural history of this animal familiar to every one. In both sexes, between the anus and pudendum, there are four follicles of an oblong shape, smaller above and larger below, formed of a tough membrane, almost resembling leather. The two largest and undermost of these, which are also connected, and lie parallel and close to each other, contain an oily fluid secretion, which is the substance known by the name of castor. It is preserved by cutting out the entire bags, and drying them in the smoke.

The best castor comes from Russia, Prussia, and Poland. The cods should be dry, gibbous, roundish, heavy, solid, and filled with a solid substance, contained in membranous cells, somewhat tough, but brittle, of a dark brown colour, of a peculiar, disagreeable, narcotic smell, and a nauseous, bitter, acrid taste. The Canadian castor is of an inferior quality; the cods are smaller, thin, oblong, and much corrugated, and the castor itself has much less smell and taste: what is very old, quite black, and almost destitute of smell and taste, is unfit for use, as well as the counterfeited castor, which is a mixture of various gummy resins and other substances, with a little real castor,

* Barton's Collections, Part I. p. 39.

artificially interspersed with membranes, and stuffed into the scrotum of a goat. This imposition is easily detected by the weaker degree of its smell and taste, by chemical analysis, and even by mere external examination; for to the real bags, the two smaller and upper follicles, filled with a fatty matter, are always attached.

Neumann got from 480 parts of castor, 140 alcoholic extract, and afterwards 80 watery; inversely, 140 watery, and 20 alcoholic. The first alcoholic extract retained the whole flavour of the castor, as none of it rose in distillation with the alcohol. The distilled water, on the contrary, contained the whole flavour, and the watery extract was merely bitter. Cartheuser obtained from it a volatile oil by distillation. Bouillon Lagrange says it is composed of a resin, adipocere, volatile oil and extractive, and Langier has discovered benzoic acid in it.

Medical use.—Castor is an excellent antispasmodic. It is very little heating, and acts particularly upon the uterine system.

It is given with advantage,

1. In typhoid fevers.
2. In spasmodic diseases, especially in hysteria and epilepsy, and in cases of difficult parturition, from a spasmodic contraction of the mouth of the uterus after the membranes have burst.
3. In amenorrhœa.

It is exhibited most advantageously in the form of powder, in doses of from 10 to 20 grains, and in clysters to a drachm. Diluted alcohol extracts its virtues; therefore it may be also given in the form of tincture. But its exhibition in the form of extract or decoction is improper.

Officinal Preparation.

Tinctura castorei, E. L. D. - *vide Tincturæ.*

CATAPLASMATA.—*CATAPLASMS.*

By cataplasms are in general understood those external applications which are brought to a due consistence or form for being properly applied, not by means of oily or fatty matters, but by water or watery fluids. Of these many are had recourse to in actual practice; but they are seldom prepared in the shops of the apothecaries; and in some of the best modern pharmacopœias no formula of this kind is introduced. The London and Dublin colleges, however, although they have abridged the number of cataplasms, still retain a few; and it is not without some advantage that there are fixed forms for the preparation of them.

CATAPLASMA FERMENTI. *Lond.*

Yeast Cataplasm.

Take of
  Flour, one pound;
  Beer yeast, half a pint.
Mix and expose to a gentle heat, till the mass begins to swell.

The yeast excites fermentation in the flour, and converts the whole into a thin dough. This cataplasm is considered as a very efficacious application to putrid or putrescent ulcers or tumours.

CATAPLASMA ALUMINIS. L.

Cataplasm of Alum.

Coagulum Aluminosum. D. *Alum Curd.*

Take
  The white of two eggs.
Shake them with a piece of alum till they be coagulated. (L.)

This preparation is taken from Riverius. It is a useful astringent epithem for sore moist eyes. Where the complaint is violent, this preparation, after the inflammation has yielded a little to bleeding, is one of the best external remedies. It is to be spread on lint, and applied at bed-time.

CATAPLASMA SINAPIS. L.

Mustard Cataplasm.

Take of
  Mustard seed, powdered,
  Crumb of bread, of each half a pound;
  Vinegar, as much as is sufficient.
Mix and make a cataplasm.

Cataplasms of this kind are commonly known by the name of *Sinapisms*. They were formerly frequently prepared in a more complicated state, containing garlic, black soap, and other similar articles; but the above simple form will answer every purpose which they are capable of accomplishing. They are employed only as stimulants: they often inflame the part and raise blisters, but not so perfectly as cantharides. They are frequently applied to the soles of the feet in the low state of acute diseases, for raising the pulse and relieving the head. The chief advantage they have depends on the suddenness of their action.*

* On this quickness of action a very important end in practice may be attained, and which I have repeatedly pursued with the best effect, viz. to apply a mustard cataplasm (in pleurisy, &c.) for an hour, or less, when the disposition

CENTAUREA BENEDICTA. *Herba. Folia. Ed.* D.

Blessed Thistle. The leaves or plant.

Willd. g. 1548. *sp.* 89. *Syngenesia Polygamia frustranea.*—Nat. ord. *Compositæ capitatæ.*

This is an annual plant, indigenous in the Grecian islands, and cultivated in gardens: it flowers in June and July, and perfects its seeds in the autumn. The herb should be gathered when in flower, quickly dried, and kept in a very dry airy place, to prevent its rotting or growing mouldy, which it is very apt to do. The leaves have a penetrating bitter taste, not very strong or very durable, accompanied with an ungrateful flavour, from which they are in a great measure freed by keeping. Water extracts, in a little time, even without heat, the lighter and more grateful parts of this plant; if the digestion be continued for some hours, the disagreeable parts are taken up. A strong decoction is very nauseous and offensive to the stomach. Rectified spirit gains a very pleasant bitter taste, which remains uninjured in the extract.

Neumann got from 1920 parts 270 alcoholic, and afterwards 390 watery extract, and inversely 600 watery and 60 alcoholic.

Medical use.—The virtues of this plant seem to be little known in the present practice. The nauseous decoction is sometimes used to provoke vomiting; and a strong infusion to promote the operation of other emetics. But this elegant bitter, when freed from the offensive parts of the herb, may be advantageously applied to other purposes. Excellent effects have been frequently experienced from a slight infusion of carduus in loss of appetite, where the stomach was injured by irregularities. A stronger infusion made in cold or warm water, if drunk freely, and the patient kept warm, occasions a plentiful sweat, and promotes the secretions in general.

The extract prepared by evaporating the expressed juice, with the addition of a little alcohol to prevent it from becoming mouldy, has been strongly recommended in the catarrh of children.

The seeds of this plant are also considerably bitter, and have been sometimes used with the same intention as the leaves.

to vesication is so strongly excited, that an epispastic will rise in half its usual time, which in many cases is of the utmost consequence. *American Editor.*

CEPHAELIS IPECACUANHA.

Willd. g. 356. *species nova.—Pentandria Monogynia.*—Nat. ord. *Aggregatæ.*

CALLICOCCA IPECACUANHA. E. L. D.—*Brotero, Linnæan Trans. vol.* 6.—*Radix.*

Ipecacuan. The Root.

D. *Braakwortel Roodenloopwortel.*	I. *Ipecocacanua.*
DA. *Brækrod.*	P. *Cipó de camaras, Ipecacuanah.*
F. *Ipecacuanha.*	S. *Ipecacuana.*
G. *Amerikanische Brechwurzel, Ruhrwurzel.*	SW. *Kräkrot.*

IPECACUAN, in the language of South America, means vomiting root, and is applied to various vegetables which possess that property in any remarkable degree; hence the confusion and contradictions which have long prevailed concerning the plant which furnishes our officinal Ipecacuan: and this confusion is increased by several varieties of ipecacuan being found in the shops.

1st, The ash-coloured or Peruvian ipecacuan is a small wrinkled root, bent and contorted into a great variety of figures, brought over in short pieces, full of wrinkles and deep circular fissures, quite down to a small white woody fibre that runs in the middle of each piece: the cortical part is compact, brittle, looks smooth and resinous upon breaking: it has very little smell; the taste is bitterish and subacrid, covering the tongue as it were with a kind of mucilage. This, according to Mutis, is obtained from the Psycotria emetica, and is that commonly used.

2d, The brown ipecacuan is small, and somewhat more wrinkled than the foregoing; its bark is of a brown or blackish colour without, and white within; this is brought from Brazil, and is the root of a cephaëlis, which is perennial, and grows in moist shadowy situations. A complete monography of it, and an excellent plate, were published, in the sixth volume of the Transactions of the Linnæan Society, by Professor Brotero, who calls it the Callicocca Ipecacuanha; but the genus Callicocca has been united by Willdenow with that of Cephaëlis, to which we have therefore referred it. The plate of Brotero corresponds with that published in Woodville's Medical Botany, vol. iii. from a plant sent in spirits from Brazil by Governor Philips to Sir Joseph Banks, but which unfortunately was not in flower, and also with the rude draught of Piso, who first examined it. It has been sometimes observed, even in a small dose, to produce violent effects.

3d, The white sort is woody, has no wrinkles, and no perceptible bitterness in taste. It is probably the root of a viola. Though taken in a large dose, it has scarcely any effect at all.

Besides these, the name of Ipecacuan is given to various species of Cynanchum, Asclepias, Euphorbia, Dorstenia, and Ruellia. With regard to their comparative strengths, Decandolle says, that vomiting is produced by 22 grains of the Cynanchum Ipecacuanha, 24 of the

Psycotria emetica, 60 to 72 of the Viola calceolaria, and one to three drachms of the Viola Ipecacuanha.

Ipecacuan was first brought into Europe about the middle of last century, and an account of it published at the same time by Piso; but it did not come into general use till about the year 1686, when Helvetius, under the patronage of Lewis XIV, introduced it into practice. The root is one of the mildest and safest emetics with which we are acquainted; and has this peculiar advantage, that when it does not operate by vomiting, it passes off by other emunctories.

Neumann got from 7680 parts 1440 alcoholic, and afterwards 1880 watery extract, and inversely 2400 watery, and 600 alcoholic. The tincture of ipecacuan does not redden infusion of litmus, it is precipitated by water, after which it does not precipitate a solution of gelatin, but is precipitated by red sulphat of iron, and readily acquires a green colour from excess of the chalybeate, and precipitates infusion of gall nuts. Dr. Irvine ascertained that the watery solution is much more powerfully emetic than the alcoholic; that the cortical is more active than the ligneous part; and that the whole root possesses considerable influence, both as an antiseptic and astringent; that the distilled water has very little influence; but that the decoction which remained in the still, operated violently as an emetic, produced rigours, cold sweats, and other alarming symptoms; that by long continued boiling, the activity of the root is almost totally destroyed; and that the emetic property of ipecacuan was most effectually counteracted by means of the acetous acid, insomuch that thirty grains of the powder taken in two ounces of vinegar, produced only some loose stools.

From these experiments it evidently appears, that ipecacuan contains cinchonin and a resin, and that its emetic property does not depend upon the latter, although we can scarcely attribute it to the former, as in other substances it does not manifest any emetic property. It is therefore probably owing to some other principle soluble in water and alcohol. Others have found, that the resinous part is more apt to act upon the intestinal canal, and to operate by stool.

Medical use.—The primary effect of ipecacuan is that of stimulating the stomach. If the dose be sufficiently large it excites vomiting, by inverting the peristaltic motion of the stomach and duodenum; in a smaller dose, it only produces nausea, and operates by stool; and in still smaller doses, it generally stimulates the stomach, increases the appetite, and facilitates digestion. Its secondary effects depend on the sympathy of other parts with the stomach; and in this way only can we explain its action as an antispasmodic, diaphoretic, expectorant, and in checking hemorrhagies. Its beneficial effects in some cases also seem to be owing to the general concussion given to the whole system during the action of vomiting.

Ipecacuan, properly administered, often proves serviceable,

1. In intermittent fevers. It has frequently succeeded in stopping these, when given about an hour before an accession was expected, and also when given so as to produce vomiting at the time of an accession, or at the end of the cold stage.

2. In continued fevers. Its beneficial effects are very decided in the commencement of typhus fever. An emetic, succeeded by a diaphoretic regimen, when administered sufficiently early in this disease, very frequently cuts it short at once, and when it fails in this desirable object, it always has a beneficial influence on the progress of the fever.
3. In inflammatory diseases, rheumatism, bubo, swelled testicle.
4. In exanthematous diseases, when the eruption is disposed to recede.
5. In hemorrhagies, when given in nauseating doses.
6. In profluvia, especially in dysentery, so much so, that it was formerly esteemed a specific against that disease. But Cullen attributes its good effects in this instance to its producing a steady determination of the peristaltic motion of the intestines downwards, when given in repeated small doses.
7. In many spasmodic diseases; in epilepsy; asthma; dyspnœa; pertussis; chronic diarrhœa; hysteria; melancholia; mania.
8. In cachectic diseases, as in some kinds of dropsy.
9. In impetiginous diseases; in jaundice.
10. In local diseases; in amaurosis, and several of the dysorexiæ.
11. Lastly, in every instance when we wish to evacuate the stomach, as when it is overloaded with food, or when poison, especially opium, has been swallowed.

The use of ipecacuan, as an emetic, is contra-indicated,

1. Where there is a disposition to hemorrhagy.
2. Where there is an increased flow of blood towards the head.
3. In very irritable subjects.
4. In pregnant women, and persons afflicted with hernia.

Ipecacuan is exhibited,

1. In substance; in powder. Full vomiting will generally be produced in an adult by a scruple or half a drachm, and though less might answer the purpose, fortunately an over dose is scarcely attended with any inconvenience, as the whole of it is vomited with the contents of the stomach as soon as it operates. The vomiting is promoted and facilitated by drinking copiously of warm watery fluids. On the contrary, when vomiting is not intended, liquids must be rather drunk sparingly, and the dose must be diminished to a grain or less. In such small doses it is conveniently combined with any proper adjunct, in the form of powder, pill, or bolus.
2. In infusion. One drachm may be infused in four ounces of water, and taken in repeated doses till it operate.
3. Infused in wine.

Ipecacuan not only checks the narcotic effects of opium, and is therefore one of the best antidotes for its poison, but reciprocally the emetic powers of ipecacuan are checked by the addition of opium, and the combination operates by increasing the cuticular discharge.

" It has recently been announced by Thomas Clark, M. D. an English physician, that a decoction of the root of ipecacuanha has been administered as injections in dysentery and internal piles with surprising success. The practice has been adopted by several physicians, all of whom testify their confidence in the superior efficacy of the remedy. Dr. Clark directs for an adult affected with dysentery three drachms of the bruised root to be boiled in a quart of water down to a pint, strained, and given all at once as a lavement, and repeated if necessary. In cases of internal piles, half that quantity will be sufficient."

Officinal Preparations.

Vinum ipecacuanhæ, E. L. D.	- -	*vide Vina medicata.*
Pulvis ipecacuanhæ et opii, E. L. D.	-	*Pulveres.*

CEREVISIÆ FERMENTUM. *Lond.*

Barm or Yeast.

Barm or yeast has lately been much extolled as an antiseptic remedy in putrid fevers. A table spoonful is recommended to be given as a dose, in porter, or wine and water. It is also applied externally, in the form of a poultice, to foul and putrid sores.

CERA.—*WAX.*

D.	*Wasch.*	P.	*Cera.*
DA.	*Vox.*	POL.	*Wosk.*
F.	*Cire.*	R.	*Wosk.*
G.	*Wacks.*	S.	*Cera.*
I.	*Cera.*	SW.	*Vax.*

CERA FLAVA. *Ed.* L. D. *Yellow Wax.*

Wax is a solid, of considerable consistence, granulated and crystalline in its fracture, of a white colour, and without any remarkable odour or taste. It softens and becomes plastic when very slightly heated; at 140° it melts; at a higher temperature it is in part vaporized and decomposed, and its vapour is inflammable. It resists in a remarkable degree the action of the acids; but in most of its other properties it resembles the fixed oils. From its combustion it appears to consist of carbon 53.12, hydrogen 16.91, and oxygen 29.97; or, according to the former calculation, of 82.28 charcoal, and 17.72 hydrogen.

For this useful substance we are indebted to the common honey bee (*apis mellifica*), an insect belonging to the class of *Hymenoptera mellita* of Cuvier. It is, however, a vegetable production, and is collected by the bees from the surface of leaves, and the antheræ of flowers. They employ it to form the combs in which the honey and larvæ are deposited.

It is found in the shops in round cakes, which are formed by melting the combs, after all the honey has been expressed from them, in hot water. The wax swims above, and the impurities either sink to the bottom, or are dissolved in the water. When recent, it is tenacious, but brittle, of a yellow colour, and sweet honey-like smell; dry, not greasy to the feel; insoluble in water, alcohol and ether; soluble in the fat oils and alkalies; fusible and inflammable. In selecting it, we should observe that the cakes be brittle, have a pleasant yellow colour, an agreeable smell, no taste, do not adhere to the teeth when chewed, and burn entirely away. When adulterated with resin, the fraud is detected by its taste, and the action of alcohol, which dissolves the resin. When mixed with pease meal, or earthy substances, it is more brittle, of a paler colour, and may be separated from them by liquefaction and straining. When combined with tallow, it becomes less brittle, but at the same time softer, and has an unpleasant smell.

CERA FLAVA PURIFICATA. *Dub.*

Purified Yellow Wax.

Take of

Yellow wax, any quantity.

Melt it with a moderate heat, remove the scum, and after allowing it to settle, pour it cautiously off from the fæces.

Yellow wax is so often adulterated, that this process is by no means unnecessary.

CERA ALBA. *Ed.* L. D.

White Wax.

The yellow colour of beeswax, and its peculiar smell, may be destroyed by the combined action of water, air, and the sun's rays. In the process for bleaching wax, we therefore, extend its surface as much as possible, by melting it and forming it into thin plates, which are fully exposed to the sun's rays, upon linen stretched in frames, and repeatedly moistened, until it acquires the whiteness desired. It is then usually melted into thin disks. White wax is more brittle, less fusible, and heavier than yellow wax. It is sometimes mixed with white oxyd of lead, or with tallow. For medical use, it has no advantage over yellow wax.

Medical use.—When taken internally, wax agrees in its effects with the fat oils, and though less frequently prescribed in this way, it is preferable, it being less apt to become rancid. Poerner recommends it as an excellent remedy in diseases of the intestines, attended with pain, excoriation, and obstinate diarrhœa. He gave a scruple, or half a drachm of wax, three or four times a-day, in the form of an emulsion, by melting it first with some fixed oil, and then mixing it with a decoction of groats by trituration with the yolk of an egg. But by far its principal use is for the formation of cerates, ointments, plasters, &c.

Officinal Preparations.

Oxydum antimonii vitrificatum cum cera, E. *vide Antimonium.*
Wax enters likewise into the composition of most of the various cerates, plasters, and ointments, of the colleges. - - - - *Unguenta, &c.*

CERATA.—*CERATES.* *Vide Unguenta.*

CERUSSA. *Vide Plumbum.*

CERVUS ELAPHUS. *Cornua. Ed.* L. D.

The stag or hart. The horns.

Mammalia Ruminantia.

The male has two round solid horns on his forehead, with several conical branches, the number of which ascertain the age of the animal to which they belong. These horns fall off and are renewed every year. When first reproduced, they are soft, full of bloodvessels, and covered with a velvety skin, but they soon lose their covering, and become hard, compact and bony.

In their nature they do not seem to differ from bone except in containing a larger proportion of cartilage. They afford a very considerable quantity of gelatin by decoction with water, and hartshorn shavings are still employed in domestic economy for furnishing a nutritious and demulcent jelly. By the action of fire, their products are the same with those of animal substances in general; and they were formerly so much used for the preparation of ammonia, that it was commonly called salt or spirit of Hartshorn. By burning they are totally converted into phosphat of lime.

Officinal Preparations.

Cornu cervi ustum, L. D.
Liquor volatilis, sal, et oleum cornu cervi, L. D. *vide Ammonia.*
Oxydum antimonii cum phosphat calcis, E. L. D. *Antimonium.*

PHOSPHAS CALCIS.

Phosphat of Lime.

Pulvis Cornu Cervini Usti. D.

Burnt Hartshorn.

Burn pieces of hartshorn till they become perfectly white; then reduce them to a v ry fine powder. L. D.

The pieces of horn generally employed in this operation, are those left after distillation.

In the burning of hartshorn, a sufficient fire and the free admission of air are necessary. The potter's furnace was formerly directed for the sake of convenience; but any common furnace or stove will do. Indeed too violent a heat makes their surface undergo a kind of fusion and vitrification, which both prevents the internal parts from being completely burnt, and renders the whole less soluble. If the pieces of horn be laid on some lighted charcoal, spread on the bottom of the grate, they will be burnt to whiteness, still retaining their original form.

According to the analysis of Merat Guillot, hartshorn was found to consist of 27. gelatin, 57.5 phosphat of lime, 1. carbonat of lime, and there was a loss of 14.5, probably water. Now, as the gelatin is destroyed by burning, and the water expelled, the substance which remains is phosphat of lime, mixed with less than two *per cent.* of carbonat of lime. Fourcroy and Vauquelin have analysed bones more accurately, and found that they contain phosphat of magnesia, iron, and manganese, and that human bones contain less of the first of these, and more of the two others than animal bones, which is probably owing to the constant excretion of phosphat of magnesia in human urine. In human bones there are also traces of alumine and silex.

Medical use.—From its white earthy appearance, it was formerly considered as an absorbent earth. But since it has been accurately analyzed, that idea has been laid aside, and its use has been suggested as a remedy in rickets, a disease in which the deficiency of the natural deposition of phosphat of lime in the bones seems to be the essential or at least most striking symptom. M. Bonhomme, therefore, gave it to the extent of half a scruple, mixed with phosphat of soda, in several cases with apparent success. Whatever objections may be made to his theory, the practice certainly deserves a trial.

Pharmaceutical Preparations.

Decoctum cornu cervi, L. - -	*vide Decocta.*
Pulvis opiatus, L. - - - -	*Pulveres.*
Phosphas sodæ, L. - - . -	*Soda.*

CHAMÆMELUM. *Vide Anthemis.*

CHENOPODIUM ANTHELMINTICUM.

Worm seed. Jerusalem oak.

This plant grows plentifully in the United States, and is much used for worms. The whole plant has a powerful smell, of which it is very retentive. Its taste is bitter, with much aromatic acrimony. The whole plant may be employed. The expressed juice is used, in doses of a table-spoonful for a child of two or three years old. A decoction of the plant made by boiling a handful of the green leaves in a quart of milk, for about one quarter of an hour; to which orange peel may be added, may be given to a child of four or five years old, in doses of about a wine glass full two or three times a day. The seeds are more employed, reduced to a fine powder, and made into an electuary with syrup. Of this, a child of two or three years old may take a table-spoonful early in the morning; abstaining from nourishment for some hours: a like dose is given at night, or they may be strewed on bread and butter. It is often necessary to continue this course for several days. Great numbers of lumbrici are frequent discharged after the use of a few doses of the medicine.*

CHIRONIA CENTAUREUM. *Summitates Florentes.* E. D. L.

CENTAUREUM MINUS.

Smaller Centaury. The flowering heads.

Willd, g. 394. *sp.* 9. *Smith, Flor. Brit. g.* 102, *sp.* 1. *Pentandria Monogynia.* Nat. ord. *Rotaceæ.*

THIS plant is annual, and grows wild in many parts of England on barren pastures. It flowers between June and August. The corolla is said to have no taste; and therefore the herb, which is intensely bitter, should be preferred to the flowering tops, which derive their virtues only from the stalks connected with them. It agrees in every respect with our pure bitters.

Neumann got from 480 parts 210 alcoholic, and 140 watery extract, and inversely 320 watery, 40 alcoholic.

This plant is found native within the limits of the United States.†

CHIRONIA ANGULARIS. *Linn.*

THIS is a beautiful annual plant which grows abundantly in many parts of the United States. Every part of the plant is intensely bitter, in which respect it differs from the gentiana centaureum, the blossoms of which are nearly insipid. In other respects it is closely allied to the lesser centaury; and it is in no respect as a bitter, inferior to it. It is much more common than the other, and may without injury supersede it in practice. It is called by Dr. Schoepf wild-succory.‡

CICUTA. *Vide Conium.*

* Barton's Collections, Part I. p. 38, 60. Dr. Mease mentions the essential oil of the seeds as being equally or more powerful. Its dose is from four to eight or ten drops rubbed up with sugar. Medical Museum, vol. II.—For a more particular account, see Dr. Wilkins' statement, in a paper in the 5th vol. Med. Mus.

† Barton's Collections, Part II. p. 15. ‡ Ibid.

CINCHONA.

Willd. g. 346. *Pentandria Monogynia.*—Nat. ord. *Contortæ.*

D.	*Kina, Quinquina.*	POL.	*Kwinkwinna.*
DA.	*Kina, China, Chinabark.*	R.	*China, Chinchina.*
F.	*Quinquina.*	S.	*Quina, Quina-Quina, Corteza de Loja.*
G.	*Chinarinde.*		
I.	*China, Chinacchina.*	SW.	*Feberbark, China.*
P.	*Quina, Quinquina.*		

CINCHONA. *Peruvian Bark.*

Sp. 1. Cinchona Officinalis. *Ed. Dub.*
Sp. Cinchona Cordifolia. *Lond.*
Sp. Cinchona Lancifolia. *Lond.*
Sp. Cinchona Oblongifolia. *Lond.*

Off.—The bark, commonly called *Peruvian bark*, of which there are three varieties, the *pale*, the *yellow*, and the *red*.

Cortex Peruvianus. *Dub.*
(*a*) Cinchonæ Officinalis Cortex Communis. *Ed.*
Cinchonæ Lancifoliæ Cortex. *Lond.*
(*b*) Cinchonæ Officinalis Cortex Flavus. *Ed.*
Cinchonæ Cordifoliæ Cortex. *Lond.*
(*c*) Cinchonæ Officinalis Cortex Ruber. *Ed.*
Cinchonæ Oblongifoliæ Cortex. *Lond.*

By the recent observations of the Spanish botanists, it is now ascertained, that the different varieties of Peruvian bark are not only the barks of distinct species of cinchona, but that probably each of them is indiscriminately taken from several different species. The first and most esteemed species was described in 1738 by Condamine. Ruiz and Pavon have described fifteen species, natives of Peru and Chili; and if to them we add those of Tafalla and Vahl, twenty-five distinct species have been described, independently of any additions which we may owe to the zeal of Humboldt and Bonpland, of which seven have been found in the neighbourhood of Santa Fé de Bagota, by Mutis. Cinchona, considered as a genus, is a mountainous tree, never found in the plains, and growing between the height of 1282 and 975 toises above the level of the sea. It grows to a great height, and formerly its trunk was often thicker than a man's body. But since its bark has come into such general use, few trees are to be seen thicker than the arm. Indeed, there is reason to fear that it will become still more scarce, as no attention is paid to its cultivation, and the trees always die after being stripped of their bark. This operation is performed in the dry season from September to November. The bark is then carefully dried in the sun, and packed in skins, which contain from 100 to 150 pounds, and are called by the Spaniards *zeronne*. In these, coarse and fine pieces of the same kind of bark are promiscuously mixed, but they are afterwards sorted. Humboldt says, that from 12 to 14,000 quintals are annually exported. 2000 are exported from Carthagena, and come from the kingdom of

Santa Fé. Loxa furnished, previous to 1779, 4000 quintals, but now only 110, which are sent to Spain on account of the king. The rest is furnished by the provinces of Huamanga, Cuença, Braccamoros, &c. and are exported from Lima and the other parts of the Pacific Ocean.

1. Pale Bark. *Cascarilla fina. Quina amarilla.* This is the bark of the *Cinchona lancifolia* of Mutis, which is the *C. officinalis* of Condamine, Act. Paris 1738; of Linnæus, Spec. Plant. edit. 2. p. 244; Syst. Veget. edit. 10. p. 929; Mat. Med. p. 66; Lamark, Encyclop. p. 164, f. 1; Lambert, a description of the genus Cinchona, fig, 1; Willd. Spec. Plant. p. 957; *C. condaminea* of Humboldt and Bonpland; Plant. Aequinoct. p. 33. t. 10. To the same species, Zea, according to Fabbroni, refers the *glabra* or *lanceolata*, *fusca* or *rosea*, *angustifolia* or *tunita*, and the *nitida;* but Ruiz, as well as Humboldt and Bonpland, consider the *nitida* to be a distinct species; and these last botanists refer to the same species the *C. officinalis* of Ruiz. Quinologia, Art. 2. p. 56. They also inform us, that the greatest part of the bark of commerce is produced in the province of Jean de Braccomoros, and that the most esteemed is obtained from a species to which they have given the name of *Cinchona scrobiculata*, the young bark of which can scarcely be distinguished from that of their *C. condaminea*. The *Cinchona lancifolia* grows near Loxa, and also near Guancabamba and Ayavaca in Peru, at a height between 75 and 82 toises above the level of the sea, and always upon micaceous schistus.

In commerce, we have several varieties of the common pale bark, the most remarkable of which are, the quilled bark, which comes from Loxa, and the flat bark, from Guanaco.

The bark which comes from Loxa consists of thin, singly or doubly rolled pieces, four or five inches long, and scarcely a line in thickness; externally rough, of a greyish brown colour, and generally covered with a kind of lichen; internally of a cinnamon colour. Its fracture should not be fibrous or powdery, but even and shining. It has a peculiar aromatic smell, and a pleasant bitter astringent taste.

The bark which comes from Guanaco consists of much thicker, coarser, and flatter pieces; externally of a dark brown, or almost black colour, but internally it has the same cinnamon colour; and in its resinous fracture, smell, and taste, it exactly resembles the former. When genuine, both varieties are excellent remedies, although the former be generally preferred on the continent, and the latter in Britain.

2. Yellow Bark. *Quina naranjada. Callisaya.* This is the bark of the *cinchona cordifolia* of Mutis, under which Zea, according to Fabbroni, includes the *hirsuta*, *ovata*, *purpurea*, and *micrantha* of the Flora Peruviana, the *pubescens* of Vahl. Humboldt and Bonpland give as synonimes of the *C. pubescens* of Vahl, Act. Soc. Hist. Nat. Half. 1. p. 19. t. 2. and Symb. Bot. p. 2. p. 37; Lambert, p. 21. t. 2. Willd. Sp. Pl. p. 958; the *C. officinalis* Linn. Syst. Nat. edit. 12. p. 164; Syst. Veget. edit. 13. p. 178; Suppl. p. 144; Gaertner de fruct. et sem. t. 1. p. 169. t. 33. f. 4. But Drs. Powell and A. T. Thomson also include under the *C. cordifolia* of Mutis, the *C. macrocarpa* of Willdenow, misled probably by the confusion among the synonimes

cited; for Ruiz, Flor. Peruv. vol. 3. p. 3. t. 198. has referred it to a new genus under the title of *Cosmibuena obtusifolia*, of which Humboldt and Bonpland have given the following synonimes: *Cinchona macrocarpa*, Vahl, Act. Soc. Hist. Nat. Half. 1. p. 20. t. 3. without the synonimes; Lambert, p. 22. t. 3. Willd. Sp. Pl. p. 598. without the synonimes: *Cinch. ovalifolia* of Mutis, and *grandiflora* of Ruiz and Pavon. Flor. Peruv. p. 54. f. 198; and Fabbroni says it is the *White* bark of the English.

The Cinchona cordifolia grows in the province of Cuença, where there is also immense quantities of another species, called *Cascarilla peluda*, which Humboldt has described under the name of Cinchona ovalifolia, and of which the bark is not much esteemed, although a great quantity of it was cut about twenty years ago.

Yellow bark consists of pieces about six inches in length, thicker, and less rolled up than the common bark. Its internal surface is of a deeper red. It sometimes wants the epidermis, which is often as thick as the bark itself. It is lighter and more friable than the former variety; its fracture is fibrous; and when reduced to powder, its colour is paler. Its taste is much more bitter, astringent, and stronger; but its smell is weaker. Its decoction, when hot, is redder; but when cold, paler. Its solution strikes a deeper colour with sulphat of iron. It contains more of the active constituents than either of the others, but less gum than the common, and less resin than the red. It is much more powerful than the preceding species; according to Mutis, it is the only one which is directly febrifuge; and we are informed by Humboldt, it is that which is most esteemed at Loxa, and known by the name of *Cascarilla fina*.

3. Red Peruvian bark is obtained from the *Cinchona magnifolia* of Ruiz and Pavon, the *oblongifolia* of Mutis. It occurs generally in much larger, thicker, flatter pieces, but sometimes also in the form of quills. It is heavy, firm, sound, and dry; friable between the teeth; does not separate into fibres; and breaks, not shivery but short, close, and smooth. It has three layers: the outer is thin, rugged, of a reddish brown colour, but frequently covered with mossy matter; the middle is thicker, more compact, darker coloured, very resinous, brittle, and yields first to the pestle: the inmost is more woody, fibrous, and of a brighter red. Its powder is reddish, like that of Armenian bole.

Its astringency and bitterness are more intense, and it contains more resin than the pale bark. It is not, however, allowed by Mutis to be, like the yellow bark, directly febrifuge. It is said to be more frequently adulterated.

The great price of cinchona bark has sometimes tempted dishonest men to adulterate it with other similar and less powerful barks, and, what is still more blameable, with genuine bark, from which the active constituents have been entirely extracted, by decoction with water.

In selecting Cinchona bark, we must therefore take care, that besides the characteristics already noticed, it be dense, heavy, and dry, not musty, or spoiled by moisture, and that a decoction made of it have a reddish colour when warm, but when cold become paler, and deposite a brownish red sediment. Those pieces whose taste is simply intensely bitter or very astringent, or nauseous, or merely mucilaginous, whose surface is smooth, or polished, of a dark colour, or pale yellow, or red, which are tough or spongy, whose fracture is fibrous, woody, or powdery, and their internal colour white or grey, are to be rejected.

There are few vegetable substances which have been subjected to analysis more frequently, and by abler chemists, than the Cinchona bark. But from the difficulty of the subject, and from essential differences in the chemical properties of several varieties confounded under one denomination, contradictory results have arisen, and our knowledge of the subject is still imperfect.

Neumann got from 7680 parts of common cinchona 640 alcoholic, and afterwards 300 watery extract; and inversely 330 watery and 600 alcoholic; from which it might be inferred, that there were about 600 parts soluble in alcohol only, 300 in water only, and 30 or 40, in both; but the proportion of the last is certainly too small. Fourcroy extracted from 576 parts of red bark, 38 by water, and afterwards 24 by alcohol. Marabelli got from a pound of yellow bark 464 grains of gum, 470 of extractive mucous matter, 292 of extractive resinous matter, and 125 of resin, besides saline matters, &c Lewis observed, that the decoction became turbid on cooling, and that the precipitate was soluble in alcohol. He also pointed out the deep green colour which decoctions of cinchona acquire from the addition of chalybeates. Dr. Irvin afterwards found, that recent decoctions gave a black colour, while those which had been kept some time gave a green. The tincture gives a black, while the cold infusion gives a green; and that, in all cases where an excess of the chalybeate is used, a green colour is produced. These effects have been ascribed to the presence of tannin; but they have little resemblance to the intensity and durability of the blue colour produced in infusions of gall-nuts, and other powerful astringents. They, however, show, that the principle on which the colour depends is more soluble in alcohol and in boiling water, than in cold water, and that it is very destructible. It was long believed that cinchona was a powerful astringent; but after Seguin's discovery of gelatin as a test of the principle of astringency, Dr. Maton found that cinchona contained very little tannin. In Dr. Duncan's experiments, solution of gelatin did not affect the cold infusion, but precipitated the tincture, diluted with water and filtered, slightly, and the filtered decoction copiously. The precipitate in the last case was filamentous, and exactly resembled that produced by gelatin in infusion of galls. Hence it appears that the tannin in cinchona is much less soluble in alcohol and in cold water, than in hot. Dr. Maton discovered, that infusion of cinchona was precipitated by infusion of nut-galls. Seguin, who afterwards made the same observation, concluded from it that cinchona contained gelatin, but erroneously, as Dr. D. soon after proved. Infusion of galls is precipitated copiously, not only by the filtered decoction of cinchona, but also by the infusion and tincture diluted and filtered; and as these phenomena are inconsistent with the properties of gelatin or starch, (the only other principles which precipitate infusion of galls,) Dr. Duncan conceived himself authorised to ascribe them to a vegetable principle, not hitherto examined, soluble in alcohol and in water, and called it Cinchonin.* Seguin supposed that it was the tannin of the infusion of galls which formed the precipitate in infusion of cinchona; but this is extremely doubtful; for, as Dr. D. stated in Nicolson's Journal, vol. vii, a decoction of cinchona is precipitated both by gelatin and galls, and when saturated by either of these re-agents, is still acted upon by the other; but an infusion of galls, after being saturated with gelatin, does not act on a decoction of cinchona. "Now, if gelatin deprived the infusion of galls of no other principle but tannin, it would follow, that a decoction of cinchona contains both tannin and a principle precipitable by tannin, which can scarcely be the case; and indeed we do not at present see any way of accounting for the facts, but by supposing that the galls and cinchona contain each of them tannin, and another principle, of a different nature in each, not precipitable by tannin, but by each other." It is satisfactory to find that great master of analysis, Vauquelin, drawing nearly the same conclusion from his observations. "It would seem that it is to the tannin of the oak bark and galls that this principle (cinchonin) unites to form the precipitates observed in the infusions of these substances; but as this principle exists in some species which at the same time precipitate glue, it is doubtful that it really unites to the tannin of the oak bark, or that the principle in the other species of cinchona which precipitate glue, is actually tannin. But the one or the other of these suppositions must be correct, as the infusions of the two species precipitate each other."

Following up Dr. Duncan's experiments, Dr. Gomes, in the Transactions of the Royal Academy of Lisbon, has published an Essay on Cinchonin, and has described its properties when obtained in a state of purity. Dr. Irving obtained from cinchona, a small portion of volatile oil, on which its aroma depends; and Fourcroy and other chemists have observed, that during the evaporation of an infusion or decoction of cinchona, exposed to the air, an insoluble pellicle is formed on the surface. Fabbroni observed, that cinchona loses its solubility by long exposure to the air, and even by being reduced to very fine powder; 100 parts of cinchona, when bruised, yielding from 12 to 16 of extract, and when finely powdered only 6 or 7; and that cinchona destroys the emetic property of tartrat of antimony, without losing its febrifuge virtues.

Vauquelin has lately done much to lessen this confusion, by showing that there are three, if not four classes of Cinchona bark, differing essentially in chemical constitution; but unfortunately he has not been able to designate, with botanical accuracy, the individuals he found to belong to each.

The first class precipitate astringents, but not gelatin.

The second precipitate gelatin, but not astringents.

The third precipitate both astringents and gelatin. And,

Lastly, some barks confounded with these precipitate neither as-

* *Cinchonin*, not acrid, soluble in alcohol and in water, precipitated by infusion of galls. Dr. Thomson discovered a principle, possessing similar chemical properties, in black pepper. Dr. Duncan has since found it in capsicum, and it probably exists in other peppers.

tringents nor gelatin; but these Vauquelin, viewing the genus chemically, does not consider as Cinchonas.

Individuals in each of the three first classes are capable of curing intermittents, which shows how insufficient our analysis, in its present state, is for explaining the connection between the medical virtues and chemical properties of this remarkable genus. Besides these principal differences, on which Vauquelin founds his classification, Cinchona barks vary in the effects of many chemical agents. The infusions of some kinds redden turnsole, others do not affect it; some impart a deep colour to water, others very little; some affect certain metallic solutions, which others do not; and the decoctions of some kinds remain transparent after becoming cold, others grow turbid as they cool, and deposite a copious precipitate. The following mode of analysis, however, will give an idea of the composition of the second class:—The cold infusion has a red colour, more or less brown or yellow bitter taste, with more or less astringency; becoming, in a few days, covered with a green mould. On evaporating the infusion, if it be permitted to cool repeatedly during the process, it becomes turbid, and deposites a precipitate for several times. If these precipitates be separated, and the supernatant fluid, after it ceases to become turbid on cooling, be evaporated to the consistence of a soft extract, and treated with alcohol, there remains only a viscid substance, of a brown colour, almost without bitter taste, insoluble in alcohol, perfectly soluble in water, not rendering it turbid on cooling, and which, by spontaneous evaporation, is analysed into a saline mass, consisting of reddish brown crystals, hexahedral, rhomboidal, or square, and a mucilaginous matter, which remains dissolved in the mother-water.

The precipitate which is deposited on the cooling of the concentrated infusion, when dried, has a red brown colour and an intensely bitter taste. It is readily soluble in alcohol, especially when heated. The tincture is decomposed by water, and yields crystals on spontaneous evaporation. It is sparingly and only partially soluble in cold water, more copiously and completely in boiling water, which, however, again becomes turbid on cooling. Its solution reddens tincture of turnsole, grows mouldy in a few days, does not precipitate tartar emetic, or solution of gelatin; is not visibly acted upon by acids, but with alkalies is coagulated into a thick whitish matter, becoming brown and somewhat hard by the exposure to the air, softening with heat, and acquiring the ductility and silky gloss of turpentine.

The saline mass which crystallizes from the mother-water, on being purified by repeated solutions and crystallizations, is obtained in the form of white square or rhomboidal plates, often grouped, with almost no taste, soluble in about five waters at 50°, insoluble in alcohol, destructible by fire, not decomposed by ammonia, acetat of lead, or nitrat of silver, but by the fixed alkalies, and the oxalic and sulphuric acids, and by infusion of tan, and of some varieties of cinchona. This salt M. Vauquelin discovered to consist of lime, and a new acid, which crystallizes in plates, has a very acid taste, forms soluble and crystallizable combinations with the alkalies and earths, and does not precipitate the nitrats of silver, mercury, or lead. M. Vauquelin has given it the name of Kinic acid; but as this would lead us to suppose that it was obtained from Kino, it appears to me that it ought to be named the Cinchonic acid, from the systematic name of the tree from whose bark it has been first obtained.

M. Vauquelin has also analysed the barks of the cinchona pubescens and officinalis, which he refers to the first class. In almost every respect the analysis agrees with that now detailed, except in the chemical properties of the deposite from the concentrated infusion, which in the present instance produces a copious precipitate in the infusion of nut-galls, as well as in tartar emetic and nitrat of mercury. These deposites, he observes, differ from resins in being soluble in water, in acids and in alkalies, in acting as a dye, in decomposing metallic solutions, and in their watery solution becoming mouldy. He is inclined to consider them as a peculiar vegetable principle, not yet sufficiently examined.

How little the analysis has hitherto accounted for the virtues of cinchona, is evident from three of the latest writers referring its virtues to totally different principles: Deschamps to the cinchonat of lime, two doses of which, of 36 grains each, according to him, cure every intermittent; Westring to the tanning principle; and Seguin, on the contrary, to the principle which precipitates tannin, and which he at first mistook for gelatin; and upon the faith of this mistake, he and other French and Italian physicians gave clarified glue in intermittents, and it is said with success. M. Seguin, it appears, however, has now seen his error, though without retracting it, and has lately published two memoirs upon cinchona, which we proceed to abridge. He says, that hitherto apothecaries had only the external appearance, fracture, taste, and smell, to enable them to judge of the quality of cinchona; but that these characters are insufficient, and that it is only by means of chemical tests that we can ascertain the presence or proportion of the febrifuge principle. He gives with confidence the following criterions:

1. Cinchona, if good, precipitates the solution of tannin, but not those of gelatin or of sulphat of iron.

2. The precipitate which the febrifuge principle forms with the solution of tan, is reddish, slightly flocculent, and heavy. If the precipitate be considerable and sink quickly, it is a proof that the febrifuge principle is abundant and of good quality. If it be not very decided, and remain suspended in the liquor, only disturbing its transparency, it is a proof that it is scanty and of bad quality.

3. If it does not precipitate the solution of tannin, it is a proof that it does not contain any febrifuge principle.

4. If it only precipitate the solutions of tannin and of sulphat of iron, it a proof that it contains an astringent substance not capable of tanning, which is foreign to it.

5. If it precipitate solutions of tannin, sulphat of iron and gelatin, it is a proof that it contains an astringent substance analogous to that of the oak.

The application of these tests he describes as easy. He powders a drachm of cinchona, infuses it for half an hour in two ounces of boiling water, decants and filters the infusion. The solution of tannin is prepared by mixing two ounces with three ounces of cold water, and filtering it. A solution of nut-galls may be substituted, but it is rather too delicate. The solution of gelatin is made by dissolving an ounce of fine glue in three ounces of water in a sand bath, and filtering it through fine linen; the solution of sulphat of iron, by dissolving an ounce in two ounces of water. A little of the infusion of cinchona is put into a glass, and the re-agents added drop by drop.

He tried by these tests, &c. 600 different specimens of cinchona in Paris and Versailles, and he found very few genuine or good, but there was very little difference between the good, whether red, yellow, or pale.

Following these principles, Seguin makes six classes of cinchona.

Class 1. precipitate neither tannin nor gelatin, but form with sulphat of iron a precipitate soluble in acids and insoluble in alkalies; properties common to astringents. False cinchona, having no febrifuge property.

Class 2. precipitate neither tan, gelatin, nor sulphat of iron.

Class 3. precipitate neither gelatin nor sulphat of iron, but act slightly on solution of tan. These act only in large and inconvenient doses.

Class 4. precipitate neither gelatin nor sulphat of iron, but solution of tan abundantly. The best cinchona of commerce, as well as the genuine specimens sent by Mutis, are of this class.

Class 5. precipitate solutions of tan and sulphat of iron, but not gelatin. The chalybeate precipitate was ferruginous, yellow and abundant, and soluble in alkalies. He found these properties to belong to a specimen of a bark sold as angustura.

Class 6. precipitate tannin and gelatin, but not sulphat of iron. M. Seguin rarely met with this kind, but he thinks favourably of it. He also notices, as Dr. Duncan had previously done, the co-existence of the febrifuge principle and tannin in the same solution.

Medical use.—On dead animal matter cinchona acts as an antiseptic, and on the living body it acts moreover as a stimulant, tonic, and antispasmodic. The discovery of its medical virtues was, in all probability, the result of accident. In fact, according to some, the Peruvians learned its use by observing certain animals affected with intermittents instinctively led to it; or, according to others, a Peruvian having an ague was cured by accidentally drinking of a pool which, from some trees having fallen into it, tasted of cinchona: and its use in gangrene is said to have originated from its curing one in an aguish patient. It has had various appellations. About the year 1640, from curing the lady of the Spanish viceroy, the Comitissa del Cinchon, it was called Cortex or Pulvis Commitissæ, Cinchona, &c.; from the interest which Cardinal de Lugo, and the Jesuit fathers took in its distribution, Cortex or Pulvis Cardinalis de Lugo, Jesuiticus, Patrum, &c.; from the place where it was originally found, Peruvian bark, or simply, from its pre-eminence, Bark.

On its first introduction into Europe, it was reprobated by many eminent physicians; and at different periods long after, it was considered as a dangerous remedy; but its character, in process of time, became universally established.

It was first introduced for the cure of intermittent fevers; and these, when it is properly exhibited, it rarely fails to cure. But there have been considerable differences of opinion with regard to the best mode of exhibition; some prefer giving it just before the fit, some during the fit, others immediately after it. Some, again, order repeated doses between the fits; and this mode of exhibition, although it may perhaps sometimes lead to the employment of more bark than is necessary, upon the whole appears preferable, from being best suited to most stomachs. The requisite quantity is very different in different cases; and in many vernal intermittents, cinchona seems even hardly necessary.

It is now given from the very commencement of the disease, without previous evacuations, which, by retarding the cure, often seem to induce abdominal inflammations, scirrhus, jaundice, hectic, dropsy, &c.; symptoms formerly imputed to the premature or immoderate use of the bark, but which are best obviated by its early and liberal use. It is be continued not only till the paroxysms cease, but till the natural appetite, strength, and complexion return. It is then to be gradually left off, and repeated at proper intervals to secure against a relapse; to which there often seems to be a peculiar disposition, especially when the wind blows from the east. Although, however, evacuations rather counteract the effects of cinchona in the cure of intermittents, yet, previous to its use, it is advisable to empty the alimentary canal, particularly the stomach; and on this account good effects are often obtained from premising an emetic.

It is a medicine which seems not only suited to both formed and latent intermittents, but to that state of fibre on which all periodical diseases seem to depend; as periodical pain, inflammation, hæmorrhagy, spasm, cough, loss of external sense, &c.

Cinchona is now used by some in all continued fevers; at the same time attention is paid to keep the bowels clean, and to promote when necessary the evacuation of redundant bile, always, however, so as to weaken the patient as little as possible.

In confluent small-pox, it promotes languid eruption and suppuration, diminishes the fever, and prevents or corrects putrescence and gangrene.

Dr. Haygarth has lately extolled its use in acute rheumatism, from the very commencement, even without premising venesection.

In gangrenous sore throats, and indeed in every species of gangrene, it is much used, both externally and internally.

In contagious dysentery, after due evacuation, it has been used, taken internally and by injection, with and without opium.

In all those hæmorrhagies called passive, and likewise in other increased discharges, it is much used; and in certain undefined cases of hæmoptysis, some allege that it is remarkably effectual when joined with an absorbent.

It is used for obviating the disposition to nervous and convulsive diseases; and some have great confidence in it, joined with sulphuric acid, in cases of phthisis, scrofula, ill-conditioned ulcers, rickets, scurvy, and in states of convalescence.

In these cases, it is proper to conjoin it with a milk diet.

In dropsy, not depending on any particular local affection, it is often alternated or conjoined with diuretics or other evacuants; and by its early exhibition after the water is once drawn off, or even begins to be freely discharged, a fresh accumulation is prevented, and a radical cure obtained.

Mr. Pearson of the Lock Hospital praises very highly the powers of this remedy in different forms of the venereal disease; in reducing incipient bubo, in cleansing and healing ulcers of the tonsils, and in in curing gangrenous ulcers from a venereal cause. But in all these cases mercury must also be given to eradicate the venereal virus from the system.

Peruvian bark may be exhibited,

1. In substance.

The best form of exhibiting this valuable remedy is in the state of a very fine powder, in doses of from ten grains to two drachms and upwards. Mutis and Zea say, that two drachms of true yellow bark in powder are sufficient to prevent the access of an intermittent, while, to produce the same effect, it requires the decoction of two ounces. Nay, even the residuum of an infusion is capable of curing agues, provided it be given in a larger dose than the entire powder. As it cannot be swallowed in the form of a dry powder, it must either be diffused in some liquid, as water, wine, or milk, or mixed with some viscid substance, as currant jelly. Its taste, which is disagreeable to many people, is best avoided by taking it immediately after it is mixed with the vehicle. In this respect, therefore, it is better for the patients to mix it up themselves, than to receive it from the apothecary already made up, into a draught with some simple distilled water, or into an electuary with a syrup. A much more important objection to giving cinchona in substance is, that some stomachs will not bear it, from the oppression, and even vomiting, which in these cases it excites. We must endeavour to obviate this inconvenience by the addition of some aromatic, and by giving it in small doses more frequently repeated. If we are unable to succeed by these means we must extract the most active constituents of the bark by means of some menstruum. It has therefore long been a pharmaceutical problem to discover which menstruum extracts the virtues of cinchona most completely. But it would be contrary to analogy to suppose, that its constituent principles should subsist so intimately mixed as they must be in an organic product, without exerting upon each other some degree of chemical affinity, and forming combinations possessed of new properties. Accordingly, we find, whether it arise from this cause, or merely from the state of aggregation, that neither water nor alcohol extract these constituents from cinchona bark in the same quantity in which they are able to dissolve them separately, and that we must have recourse to direct experiment to determine the degree of action possessed by each menstruum upon it. With this view, many experiments have been made, and by very able chemists. But most of them were performed when the science of chemistry was but in its infancy; and even at this time that branch of it which relates to these substances is so little understood, that the results of the latest experiments are far from conclusive.

2. In infusion.

To those whose stomachs will not bear the powder, this is the best form of exhibiting cinchona bark. Water, at a given temperature, seems capable of dissolving only a certain quantity of its active constituents, and therefore we are not able to increase the strength of an infusion, either by employing a larger quantity of the bark, or allowing them to remain longer in contact. One part of bark is sufficient to saturate sixteen of water in the course of an hour or two. To accelerate the action of the water, it is usual to pour it boiling hot upon the bark, to cover it up, and allow it to cool slowly. After standing a sufficient length of time, the infusion is decanted off for use. The propriety of this process may, however, be doubted; for if a cold infusion be boiled, or even gently heated, it acquires a deeper colour, and lets fall a deposite, in part insoluble in alcohol and in water. The infusion in water is however liable to one very great objection, that it cannot be kept even a very short time without being decomposed and spoiled. Therefore, in some instances, we prepare the infusion with wine; and it fortunately happens that very often the use of the menstruum is as much indicated as that of the solvend. Cinchona also prevents wine from becoming acid, but in the course of a few days throws down its colouring matter, as nut-galls and charcoal do.

3. In tincture.

The great activity of the menstruum in this preparation, prevents the bark from being given in sufficiently large doses to exert its peculiar virtues. It is, however, a powerful stimulant.

4. In decoction.

Water of the temperature of 212° is capable of dissolving a much larger proportion of the soluble parts of cinchona bark than water at 60°. But the solvent powers even of boiling water have their limits, and by protracting the decoction we do not increase its strength, but rather, by diminishing the quantity of the menstruum, we lessen the quantity of matter dissolved. Besides, at a boiling temperature, some of the active constituents are dissipated, while others absorb oxygen rapidly from the atmosphere, and are converted into what seems to be an insoluble and inert resinous substance.

5. In extract.

In this preparation, we might expect to possess the virtues of cinchona bark in a very concentrated state. The principal objections to its use are its great expense, and the decomposition and destruction of the active constituents of the bark during the preparation, even when most carefully conducted. Not above half the weight of the dry extract is again soluble in water. It is convenient for the formation of pills and boluses, but we would always prefer a fresh infusion or decoction to any mixture in which the extract is redissolved.

Externally, cinchona bark is used in substance, as an application to ill-conditioned, carious, or gangrenous ulcers.

In the form of clyster it may be given in substance, decoction, or extract. The powder is used as a tooth-powder for spongy and bleeding gums, and the decoction is an excellent astringent gargle or wash.

To increase the power of cinchona bark, or to direct its efficacy to a particular purpose, or to correct some inconveniences occasionally produced by it, it is frequently combined with other remedies. When it produces vomiting, carbonic acid forms a useful addition; when it purges, opium; when it oppresses the stomach, aromatics; and when it induces costiveness, rhubarb. But we are afraid that many additions are made, chiefly saline substances, of which the effects are not at all understood. Sulphuric acid, super-sulphat of alumina and potass (alum), muriat of ammonia, carbonat of potass, tartrat of potass, tartrat of antimony and potass (tartar emetic), iron, lime-water, astringents, &c. have been frequently prescribed with it; but we know that in many of these mixtures decomposition occurs, which renders the whole either inactive, or completely deceives us with regard to the expected effects.

CINCHONA CARIBÆA. *Ed. Sp.* 4.

Caribæan Cinchona. The bark.

CINCHONÆ CARIBÆÆ CORTEX. *Ed.*

THIS tree is found in the Caribæan islands. It grows to a very large size. Dr. Wright, to whom we are indebted for all our knowledge of it, found some in the parish of St James's, Jamaica, fifty feet high, and proportionally thick. The wood is hard, clouded, and takes a fine polish. The bark of the large trees is rough, the cuticle thick and inert, and the inner bark thinner than that of the young trees, but more fibrous. The bark is brought to us in pieces about a span in length, rolled together, and a line or half a line in thickness, of a brown colour on the surface, which is most commonly covered with white lichens: internally it is of a dark brown colour, and very fibrous in its fracture. It has at first a sweetish taste, but after being chewed some time, it becomes extremely nauseous and bitter. Dr. Wright says he made use of this bark in all cases where Peruvian bark was indicated, and with the greatest success. It has often been confounded with the cinchona floribunda (Willdenow's 7th species,) so excellently analyzed by Fourcroy, under the title of the Cinchona of St. Domingo, and which, taken internally, is apt to excite vomiting and purging.

CINNAMOMUM. *Vide Laurus.*

CISSAMPELOS PAREIRA.

PAREIRA BRAVA. *Radix.* L. D. *Pareira brava. The root.*

Dioecia Monadelphia.—Nat. ord. *Sarmentaceæ.*

THIS is a perennial climbing plant, which grows in the West-India islands, and in South America. The root, which is officinal, is brought to us from Brazil, in pieces of different sizes, some no bigger than one's finger, others as large as a child's arm; it is crooked, and variously wrinkled on the surface; outwardly of a dark colour, internally of a dull yellowish, and interwoven with woody fibres; so that, upon a transverse section, a number of concentric circles appear, crossed with fibres, which run from the centre to the circumference. It has no smell; the taste is a little bitterish, blended with a sweetness like that of liquorice. Neumann got from 480 parts 123 alcoholic, and 60 watery extract, and inversely 140 watery, and 66 alcoholic. Nothing rose in distillation.

Medical use.—This root is highly extolled by the Americans and Portuguese, in a great variety of diseases, particularly against suppressions of urine, nephritic pains, and calculus. Geoffroy also found it useful in nephritic disorders, in ulcers of the kidneys and bladder, in humoral asthmas, and in some species of jaundice. The common people of Jamaica use a decoction of the roots for pains and weakness of the stomach, proceeding from relaxation. The dose of the root in substance is from twelve grains to half a drachm; in decoction to two or three drachms.

CISTUS CRETICUS.

LADANUM. *Resina.* L. *Cretan Cistus. Ladanum. A Resin.*

Willd. g. 1048. *sp.* 13.—Nat. ord. *Ascyroideæ.*

THIS is a perennial shrub which grows in Syria, and more especially in the Grecian islands.

This resin is said to have been formerly collected from the beards of goats who browsed the leaves of the cistus: at present, a kind of rake, with several straps or thongs of skins fixed to it, is drawn lightly over the shrub, so as to take up the unctuous juice, which is afterwards scraped off with knives. It is rarely met with pure, even in the places where it is produced; the dust blown upon the plant by the wind, mingling with the viscid juice, and the inhabitants also being said to mix it with a certain black sand. In the shops two sorts are met with: the best (which is very rare) is in dark-coloured almost black masses, of the consistence of a soft plaster, which grows still softer upon being handled; of a very agreeable smell, and of a light, pungent, bitterish taste: the other sort is harder, not so dark-coloured, in long rolls coiled up: this is of a much weaker smell than the first, and has a large admixture of a fine sand, which in the ladanum examined by the French academy, made up three-fourths of the mass; and that found in the shops seems even more sandy. What Neumann examined, however, gave him 5400 alcoholic, and 480 watery, and inversely 960 watery, and 4960 alcoholic extract, from 7680 parts. In distillation water carries over a volatile oil, and alcohol distilled from it becomes milky on the addition of water.

OFFICINAL PREPARATIONS.

Emplastrum ladani compositum, L.	- -	*vide Unguenta.*
picis burgundicæ, L.	- -	*Idem.*

CITRUS.

Willd. g. 1391. *Polydelphia Icosandria.*—Nat. ord. *Pomaceæ.*

CITRUS AURANTIUM. *Ed. sp.* 2. L. D.

Var. Aurantium Hispalense.

Folia, flores, aqua stillatitia et oleum volatile florum, fructus succus, fructus immaturus, et cortex exterior.

Seville orange. *The leaves, flowers, distilled water, and essential oil of the flowers, the juice and outer rind of the fruit, and the unripe fruit.*

D.	*Oranjen.*	P.	*Laranjas.*
DA.	*Pomerantser.*	POL.	*Pomeranczy.*
F.	*Oranges.*	R.	*Pomerancza.*
G.	*Pomeranzen.*	S.	*Naranjas.*
I.	*Melarance.*	SW.	*Pomeranser.*

The orange tree is a beautiful evergreen, a native of Asia, but now abundantly cultivated in the southern parts of Europe and in the West-India islands. There are several varieties of this species, but they may all be referred to the bitter or Seville orange, and the sweet or China orange.

The leaves are neither so aromatic nor so bitter as the rind of the fruit.

The flowers (*flores naphæ,*) are highly odoriferous, and have been for some time past in great esteem as a perfume; their taste is somewhat warm, accompanied with a degree of bitterness. They yield their flavour by infusion to rectified spirit, and in distillation both to spirit and water, (*aqua florum naphæ*): the bitter matter is dissolved by water, and, on evaporating the decoction, remains entire in the extract.

A very fragrant red-coloured oil, distilled from these flowers, is brought from Italy under the name of *oleum* or *essentia neroli;* but oil of behen, in which orange flowers have been digested, is frequently substituted for it. The fraud, however, is easily detected, as the real oil is entirely volatile, and the adulterated is not.

The juice of oranges is a grateful acid liquor, consisting principally of citric acid, syrup, extractive, and mucilage.

The outer yellow rind of the fruit is a grateful aromatic bitter.

The unripe fruit dried are called Curacoa oranges. They vary in size from that of a pea to that of a cherry. They are bitterer than the rind of ripe oranges, but not so aromatic, and are used as a stomachic.

Medical use.—The leaves have been celebrated by eminent physicians as a powerful antispasmodic in convulsive disorders, and especially in epilepsy; with others they have entirely failed. Orange flowers were at one time said to be an useful remedy in convulsive and epileptic cases; but experience has not confirmed the virtues attributed to them. As by drying they lose their virtues, they may be preserved for this purpose by packing them closely in earthen vessels, with half their weight of muriat of soda. The juice is of considerable use in febrile or inflammatory distempers, for allaying heat, quenching thirst, and promoting the salutary excretions: it is likewise of use in genuine scorbutus, or sea-scurvy. Although the Seville, or *bitter orange*, as it is called, has alone a place in our pharmacopœias, yet the juice of the China, or sweet orange, is much more employed. It is more mild, and less acid; and it is used in its most simple state with great advantage, both as a cooling medicine, and as an useful antiseptic in fevers of the worst kinds, as well as in many other acute diseases, being highly beneficial as alleviating thirst. Dr. Wright applied the roasted pulp of oranges as a poultice to fetid sores in the West-Indies, with very great success.

The rind proves an excellent stomachic and carminative, promoting appetite, warming the habit, and strengthening the tone of the viscera. Orange-peel appears to be considerably warmer than that of lemons, and to abound more with essential oil; to this circumstance, therefore, due regard ought to be had in the use of these medicines. The flavour of the first is likewise supposed to be less perishable than that of the latter.

Officinal Preparations.

Of the rind.

Syrupus cort. aurantii, L. D. -	*vide Syrupi.*
Aqua cort. aur. destillata, E. - -	*Aquæ destillatæ.*
Spiritus raphani compositus, L. D. -	*Sp. destillati.*
Tinctura corticis aurantii, L. D. - -	*Tincturæ.*
cinchonæ composita, L. D. -	*Idem.*
gentianæ composita, E. -	*Idem.*
Conserva cort. aurantii, E. L. D. - -	*Conservæ.*

Of the fruit.

Succus cochleariæ offic. compositus, E. L.	*Succi expressi.*

CITRUS MEDICA. *Ed.* L. D. *Sp.* 1.

Succus, cortex exterior, ejusdemque oleum volatile. D.

Lemon tree. The juice and outer rind, and the volatile oil of the fruit.

D. *Lemoenen, Citroenen.*
DA. *Limoner, Citroner.*
F. *Citrons, Limons.*
G. *Limonen, Citronen.*
I. *Limoni.*
POL. *Limonii.*
R. *Limonii.*
S. *Limones, Limoes.*
SW. *Limoner, Citroner.*

The juice of lemons is similar in quality to that of oranges, from which it differs little otherwise than in containing more citric acid and less syrup. The quantity of the former is indeed so great, that the acid has been named from this fruit, Acid of Lemons, and is commonly prepared from it. The simple expressed juice will not keep on account of the syrup, extractive, and mucilage, and quantity of water which it contains, which causes it to ferment.

It was therefore extremely desirable that an easy method should be discovered of reducing it to such a state that it would not spoil by keeping, and would be less bulky.

Various means have been proposed and practised with this view. The juice has been evaporated to the consistence of rob; but this always gives an empyreumatic taste, and does not separate the extractive or mucilage; so that it is still apt to ferment when agitated on shipboard in tropical climates. It has been exposed to frost, and part of the water been removed under the form of ice; but this is liable to all the former objections, and besides, where the lemons are produced in sufficient quantity, there is not a sufficient degree of cold. The addition of a quantity of alcohol to the inspissated juice separates the mucilage, but not the extractive or sugar. By means, however, of Scheele's process, as reduced to determinate quantities by Proust, we can obtain the acid perfectly pure and crystallized.

To 94 parts of lemon juice, 4 parts of carbonat of lime are to be added: the carbonic acid is separated by effervescence, and a quantity of insoluble citrat of lime is precipitated. By evaporating the supernatant liquor, another portion of citrat of lime is obtained. These added together amount to about $7\frac{1}{2}$ parts, and require 20 parts of sulphuric acid, of the specific gravity of 1.15, to decompose them. The sulphat of lime, being nearly insoluble, is precipitated, while the citric acid remains in solution, and is to be separated by washing and crystallized by evaporation. If too much sulphuric acid be added, when the liquor is much concentrated, it reacts upon the citric acid, and chars a portion of it. When this is the case, a little chalk must be added.

By this or some similar process, it is now manufactured in this country, in large quantities, and sold under the name of Coxwell's concrete Salt of Lemons.

The yellow peel is an elegant aromatic, and is frequently employed in stomachic tinctures and infusions: it is considerably less hot than orange-peel, and yields in distillation with water a less quantity of essential oil: its flavour is nevertheless more perishable, yet does not arise so readily with spirit of wine; for a spiritous extract made from lemon-peel possesses the aromatic taste and smell of the subject in much greater perfection than an extract prepared in the same manner from the peels of oranges.

Medical use.—Lemon Juice is a powerful and agreeable antiseptic. Its powers are much increased, according to Dr. Wright, by saturating it with muriat of soda. This mixture he recommends as possessing very great efficacy in dysentery, remittent fever, the belly-ach, putrid sore throat, and as being perfectly specific in diabetes and lienteria. Citric acid is often used with great success for allaying vomiting: with this intention it is mixed with carbonat of potass, from which it expels the carbonic acid with effervescence. This mixture should be drunk as soon as it is made: or the carbonic acid gas, on which actually the anti-emetic powers of this mixture depends, may be extricated in the stomach itself, by first swallowing the carbonat of potass dissolved in water, and drinking immediately afterwards the citric acid properly sweetened. The doses are about a scruple of the carbonat dissolved in eight or ten drachms of water, and an ounce of lemon juice, or an equivalent quantity of citric acid.

Lemon juice is also an ingredient in many pleasant refrigerant drinks, which are of a very great use in allaying febrile heat and thirst. Of these, the most generally useful is lemonade, or diluted lemon-juice, properly sweetened. Lemonade, with the addition of a certain quantity of any good ardent spirit, forms the well-known beverage punch, which is sometimes given as a cordial to the sick. The German writers order it to be made with arrack, as rum and brandy, they say, are apt to occasion headach. But the fact is directly the reverse, for, of all spirits, arrack is most apt to produce headach. The lightest and safest spirits are those which contain least essential oil, or other foreign matters, and which have been kept the longest time after their distillation.

Officinal Preparations.

Of the Rind.

Aqua citri medicæ destillata, E.	-	*vide Aquæ destillatæ.*
Spiritus ammoniæ compositus, E. L. D.		*Tincturæ ammoniatæ.*

Of the Juice.

Syrupus citri medicæ, E. L. D.	-	*Syrupi.*
Succus spissatus limonis, L.	-	*Succi spissati.*

Of the Oil.

Unguentum sulphuris, E.	-	*Unguenta.*
hellebori albi, L. D.		*Idem.*

As the CITRIC ACID has been noticed as abounding in the two last articles enumerated, it may be proper to state something of its properties.

Citric acid crystallizes in rhomboidal prisms, which suffer no change from exposure to the air, and have an exceedingly acid taste. When sufficiently heated, they melt, swell, and emit fumes, and are partly sublimed unchanged, and partly decomposed. Water, at ordinary temperatures, dissolves $\frac{1}{2}$ of its weight of these crystals, and at 212° twice its weight. The solution undergoes spontaneous decomposition very slowly. Sulphuric acid chars it, and forms vinegar. Nitric acid converts it into oxalic and acetous acids.

Citrats are decomposed by the stronger mineral acids, and also by the oxalic and tartarous, which form an insoluble precipitate in their solutions. The alkaline citrats are decomposed by a solution of barytes.

CLEMATIS CRISPA.—CLEMATIS VIORNA.

THE leaves of these species of Clematis are extremely acrid, and may be found useful in chronic rheumatism, palsy, old ulcers, and in fine, in all the diseases in which Stork found the Clematis recta useful. It is necessary to use them in small doses.*

* Barton's Collections, Part II. p. 30.

CLEOME DODECANDRA.

This plant is a native of Pennsylvania, New-York, &c. and grows abundantly in the neighbourhood of Albany. The whole plant has an extremely fetid smell. In some parts of the United States, the root is employed as an Anthelmintic.*

COCCUS CACTI. *Ed.* L. D.

COCCINELLA. D. *Cochineal.*

D.	*Conchenilje.*	P.	*Cochenilha.*
DA.	*Cochenille.*	POL.	*Cochinelha.*
F.	*Cochenille.*	R.	*Konssenel.*
G.	*Koschenil.*	S.	*Cochinilla, Grana.*
I.	*Cocciniglia.*	SW.	*Cochenille.*

Cochineal is the dried body of the female of a hemipterous insect. It is found only in Mexico, chiefly in the province of Oaxaia, on the leaves of a non-descript cactus, according to Humboldt. There are two kinds of the cochineal insect, which live on different species of cactus. The wild cochineal, *grana sylvester*, which is covered with a silky or cottony envelope, and is found in many places, New Granada, Quito, Peru, Mexico, is less valuable than the cultivated or powdery cochineal, which is without that covering, grows to a larger size, and furnishes a finer and more permanent colour. The Spaniards endeavour to confine both the insect, and the plant on which it feeds, to Mexico. But this attempt at monopoly will, we hope, be frustrated, by the exertions of some gentlemen in the East Indies, whither the insect was carried from Rio Janeiro in 1795 by Captain Nelson. The male only is furnished with wings; the female has none, and remains constantly attached to the leaf of the cactus. During the rainy season, the Mexicans preserve these insects, with the succulent leaves to which they are attached, in their houses; and after the rainy season is over they are transferred to the living plants, and in a few days they lay innumerable eggs, and die. Or the pregnant mothers are rapidly conveyed to the neighbouring mountains, where they are kept till October, when the rains cease in the plains and commence in the mountains. They are collected three times in the year; first, the dead mothers are gathered, as soon as they have laid their eggs, *grana de pastle:* in three or four months, the young, which have grown to a sufficient size, are collected; and in three or four months more, all the young are collected, large and small indiscriminately, except those which they preserve for breeding next year. They are killed by throwing them into hot water, or by turning them over in heaps in the sun, or by placing them on mats in their furnaces; which last method, though least common, preserves upon the insect that whitish powder, which enhances their price at Vera Cruz and Cadiz. Good cochineal loses but $\frac{2}{3}$ of its weight by being dried. From a very distant period, laws have existed against the

* Barton's Collections, Part I. p. 64.

adulteration of cochineal, and it is ordered to be exposed for sale in separate grains, not in agglutinated masses. 800,000 pounds are brought annually to Europe; and each pound contains at least 70,000 insects; Humboldt says, 32,000 arobas of 32 pounds each. From their appearance, when brought to us, they were long supposed to be the seed of some plant. They are small, irregular, roundish bodies, of a blackish red colour on the outside, and a bright purple red within. Their taste is acrid, bitterish, and astringent. They are used chiefly for the sake of the fine colour which they produce, and they are principally consumed by the scarlet dyers. It is worthy of notice, that not only the fruit, but even the green joints of several species of cactus, dye cotton purple or red. In pharmacy, they are employed to give a beautiful red to some tinctures. Their colour is easily extracted, both by alcohol, water, and water of ammonia; and in the dried insect it is not impaired by keeping for any length of time.

"The true cochineal has been found in South Carolina, and Mr. Raphael Peale of Philadelphia asserts, that he has discovered it upon the island of Little St. Simons, on the coast of Georgia. It is extremely desirable that the insect, and the cactus coccinellifer plant on which it breeds, should be cultivated in the southern states. The planter might find it a valuable source of revenue, when, from vicissitudes in the season, their crops of rice or cotton should fail."

Neumann got from 1920 grains, 1440 watery extract; and in another experiment, from the same quantity, 1430 alcoholic. The former was extremely gelatinous.

Medical use.—They have been lately recommended as an anodyne; and antispasmodic in whooping cough.

Officinal Preparations.

Tinctura cardamomi composita, L. D. -	*vide Tincturæ.*
aristolochiæ serpentariæ, E. - -	*Idem.*
gentianæ composita, E. - -	*Idem.*
cinchonæ composita, L. - -	*Idem.*
hellebori, E. L. D. - - - -	*Idem.*
cantharidum, L. - - - -	*Idem.*

COCHLEARIA.

Willd. g. 1228. *Smith, Flor. Brit. g.* 297. *Tetradynamia Siliculosa.*—Nat. ord. *Siliquosæ.*

COCHLEARIA OFFICINALIS. *Herba. Ed.* D.

Sp. 1. *Willd. and Smith.*

Common scurvy-grass. The Plant.

This is an annual plant, which grows on the sea-shore of the northern countries of Europe, and is sometimes cultivated in gardens. As long as it is fresh it has a peculiar smell, especially when bruised, and a kind of saline acrid taste, which it loses completely by drying, but which it imparts by distillation to water or alcohol. It also furnishes an essential oil, the smell of which is extremely pungent.

Medical use.—The fresh plant is a gentle stimulant and diuretic, and is chiefly used for the cure of sea-scurvy. It is employed externally as a gargle in sore throat, and scorbutic affections of the gums and mouth. It may be eaten in substance in any quantity, or the juice may be expressed from it, or it may be infused in wine or water, or its virtues may be extracted by distillation.

Officinal Preparations.

Succus cochleariæ compositus, L. E. *vide Succi expressi.*
Spiritus raphani compositus, L. D. *Spiritus destillati.*

COCHLEARIA ARMORACIA. *Radix. Ed.* L. D.

Sp. 8. Willd. and Smith.

Horse-radish. The root.

This perennial plant is sometimes found wild about river sides, and other moist places: for medicinal and culinary uses, it is cultivated in gardens; flowers in June, but rarely perfects its seeds in Great Britain. Horse-radish root has a quick pungent smell, and a penetrating acrid taste; it nevertheless contains in certain vessels a sweet juice, which sometimes exudes upon the surface. By drying, it loses all its acrimony, becoming at first sweetish, and afterwards almost insipid: if kept in a cool place, covered with sand, it retains its qualities for a considerable time.

3840 parts, according to Neumann, were reduced by drying to 1000, and gave of watery extract 480, and 15 of alcoholic, and inversely 420 alcoholic, and 480 watery; all these extracts were sweetish, without pungency. About 15 of volatile oil, extremely pungent, and heavier than water, arose in distillation with water.

Medical use.—This root is an extremely penetrating stimulus. It excites the solids, and promotes the fluid secretions. It has frequently done service in some kinds of scurvies and other chronic disorders, proceeding from a viscidity of the juices, or obstructions of the excretory ducts. Sydenham recommends it likewise in dropsies, particularly those which sometimes follow intermittent fevers.

Officinal Preparation.

Spiritus raphani compositus, L. D. *vide Spiritus destillati.*

COFFEA.

The Coffee Tree. The fruit.

A shrub from twelve to eighteen feet high, originally a native of Arabia, but is now cultivated in the East and West-Indies, and in several parts of America. The Arabian, or Mocha coffee, imported from the Levant, is far the most aromatic and resinous, and, on account of its superior flavour, is the most esteemed. Very various have been the opinions entertained by different physicians relative to the medicinal qualities of the coffee-berry; some inveighing against its use as a pernicious indulgence, others, on the contrary, are as vehement in its praise. It has been suspected of producing palsies; and Dr. Percival assures us, from his own observations, that the suspicion is not, altogether, without foundation. According, however, to the experiments, and, in the language of the same respectable author, coffee is slightly astringent and antiseptic; it moderates alimentary fermentation, and is powerfully sedative. Its medicinal qualities seem to be derived from the grateful sensation it produces on the stomach, and from the sedative powers it exerts on the *vis vitæ*. Hence it assists digestion, and relieves the headach; but in delicate habits it often occasions watchfulness, tremors, and many of those complaints denominated nervous.

The celebrated Sir John Pringle, bestows high encomiums on coffee, as a remedy in paroxysms of the periodic asthma. He directs the best Mocha coffee, newly burnt, and made very strong immediately after grinding it, an ounce to one dish, without milk or sugar, to be repeated after the interval of a quarter or half an hour, until relief be obtained. We are assured also, that Sir John Floyer, during the latter year of his life, kept free from, or lived easy under this afflictive complaint, by the use of strong coffee.

With respect to the medicinal properties of coffee, says Dr. Willich, it is in general excitant and stimulating, though we doubt whether it relaxes the animal fibres, as has by some authors been supposed. Its more or less wholesome effect greatly depends on the climate, as well as the age, constitution, and other peculiarities of the individual. Hence it cannot be recommended to children, or persons of a hot, choleric, nervous, or phthisical habit; nor will it be so useful in warm, as in cold and temperate climates; but to the phlegmatic and sedentary, a cup of coffee, one or two hours after a meal, or, which is still better, one hour before it, may be of service to promote digestion, and prevent or remove a propensity to sleep. In cases of spasmodic asthma, hypochondriasis, scrofula, diarrhœa, agues, and particularly against narcotic poisons, such as opium, hemlock, &c. coffee often produces the best effects; nor is there a *domestic* remedy, better adapted to relieve periodical headachs which proceed from want of tone, or from debility of the stomach.

The heaviness, headach, giddiness, sickness, and nervous affections, which attack some persons in the morning, after taking an opiate at night, are abated by a cup or two of strong coffee.

Dr. Barton recommends a strong infusion of Coffee, with or without sugar and milk, in cases of retention and suppression of the menses, accompanied with very weak arterial action. He opposes its use in all cases of active hemorrhagies, and even in common fluor albus, when connected with febrile action.

COCOS BUTYRACEA. *Oleum nucis fixum. Ed.*

The mackaw tree. The fixed oil of the nut, commonly called Palm Oil.

Palmæ.—Nat. ord. *Palmæ.*

D.	*Palm olie.*	I.	*Olio di palma.*
DA.	*Palmeolie.*	P.	*Oloe de palma.*
F.	*Huile de palme, Huile de Senegal.*	S.	*Aceite de palma.*
G.	*Palmöl.*	SW.	*Palm olja.*

THIS tree is a native of South America. The fruit is triangular, yellow, and as big as a plumb. The nut or kernel yields the *oleum palmæ* of the shops. It is first slightly roasted and cleaned, and then ground to a paste, first in a mill, then on a levigating stone. This paste is gentle heated, and mixed with $\frac{3}{16}$ its weight of boiling water, put into a bag, and the oil expressed between two heated plates of iron. It yields $\frac{7}{61}$ or $\frac{8}{16}$ of oil. If coloured, this oil may be purified by filtration when melted. This oil has the consistence of butter, a golden yellow colour, the smell of violets, and a sweetish taste. When well preserved, it keeps several years without becoming rancid. When spoiled, it loses its yellow colour and pleasant smell. It is said to be often imitated with axunge, coloured with turmeric, and scented with Florentine iris root. It is rarely used in medicine, and only externally as an emollient ointment.

COLCHICUM AUTUMNALE. *Radix. Ed.* L. D.

Meadow saffron. The root.

Willd. g. 707. *sp.* 1. *Smith, Flor. Brit. g.* 187. *sp.* 1. *Hexandria Trigynia.*—Nat. ord. *Liliaceæ.*

Meadow Saffron is a perennial bulbous-rooted plant, which grows in wet meadows in the temperate countries of Europe. It flowers in the beginning of autumn, at which time the old bulb begins to decay, and a new bulb to be formed. In the following May the new bulb is perfected, and the old one wasted and corrugated. They are dug for medical use in the beginning of summer. The sensible qualities of the fresh root are very various, according to the place of growth, and season of the year. In autumn it is inert; in the beginning of summer highly acrid: some have found it to be a corrosive poison, others have eaten it in considerable quantity without experiencing any effect. When it is possessed of acrimony, this is of the same nature with that of garlic, and is entirely destroyed by drying.

Medical use.—Stork, Collin, and Plenk have celebrated its virtues as a diuretic in hydrothorax and other dropsies. But it is at best a very uncertain remedy. The expressed juice is used in Alsace to destroy vermin in the hair.

Officinal Preparations.

Syrupus colchici autumnalis, E. -	*vide Syrupi.*
Oxymel colchici, L. - - -	*Mella medicata.*

COLOMBA. *Ed.* L. *Non descript.*

Columbo. D. *Colomba. The root.*

D.	*Columbo wortel.*	I.	*Radice di Columbò.*
DA.	*Columborod.*	P.	*Raiz de Columba.*
F.	*Racine de Colombo.*	S.	*Raiz de Columbo.*
G.	*Columbo wurzel.*	SW.	*Colomborot.*

This is the root of an unknown plant, which, however, is conjectured by Willdenow to be a species of bryonia.* It was supposed to have its name from a city in Ceylon, from which it is sent over all India. But more recent accounts say, that it is produced in Africa, in the country of the Caffres, and that it forms an important article of commerce with the Portuguese at Mozambique, in the province of Tranquebar. It is generally brought in transverse sections, from half an inch to three inches in diameter, rarely divided horizontally. This is evidently done to facilitate its drying, for the large pieces are all perforated with holes. The bark is wrinkled and thick, of a dark brown colour on the outside, and bright yellow within. The pith in the centre is spongy, yellowish, and slightly striped. Its smell is slightly aromatic, and readily lost when not preserved in close vessels; its taste is unpleasant, bitter, and somewhat acrid; the bark has the strongest taste; the pith is almost mucilaginous. Its essential constituents are cinchonin, and a great deal of mucilage. It is accordly more soluble in water than in alcohol. The tincture is not precipitated by water, and does not affect the colour of infusion of turnsole, or solution of red sulphat of iron.

Medical use.—In India it is much used in diseases attended with bilious symptoms, particularly in cholera; and it is said to be sometimes very effectual in other cases of vomiting. It often produces excellent effects in dyspepsia. Half a drachm of the powder is given repeatedly in the day.

Officinal Preparation.

Tinctura Colombæ, E. L. D. - *vide Tincturæ.*

CONFECTIONES. *vide Electuaria.*

CONIUM MACULATUM. *Folia, Semen. Ed.* L. D.

Hemlock. The leaf, flower, and seed.

Willd. g. 533. *sp.* 1. *Smith, Flor. Brit. g.* 130. *sp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

This is a large biennial umbelliferous plant, which grows very commonly about the sides of fields, under hedges, and in moist shady places. As it may easily be confounded with other plants of the same natural order, which are either more virulent, or less active, we shall give a full description of its botanical characters. The root is white, long, of the thickness of a finger, contains when it is young a milky juice, and resembles both in size and form the carrot. In spring it is very poisonous, in harvest less so. The stalk is often three, four, and even six feet high, hollow, smooth, not beset with hairs, and marked with red or brown spots. The leaves are large, and have long and thick foot-stalks, which, at the lower end, assume the form of a

* In the last edition of the London pharmacopœia, it is said to be of the natural order of *Menispermum;* the genus has not yet been determined.

groove, and surround the stem. From each side of the foot-stalk other foot-stalks arise, and from these a still smaller order, on which there are sessile, dark green, shining, lancet-shaped, notched leafits. The umbels are terminal and compound. The flowers consist of five white heart-shaped leaves. The seeds are flat on the one side, and hemispherical on the other, with five serrated ribs. This last circumstance, with the spots on the stalks, and the peculiar very nauseous smell of the plant, somewhat resembling the urine of a cat, serve to distinguish it from all other plants. We must not be misled by its officinal name Cicuta, to confound it with the Cicuta virosa of Linnæus, which is one of the most virulent plants produced in Great Britain, and readily distinguishable from the conium, by having its roots always immersed in water, which those of the conium never are. The possibility of this mistake shows the propriety of denominating all vegetables by their systematic names, as the Edinburgh college now do. The other plants which have been mistaken for the conium maculatum are, the æthusa cynapium, caucalis anthriscus, and several species of chærophyllum, especially the bubosum.

Hemlock should not be gathered unless its peculiar smell be strong. The leaves should be collected in the month of June, when the plant is in flower. The leafits are to be picked off, and the foot-stalks thrown away. The leafits are then to be dried quickly in a hot sun, or rather on tin plates before a fire, and preserved in bags of strong brown paper, or powdered and kept in close vessels, excluded from the light; for the light soon dissipates their green colour, and with it the virtues of the medicine.

Medical use.—Fresh hemlock contains not only the narcotic, but also the acrid principle; of the latter much, and of the former little, is lost by drying. The whole plant is a virulent poison, but varying very much in strength according to circumstances. When taken in an over-dose, it produces vertigo, dimness of sight, difficulty of speech, nausea, putrid eructations, anxiety, tremors, and paralysis of the limbs. But Dr. Stork found, that in small doses it may be taken with great safety; and that, without at all disordering the constitution, or even producing any sensible operation, it sometimes proves a powerful resolvent in many obstinate disorders. In scirrhus, the internal and external use of hemlock has been found useful, but then mercury has been generally used at the same time. In open cancer, it often abates the pains, and is free from the constipating effects of opium. It is likewise used in scrofulous tumours and ulcers, and in other ulcers that are only defined by the term ill-conditioned. It is also recommended by some in chincough, and various other diseases. Its most common, and best form, is that of the powdered leaves, in the dose at first of two or three grains a-day, which in some cases has been gradually increased to upwards of two ounces a day, without producing giddiness. An extract from the seeds is said to produce giddiness sooner than that from the leaves.

Officinal Preparation.

Succus spissatus conii maculati, E. L. D. *Vide Succi spissati.*

CONSERVÆ.—*CONSERVES.*

Conserves are compositions of recent vegetable matters and sugar, beaten together into a uniform mass.

This management is introduced for preserving certain simples, undried, in an agreeable form, with as little alteration as possible in their native virtues; and in some cases it is very advantageous. Vegetables, whose virtues are lost or destroyed in drying, may in this form be kept uninjured for a considerable time: for, by carefully securing the mouth of the containing vessel, the alteration, as well as dissipation, of their active principles, is generally prevented; and the sugar preserves them from the corruption which juicy vegetables would otherwise undergo.

The sugar should be pounded by itself, and passed through a sieve, before it be mixed with the vegetable mass, for without this it cannot be properly incorporated. Rose buds, and some other vegetables, are prepared for mixing with sugar by a small wooden mill contrived for that purpose.

There are, however, vegetables whose virtues are impaired by this treatment. Mucilaginous substances, by long lying with sugar, become less glutinous; and astringents sensibly become softer upon the palate. Many of the fragrant flowers are of so tender and delicate a texture, as almost entirely to lose their peculiar qualities on being beaten or bruised.

In general, it is obvious, that in this form, on account of the large admixture of sugar, only substances of considerable activity can be taken with advantage as medicines. And, indeed, conserves are at present considered chiefly as auxiliaries to medicines of greater efficacy, or as intermediums for joining them together. They are very convenient for reducing into boluses or pills the more ponderous powders, as sub-muriat of mercury, the oxyds of iron, and other mineral preparations; which, with liquid or less consistent matters, as syrups, will not cohere.

The shops were formerly encumbered with many conserves altogether insignificant; the few now retained have in general either an agreeable flavour to recommend them, or are capable of answering some useful purposes as medicines. Their common dose is the bulk of a nutmeg, or as much as can be taken up at once or twice upon the point of a knife. There is, in general, no great danger of exceeding in this particular.

CONSERVA	
Citri Aurantii. *Ed.* Aurantii Hispalensis. L. Corticis Aurantii. D.	Conserve of *Orange Peel.*
Rosæ Caninæ. *Ed.* Cynosbati. L.	- - *Hips.*
Rosæ Rubræ. *Ed.* L. Rosæ. D.	- - *Red rose buds.*
Absinthii Maritimi. L.	- - *Sea wormword.*

Pluck the leaves from the stalks, the unblown petals from the cups, taking off the heels. Take off the outer rind of the oranges by a grater.

When prepared in this way, beat them with a wooden pestle in a marble mortar, first by themselves, afterwards with three times their weight of double refined sugar, until they be mixed.

La Grange says, that by infusing the red rose leaves in four times their weight of water, which is afterwards to be expressed from them, they lose their bitterness, and are more easily reduced to a pulp, which he then mixes with a thick syrup, prepared by dissolving the sugar in the expressed liquor, and boiling it down to the consistence of an electuary.

It is scarcely necessary to make any particular remarks on these conserves. Their taste and virtues are compounded of those of sugar, and the substance combined with it. The hips are acidulous and refrigerant; the orange-rind and wormwood bitter and stomachic, and the red rose buds astringent.

CONTRAYERVA. *Vide Dorstenia.*

CONVOLVULUS.

Willd. g. 323.—*Pentandria Monogynia.*—Nat. ord. *Campanaceæ.*

CONVOLVULUS SCAMMONIA. *Sp.* 4. *Gummi-resina. Ed.* L. D.
Scammony. The gum-resin.

D.	*Skammoneum.*	I.	*Scamonea.*
DA.	*Skammonium.*	P.	*Escamonea.*
F.	*Scammonée.*	S.	*Escamonea.*
G.	*Skammonie.*	SW.	*Scammonium.*

The scammony convolvulus is a climbing perennial plant, which grows in Syria, Mysia, and Cappadocia. The roots, which are very long and thick, when fresh contain a milky juice. To obtain this, the earth is removed from the upper part of the roots, and the tops of these are cut obliquely off. The milky juice which flows out, is collected in a small vessel, sunk in the earth at the lower end of the cut. Each root furnishes only a few drachms, but it is collected from several vessels, and dried in the sun. This is the true and unadulterated scammony. It is light, of a dark grey colour, but becomes of a whitish yellow when touched with the wet finger, is shining in its fracture, has a peculiar nauseous smell, and bitter acrid taste, and forms with water a greenish milky fluid, without any remarkable sediment. In this state of purity it seldom reaches us, but is commonly mixed with the expressed juice of the root, and even of the stalks and leaves, and often with flour, sand or earth. The best to be met with in the shops comes from Aleppo in light spongy masses, having a heavy disagreeable smell, friable, and easily powdered, of a shining ash colour verging to black; when powdered, of a light grey or whitish colour. An inferior sort is brought from Smyrna in more compact ponderous pieces, with less smell, not so friable, and less easily powdered, of a darker colour, not so resinous, and full of sand and other impurities.

Resin is the principal constituent of scammony. Sixteen ounces of good Aleppo scammony give eleven ounces of resin, and three and a half of watery extract. Bouillon La Grange and Vogel obtained from 100 parts, 60 of resin, 3 of gum, 2 of extract, and 35 of insoluble matter.

Medical use.—Scammony is an efficacious and strong purgative. Some have condemned it as unsafe, and laid various ill qualities to its charge; the principal of which is, that its operation is uncertain, a full dose proving sometimes ineffectual, whilst at others a much smaller one occasions dangerous hypercatharsis. This difference, however, is owing entirely to the different circumstances of the patient, and not to any ill quality, or irregularity of operation, of the medicine: where the intestines are lined with an excessive load of mucus, the scammony passes through, without exerting itself upon them; where the natural mucus is deficient, a small dose of this or any other resinous cathartic irritates and inflames. Many have endeavoured to diminish the activity of this drug, and to correct its imaginary virulence, by exposing it to the fumes of sulphur, dissolving it in acids, and the like: but these only destroy a part of the medicine, without making any alteration in the rest. Scammony in substance, judiciously managed, stands not in need of any corrector: if triturated with sugar, or with almonds, it becomes sufficiently safe and mild in its operation. It may likewise be conveniently dissolved, by trituration, in a strong decoction of liquorice, and then poured off from the feces. The common dose of scammony is from three to twelve grains.

Officinal Preparations.

Electuarium scammonii, L. D. - - -	*vide Electuaria.*
Pulvis sennæ compositus, L. - - - -	*Pulveres.*
scammonii compositus, E. L. D. - - -	*Idem.*
cum aloë, L. - - - -	*Idem.*
calomelane, L. - - - -	*Idem.*
Extractum colocynthidis compositum, L. - - -	*Extracta.*
Pilulæ aloës cum colocynthide, E. - - - -	*Pilulæ.*

CONVOLVULUS JALAPA. *Sp.* 61. *Radix. Ed.* L. D.
Jalap. The root.

D.	*Jalappe.*	P.	*Jalappa.*
DA.	*Jalaprod.*	POL.	*Jalapa.*
F.	*Jalap.*	R.	*Jalap.*
G.	*Jalapwurzel.*	S.	*Jalapa.*
I.	*Sciarappa.*	SW.	*Jalaprot, Purggerrot.*

Jalap is another climbing perennial species of convolvulus. It is an inhabitant of Mexico and Vera Cruz. It is brought to us in thin transverse slices, which are covered with a blackish wrinkled bark, are of a dark grey colour internally, marked with darker or blackish stripes. It has a nauseous smell and taste; and when swallowed it affects the throat with a sense of heat, and occasions a plentiful discharge of saliva. When powdered it has a yellowish grey colour.

Such pieces should be chosen as are most compact, hard, weighty, dark-coloured, and abound most with black circular striæ and shining points: the light, whitish, friable, worm-eaten pieces must be rejected.

Slices of bryony root are said to be sometimes mixed with those of jalap: but they may be easily distinguished by their whiter colour, and less compact texture.

Neumann got from 7680 parts, 2480 alcoholic, and then by water 1200, and inversely 2160 watery, besides 360, which precipitated, during the evaporation, and 1440 alcoholic: the tincture extracted from 7680 parts, when precipitated by water, gave 1920.

Medical use.—Jalap in substance, taken in a dose of about half a drachm (less or more, according to the circumstances of the patient) in plethoric, or cold phlegmatic habits, proves an effectual, and in general a safe purgative, performing its office mildly, seldom occasioning nausea or gripes, which too frequently accompany the other strong cathartics. In hypochondriacal disorders, and hot bilious temperaments, it gripes violently, if the jalap be good; but rarely takes due effect as a purge. An extract originally made by water purges almost universally, but weakly; and at the same time has a considerable effect by urine: what remains after this process gripes violently. The pure resin, prepared by spirit of wine, occasions most violent gripings, and other distressing symptoms, but scarcely proves at all cathartic: triturated with sugar, or with almonds, into the form of an emulsion, or dissolved in spirit, and mixed with syrups, it purges plentifully in a small dose, without occasioning much disorder: the part of the jalap remaining after the separation of the resin, yields to water an extract, which has no effect as a cathartic, but operates powerfully by urine.

Officinal Preparations.

Tinctura jalapæ, E. L. D. - - - - *vide Tincturæ.*
Extractum jalapæ, E. L. D. - - - - - *Extracta.*
Pulvis jalapæ compositus, E. - - - - - *Pulveres.*
Tinctura sennæ composita, E. - - - - - *Tincturæ.*

CONVOLVULUS PANDURATUS.

Wild potatoe. The root.

THIS is supposed by professor Barton to be the Mechameck or wild-rhubarb of some of our Indians. In the state of Delaware it is called wild-potatoe vine; and the root Kussauder, or Kassader (a corruption of the word Cassada). From one of our species of Convolvulus, an extract has been procured, but little, if any thing, inferior to the scammony of the shops. In Virginia, and some other parts of the United States, the root of this plant has been much recommended in cases of gravel. It is used either in powder or in decoction. Dr. Harris, of New-Jersey, has found an infusion or decoction of the root very useful in his own case. He is persuaded, that it has enabled him to pass the calculous granules, with much facility.*

COPAIFERA OFFICINALIS. *Resina. Ed.* L. D.

Copaiva tree. The resin called Balsam of Copaiva.

Willd. g. 880. *sp.* 1. *Decandria Monogynia.*—Nat. ord. *Dumosæ.*

THE tree which produces this resin is a native of the Spanish West-India islands, and of some parts of the continent of South America. It grows to a large size, and the resinous juice flows in considerable quantities from incisions made in the trunk.

The juice is clear and transparent, of a whitish or pale yellowish colour, and agreeable smell, and a bitterish pungent taste. It is usually about the consistence of oil, or a little thicker; when long kept, it becomes nearly as thick as honey, retaining its clearness, but has not been observed to grow dry or solid, as most of the other resinous juices do. The best resin of copaiva comes from Brazil; but we sometimes meet with a thick sort which is not at all transparent, or much less so than the foregoing, and generally has a portion of turbid watery liquor at the bottom. This is probably either adulterated by the mixture of other substances, or has been extracted by decoction from the bark and branches of the tree: its smell and taste are much less pleasant than those of the genuine resin.

Pure resin of copaiva dissolves entirely in alcohol: the solution has a very fragrant smell. Distilled with water it yields a large quantity of a limpid essential oil, but no benzoic acid: it is therefore not a balsam, but a combination of resin and essential oil. Neumann says that it effervesces wtth liquid ammonia.

Medical use.—The resin of copaiva is an useful corroborating detergent medicine, but in some degree irritating. It strengthens the nervous system, tends to loosen the belly; in large doses proves purgative, promotes urine, and cleans and heals exulcerations in the urinary passages, which it is supposed to perform more effectually than any of the other resinous fluids. Fuller observes, that it gives

* Barton's Collections, Part. I. p. 29. 54. Part II. 49.

the urine an intensely bitter taste, but not a violet smell as the turpentines do.

This resin has been principally celebrated in gleets and the fluor albus, and externally as a vulnerary.

The dose of this medicine rarely exceeds twenty or thirty drops, though some authors direct sixty or upwards. In this country it has been given in doses of half an ounce and more, with great advantage in gonnorrhœa. It may be conveniently taken in the form of an eleosaccharum, or in that of an emulsion, into which it may be reduced, by triturating it with almonds, with a thick mucilage of gum arabic, or with the yolk of eggs, till they are well incorporated, and then gradually adding a proper quantity of water.

CORIANDRUM SATIVUM. *Semen. Ed.* L. D.

Coriander. The seeds.

Wild. g. 552. *sp.* 1. *Smith, Flor. Brit. g.* 142. *sp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

D.	*Koriander.*	P.	*Coentro, Coriandro.*
DA.	*Koriander.*	POL.	*Koryander.*
F.	*Coriandre.*	R.	*Koriander.*
G.	*Koriander.*	S.	*Cilantro, Culantro.*
I.	*Coriandro, Curiandolo.*	SW.	*Koriander.*

Coriander is an annual, umbelliferous plant, a native of the south of Europe, differing from all the others of that class in producing *spherical* seeds. These, when fresh, have a strong disagreeable smell, which improves by drying, and becomes sufficiently grateful: they are recommended as carminative and stomachic.

Officinal Preparations.

Infusum sennæ tartarisatum, L. - - -	*vide Infusa.*
tamarindi cum senna, E. - - -	*Idem.*
Tinctura sennæ composita, E. - - -	*Tincturæ.*
Electuarium sennæ, E. L. - - - -	*Electuaria.*

CORNUS FLORIDA. *Common Dogwood.*

This beautiful shrub is found in every part of the United States. In the New-England states it is known by the name of Boxwood. The bark is considerably astringent, and has long been employed in intermittent fevers. A decoction of it has likewise been found useful in the yellow water of horses, so fatal within the few last years. An agreeable bitter is made by infusing the ripe fruit or berries, in spirits or brandy. The Indians employ an infusion of the flowers in intermittents; and the same has been recommended in flatulent colic.

The bark of the root, stem, and smaller branches is employed. That of the root is deemed most efficacious. It is sometimes combined with the bark of the Liriodendron, either in decoction or in substance.*

CORNUS SERICEA. *Red-Willow. Rose-Willow.*

The bark of this shrub has been found but little inferior to the common pale Peruvian bark in intermittents.

The bark forms a beautiful tincture with proof spirits, and is, as also the powdered bark of both species, deserving of a place in the shops.†

For a particular account of these vegetables, the reader is referred to Dr. John M. Walker's "Experimental inquiry into the similarity in virtue between the Cornus Florida and Sericea, and the Cinchona Officinalis of Linnæus, &c. &c. Philadelphia, 1803."

CORTEX PERUVIANUS. *Vide Cinchona.*

CRETA. *Vide Carbonas Calcis.*

CROCUS SATIVUS. *Floris stigmata. Ed.* D. L.

Saffron. Crocus. The summits of the Pistils, called Saffron.

Willd. g. 92. *sp.* 1. *Smith, Flor. Brit. g.* 16. *sp.* 1. *Triandria Monogynia.*—Nat. ord. *Liliaceæ.*

D.	*Saffraan.*	P.	*Açafrao.*
DA.	*Saffran.*	POL.	*Szafran.*
F.	*Safran.*	R.	*Schafran.*
G.	*Saffran.*	S.	*Azafran.*
I.	*Zafferano, Gruogo.*	SW.	*Saffran.*

Crocus is a bulbous-rooted perennial plant, probably a native of the East, although it is now found wild in England, and other temperate countries of Europe. It is very generally cultivated as an ornament to our gardens, and in some places for the saffron, which is formed of the dried summits of the pistil, and not of the filaments, as stated by the Dublin College. Each flower has one pistil, the summit of which is deeply divided into three slips, which are of a dark orange-red colour, verging to white at the base, and are smooth and shining. Their smell is pleasant and aromatic, but narcotic; their taste a fine aromatic bitter, and they immediately give a deep yellow colour to the saliva when chewed. The flowers are gathered early in the morning, just before they open; the summits of the pistils are

* Barton's Collections, Part I. p. 12. 45. † Barton's Collections, Part I. p. 12.

picked out, very carefully dried by the heat of a stove, and compressed into firm cakes. In Great Britain the saffron is superior to what is imported from other countries, and may by distinguished by its blades being broader.

On the continent they reckon the Austrian and the French from Gatinois the best. The Spanish is rendered useless, by being dipt in oil, with the intention of preserving it. Saffron should be chosen fresh, not above a year old, in close cakes, neither dry, nor yet very moist; tough and firm in tearing; difficultly pulverizable; of a fiery, orange red colour; of the same colour within as without; of a strong, acrid, diffusive smell; and capable of colouring a very large proportion of water or alcohol. Saffron which does not colour the fingers when rubbed between them, or stains them with oil, has little smell or taste, or a musty or foreign flavour, is too tender, and has a whitish, yellowish or blackish colour, is bad. It is said that it is sometimes adulterated with the fibres of smoaked beef, and with the flowers of the carthamus tinctorius, calendula officinalis, &c. The imposition may be detected by the absence of the white ends, which may be observed in the real saffron, by the inferior colouring power, and by the want of smell, or bad smell when thrown on live coals.

By distillation with water, saffron furnishes a small proportion of essential oil, of a golden yellow colour, heavier than water, and possessing the characteristic smell in an eminent degree. According to Hermbstadt, the soluble matter of saffron is extractive nearly pure. Neumann obtained from 480 dried saffron 360 grains of watery extract which was soluble in alcohol, except 24 of a colourless matter like sand, and afterwards 20 of alcoholic; and inversely, 320 of alcoholic extract entirely soluble in water, and then 90 of watery.

On account of the great volatility of the aromatic part of the saffron, it should be wrapt up in a bladder, and preserved in a box or tin case.

Medical use.—Saffron is a very elegant aromatic: besides the virtues which it has in common with all the bodies of that class, it has been alleged that it remarkable exhilarates, raises the spirits, and is deservedly accounted one of the highest cordials: taken in large doses, it is said to occasion immoderate mirth, involuntary laughter, and the ill effects which follow from the abuse of spirituous liquors. The medicine is also said to be particularly serviceable in hysteric depressions, or obstruction of the uterine secretions, where other aromatics, even those of the more generous kind, have little effect. But some experiments made by Dr. Alexander serve to show that it is much less powerful than was once imagined: and it was given in the Edinburg Infirmary by Dr. Henry Cullen, even to the extent of half an ounce a day, in several hysterical cases, without any sensible effect whatever; so that of late the estimation in which it was held as a medicine has been on the decline.

Officinal Preparations.

Syrupus croci, L. - - - - *vide Syrupi.*
Tinctura croci, E. - - - - - - *Tincturæ.*
aloës cum myrrha, E. L. - - *Idem.*

Tinctura cinchonæ composita, L. D. -	*vide Tincturæ.*
rhabarbari, L. - -	*Idem.*
composita, L. - -	*Idem.*
aloës ætherea, E. - - -	*Tincturæ ethereæ.*
Vinum rhabarbari, L. - - - -	*Vina medicata.*
Pilulæ aloës cum myrrha, L. E. - -	*Pilulæ.*
Electuarium aromaticum, D. - - -	*Electuaria.*
Confectio aromatica, L. - - - -	*Idem.*

CROTON ELEUTHERIA. (*Swartz. Prod.*) *Cortex. Ed.*

CROTON CASCARILLA L. D. *Eleutheria or Cascarilla. The bark.*

Willd. g. 1713. *sp.* 2. *Monoecia Monadelphia.*—Nat. ord. *Tricoccæ.*

THIS bark is imported into Europe from the Bahama Islands, and particularly from one of them of the name of Eleutheria; from which circumstance it was long known by the title of Eleutheria. But Dr. Wright also found the tree on the sea-shore in Jamaica, where it is common, and rises to about twenty feet. It is the Clutia eluteria of Linnæus: the bark of whose Croton cascarilla has none of the sensible qualities of the cascarilla of the shops.

The cascarilla is in general brought to us either in curled pieces or rolled up into short quills, about an inch in width, somewhat resembling in appearance the Peruvian bark. It is covered with a rough whitish epidermis; and in the inside it is of a brownish cast. When broken, it exhibits a smooth, close, dark-brown surface.

This bark, when freed from the epidermis, which is insipid and inodorous, has a light agreeable smell, and a moderately bitter taste, accompanied with a considerable aromatic warmth. It is easily inflammable, and yields, when burning, a very fragrant smell, resembling that of musk; a property which distinguishes the cascarilla from all other barks.

Its active constituents are aromatic essential oil and bitter extractive. Its virtues are partially extracted by water, and totally by rectified spirit; but it is most effectual when given in substance.

Medical use.—It produces a sense of heat, and excites the action of the stomach; and it is therefore a good and pleasant stomachic, and may be employed with advantage in flatulent colics, internal hemorrhagies, dysenteries, diarrhœas, and similar disorders.

As the essential oil is dissipated in making the extract, this preparation acts as a simple bitter. It was much employed by the Stahlians in intermittent fever, from their fear of using Cinchona bark, to which, however, it is much inferior in efficacy.

OFFICINAL PREPARATIONS.

Tinctura cascarillæ, L. D. - - - -	*vide Tincturæ.*
Extractum cascarillæ, L. - - - -	*Extracta.*

CUCUMIS COLOCYNTHIS. *Fructus, cortice seminibusque objectis. Ed.*

Coloquintida, or bitter apple The medullary part of the fruit.

Willd. g. 1741. *sp.* 1. *Monoecia Syngenesia.*—Nat. ord. *Cucurbitaceæ.*

D.	*Bitterappelen, Quintappelen.*	P.	*Coloquintidas, Cabacinhas.*
DA.	*Coloquinter.*	POL.	*Kolokwintyda.*
F.	*Coloquintes.*	R.	*Kolozintii.*
G.	*Koloquinten.*	S.	*Coloquintidas, Tueras, Calabacillas.*
I.	*Coloquintida.*	SW.	*Coloquinter.*

THIS is an annual plant of the gourd kind, a native of Turkey. The fruit is about the size of an orange; its medullary part, freed from the rind and seeds, is alone made use of in medicine; this is very light, white, spongy, composed of membranous leaves, of an extremely bitter,* nauseous, acrimonious taste. It is gathered in autumn when it begins to turn yellow, and is then peeled and dried quickly, either in a stove or in the sun. In the latter case it should be covered with paper.

Neumann got from 7680 parts 1680 alcoholic extract, and then 2160 watery; and inversely, 3600 watery and 224 alcoholic.

Medical use.—Colocynth is one of the most powerful and most violent cathartics. Many eminent physicians condemn it as dangerous; and even deleterious: others recommend it not only as an efficacious purgative, but likewise as an alterative in obstinate chronical disorders. This much is certain, that colocynth, in the dose of a few grains, acts with great vehemence, disorders the body, and sometimes occasions a discharge of blood. Many attempts have been made to correct its virulence, by the addition of acids, astringents, and the like: these may lessen the force of the colocynth, but no otherwise than might be equally done by a reduction of the dose. The best method of abating its virulence, without diminishing its purgative virtue, seems to be by triturating it with gummy farinaceous substances, or the oily seeds.

OFFICINAL PREPARATIONS.

Extractum colocynthidis compositum, L. *vide Extracta.*
Pilulæ aloës cum colocynthide, L. - *Pilulæ.*

* BITTER PRINCIPLE, (Thomson), intensely bitter, of a yellowish colour, ductile while soft, brittle when dry, not fusible, soluble in alcohol and in water, not crystallizable, precipitated by nitrat of silver, acetat of lead.

CUMINUM CYMINUM. *Semen. L. Cummin. The seeds.*
Willd. g. 547. *sp.* 1.—*Pentand. Monogyn.*—Nat. ord. *Umbellatæ.*

D.	*Komyn.*	POL.	*Kmin, Kmin kramny.*
DA.	*Kummen.*	R.	*Kmin, Timon.*
F.	*Cumin.*	S.	*Comino.*
G.	*Kumin, Langer Kummel.*	SW.	*Kummin, Cumin, Spiskumin.*
I.	*Comino, Cumino.*		
P	*Cuminho, Cominhos.*		

The Cummin is an annual umbelliferous plant, in appearance resembling fennel, but much smaller. It is a native of Egypt; but the seeds used in Britain are brought chiefly from Sicily and Malta. Cummin seeds have a bitterish warm taste, accompanied with an aromatic flavour, not of the most agreeable kind, residing in a volatile oil.

Officinal Preparations.

Cataplasma cumini, L. - - - *vide Cataplasmata.*
Emplastrum cumini, L. - - - - *Unguenta.*

CUPRUM.—*COPPER. Ed.* L. D.

D.	*Coper.*	P.	*Cobre.*
DA.	*Kobber.*	POL.	*Miedz.*
F.	*Cuivre.*	R.	*Mjed, Krasnoi mjed.*
G.	*Kupfer.*	S.	*Cobre.*
I.	*Rame.*	SW.	*Koppar.*

Copper. Bright red; disagreeable taste and smell when rubbed or heated; sp. gr. 7.79; ductile; of great tenacity: sonorous; fusible at 27° Wedgwood; granulated texture, and subject to blisters; a good conductor of caloric, electricity, and galvanism; becomes brown, and at last green in the air; when heated, turns blue, yellow, violet, deep brown; when ignited and plunged into water, forms brown, brittle scales of oxyd. Its phosphuret is brilliant, brittle, hard and fusible; its sulphuret, brown, fusible, and very phosphoric; its alloy with arsenic is white, with bismuth reddish, with antimony violet, mercury deep red, with zinc forms brass, and with tin is orange; it is oxydized and dissolved by the sulphuric, nitric, and muriatic acids; its oxyd is brown, brittle, and soluble in ammonia, producing a beautiful blue.

Copper is found in many countries,

a. In its metallic state:
1. Crystallized.
2. Alloyed with arsenic and iron.
3. Sulphureted.

b. Oxydized:
4. Uncombined.
5. Combined with carbonic acid.
6. ———————— sulphuric acid.
7. ———————— arsenic acid.

Copper has a more perceptible smell and taste than almost any other metal. Its effects when taken into the stomach are highly deleterious, and often fatal. It particularly affects the primæ viæ, exciting excessive nausea, vomiting, colic pains, and purging, sometimes of blood, or, though more rarely, obstinate constipation. It also produces agitation of the mind, headach, vertigo, delirium; renders the pulse small and weak, the countenance pale, and causes fainting, convulsions, paralysis, and apoplexy. When any of these symptoms occur, we must endeavour to obviate the action of the poison by large and copious draughts of oily and mucilaginous liquors, or to destroy its virulence by solutions of potass, or sulphuret of potass.

Poisoning from copper is most commonly the effect of ignorance, accident, or carelessness; and too many examples are met with of fatal consequences ensuing upon eating food which had been dressed in copper vessels not well cleansed from the rust which they had contracted by lying in the air; or pickles, to which a beautiful green colour had been given, according to the murderous directions of the most popular cookery books, by boiling them with halfpence, or allowing them to stand in a brass pan until a sufficient quantity of verdigris was formed.

Great care ought to be taken that acid liquors, or even waters, designed for internal use, be not suffered to stand long in vessels made of copper, otherwise they will dissolve so much of the metal as will give them dangerous properties. But the sure preventive of these accidents is to banish copper utensils from the kitchen and laboratory. The presence of copper in any suspected liquor is easily detected by inserting into it a piece of polished steel, which will soon be coated with copper, or by dropping into it some carbonat of ammonia, which will produce a beautiful blue colour if any copper be present.

But although copper be thus dangerous, some preparations of it are in certain cases used with great advantage both externally and internally.

The chief of these are,

1. The sub-acetat of copper.
2. The sulphat of copper.
3. The sub-sulphat of copper and ammonia.
4. The muriat of copper and ammonia.
5. A solution of the sulphat of copper, and super-sulphat of alumina in sulphuric acid.

The two first of these are never prepared by the apothecary, but are bought by him from the manufacturer.

SUB-ACETIS CUPRI. *Ed. Sub-acetat of Copper.*

ÆRUGO, L. D. *Verdigris.*

D.	*Spaansch groen.*	POL.	*Gryszpan.*
DA.	*Spansk grönt.*	R.	*Jar.*
F.	*Verd-de-gris, Verdet.*	S.	*Cardenillo, Verdete, Ver-de-gris.*
G.	*Grünspan.*	SW.	*Spansk gröna.*
I.	*Verderame.*		
P.	*Verdete, Verdegris, Cardinilho.*		

The preparation of this substance was almost confined to Montpelier in France, owing chiefly to an excellent regulation which existed, that no verdigris could be sold until it had been examined and found of sufficiently good quality. For since that regulation has been abolished, Chaptal informs us, that so many abuses have crept into the manufacture, that the Montpelier verdigris has lost its decided superiority of character. It is prepared by stratifying copper plates with the husks and stalks of the grape, which have been made to ferment after the wine has been expressed from them. In from ten to twenty days, when the husks become white, the plates of copper are taken out, and their surfaces are found to be covered with detached and silky crystals. They are now placed on edge, with their surfaces in contact, in the corner of a cellar, and alternately dipt in water, and replaced to dry every seven or eight days, for six or eight times. By this management, the plates swell, and are every where covered with a coat of verdigris, which is easily separated with a knife. In this state it is only a paste, and is sold by the manufacturers to commissioners, who beat it well with wooden mallets, and pack it up in bags of white leather, a foot high and ten inches wide, in which it is dried by exposing it to the air and sun, until the loaf of verdigris cannot be pierced with the point of a knife.

Sub-acetat of copper should be of a bluish green colour, dry and difficult to break, and should neither deliquesce, have a salt taste, contain any black or white spots, nor be adulterated with earth or gypsum. Its purity may be tried by diluted sulphuric acid, in which the sub-acetat dissolves entirely, and the impurities remain behind.

Verdigris, as it comes to us, is generally mingled with stalks of the grape; they may be separated, in pulverization, by discontinuing the operation as soon as what remains seems to be almost entirely composed of them. Acetat of copper is readily prepared by adding acetat of lead to sulphat of copper, both in solution; an insoluble sulphat of lead precipitates; and by evaporating the supernatant fluid the verdigris is procured in very beautiful crystals.

Medical use.—Verdigris is never, or rarely used internally. Some writers highly extol it as an emetic, and say, that a grain or two act as soon as received into the stomach; but its use has been too often followed by dangerous consequences to allow of its employment. Verdigris applied externally, proves a gentle detergent and escharotic, and is employed to destroy callous edges, or fungous flesh in wounds. It is also advantageously applied to scorbutic ulcers of the mouth, tongue, or fauces, and deserves to be carefully tried in cancerous sores. With these intentions it is an ingredient in different officinal compositions. The best remedy for persons poisoned by verdigris, appears to be sugar, largely administered. See Orfila's Toxicology, Vol. I.

OFFICINAL PREPARATIONS.

Ærugo præparata, L.	
Oxymel æruginis, L. - - - -	*vide Mella medicata.*
Acidum acetosum, L. - - -	*Acidum acetosum.*
Unguentum sub-acetitis cupri, E. - -	*Unguenta.*
Emplastrum meloës vesicatorii compositum, E. - - - - - -	*Idem.*

ÆRUGO PRÆPARATA. D. L.

Prepared Verdigris.

Let the Verdigris be ground to powder, and the minute particles be separated in the manner directed for the preparation of crabs claws. *Vide Carbonas calcis præparatus.*

THE intention of this process is merely to obtain the sub-acetat of copper in the state of the most minute mechanical division.

OFFICINAL PREPARATION.

Liquor cupri ammoniati, L. D.

AQUA CUPRI AMMONIATI; olim AQUA SAPPHARINA. D.

Water of Ammoniated Copper, formerly *Sapphire Water.*

LIQUOR CUPRI AMMONIATI. L. *Solution of Ammoniated Copper.*

Take of
- Lime water, fresh made, eight ounces;
- Sal ammoniac, two scruples;
- Verdigris prepared, four grains.

Mix and digest them for twenty-four hours, then pour off the pure liquor. (D.)

IN this preparation the lime water decomposes the muriat of ammonia and forms muriat of lime; while the ammonia disengaged immediately re-acts upon the oxyd of copper contained in the verdigris, and renders it soluble. But as the quantity of lime employed is not sufficient to decompose all the muriat of ammonia, the solution contains muriat of ammonia, muriat of lime, and ammoniuret of copper, forming probably a triple salt, with the acetic acid.

Medical use.—This compound solution is applied externally for cleaning foul ulcers, and disposing them to heal. It has been recommended also for taking off specks and films from the eyes; but when used with this intention, it ought to be diluted with some pure water, as in the degree of strength in which it is here ordered, it irritates and inflames the eyes considerably. It is the best test of arsenic, which changes its blue colour into green.

SULPHAS CUPRI. *Ed.* D. L.

Sulphat of Copper. Blue Vitriol.

D. *Blaauw Vitriool, Koper-vitriool, Roomsch Vitriool.*
DA. *Blaa, Vitriol, Kobber Vitriol, Blaat Kobber-vand.*
G. *Blauer Vitriol, . Kupfer Vitriol, Römischer Vitriol.*
I. *Vitriuolo turchino, di-rame, ciprio.*
F. *Vitriol bleu, Couperose bleue, Vitriol Romain, Vitriol de Chypre.*
P. *Vitriolo de cobre.*
R. *Sinei Kuperos.*
S. *Vitriolo azul, de cobre, Romano, de Chipre.*
SW. *Bla Vitriol, Koppar Vitriol.*
POL. *Koperwas cypryyski modry.*

This metallic salt is rarely formed by combining directly its component parts; but it is obtained, either by evaporating mineral waters which contain it, or by acidifying native sulphureted copper, by exposing it to the action of air and moisture, or by burning its sulphur.

When pure it has a deep blue colour, and is crystallized generally in long rhomboids. It effloresces slightly in the air, is soluble in four parts of water at 60°, and in two at 212°, and is insoluble in alcohol. By heat it loses, first its water of crystallization, and afterwards all its acid. It is decomposed by the alkalies and earths, and some of the metals, the alkaline carbonats, borats, and phosphats, and some metallic salts.

It is composed of,

$$\left.\begin{array}{ll}\text{Copper,} & 24\\ \text{Oxygen,} & 8\\ \text{Water,} & 10\end{array}\right\}\ 42\ \text{hydro-oxyd of copper.}$$

33 sulphuric acid.
25 water of crystallization.

100

Medical use.—The sulphat of copper has a strong, styptic, metallic taste, and is chiefly used externally as an escharotic for destroying warts, callous edges, and fungous excrescences, as a stimulant application to ill-conditioned ulcers, and as a styptic to bleeding surfaces. Taken internally, it operates, in very small doses, as a very powerful emetic. It has, however, been exhibited in incipient phthisis pulmonalis, intermittent fever, and epilepsy; but its use is not free from danger.

Officinal Preparations.

Solutio sulphatis cupri composita, E.
Ammoniuretum cupri, E. L. D.

SOLUTIO SULPHATIS CUPRI COMPOSITA. *Ed.*

Olim, Aqua Styptica.

Compound Solution of Sulphat of Copper, formerly *Styptic Water.*

Take of
Sulphat of copper,
Sulphat of alumina, each three ounces;
Water, two pounds;
Sulphuric acid, an ounce and a half.
Boil the sulphats in the water to dissolve them, and then add the acid to the liquor filtered through paper. (E.)

In this preparation, the substances dissolved in the water exert no chemical action on each other, and the composition was probably contrived from the false idea, that the sum of the powers of substances having similar virtues was increased by mixing them with each other.

Medical use.—It is chiefly used as a styptic for stopping bleedings at the nose; and for this purpose, cloths or dossils, steeped in the liquor, are to be applied to the part.

AMMONIURETUM CUPRI; olim, Cuprum Ammoniacum. *Ed.*

Ammoniuret of Copper, formerly *Ammoniacal Copper.*

Cuprum Ammoniatum. D. L. *Ammoniated Copper.*

Take of
Pure sulphat of copper, two parts;
Carbonat of ammonia, three parts.
Rub them carefully together in a glass mortar, until after the effervescence has entirely ceased, they unite into a violet-coloured mass, which must be wrapped up in blotting paper, and first dried on a chalk stone, and afterwards by a gentle heat. The product must be kept in a glass phial well closed. (E.)

It may seem strange, that particular directions should be given concerning the manner of drying a mixture which is prepared by rubbing two dry substances together. But such a phenomenon is by no means uncommon, and arises from the quantity of water of crystallization contained in the ingredients being greater than what is required in the new compound formed: As soon, therefore, as the ingredients begin to act upon each other, a quantity of water is set at liberty, which renders the mass moist.

The nature of this compound, and consequently the name which should be given it, are not yet sufficiently ascertained. Prepared according to the directions of the colleges, it evidently contains oxyd of copper, ammonia, and sulphuric acid. If these substances be chemically combined, it should be denominated the Sulphat or Subsulphat of copper and ammonia. By exposure to the air during its exsiccation, and by keeping, it is apt to lose its blue colour entirely, and become green, and is probably converted into carbonat of copper. It should therefore be prepared in small quantities at a time.

Medical use.—Ammoniaret of copper has been strongly recommended in epilepsy; but, from its good effects sometimes ceasing after it has been used for some time, a want of success, in some cases, and the disagreeable consequences with which its use is sometimes attended, it has not lately been much prescribed. In my practice, however, its success has been almost uniform and astonishing. It is employed by beginning with doses of half a grain twice a-day, and increasing them gradually to as much as the stomach will bear. Dr. Cullen sometimes increased the dose to five grains.

CURCUMA LONGA. CURCUMA. *Radix.* L.

Turmeric. The root.

Willd. g. 11. *sp.* 2. *Monandria Monogynia.*—Nat. ord. *Scitamineæ.*

D.	*Kurkuma.*	POL.	*Szafranica, Ostrzyz indyyski.*
DA.	*Gurgumeye.*	R.	*Kurkuma.*
F.	*Curcuma, Terre merite.*	S.	*Curcuma.*
G.	*Kurkuma.*	SW.	*Gurkmaja.*
I.	*Curcuma.*		
P.	*Curcuma, Acafrao da India.*		

TURMERIC is a perennial plant, a native of the East Indies. The roots are tuberous, knotty, and long; wrinkled, externally of a pale yellow colour, and internally of a shining saffron brown. They have a weak aromatic smell, and a slightly bitter aromatic taste. They contain a very little essential oil; and Neumann got from 960 parts, 320 watery, and afterwards 50 alcoholic extract, and inversely 150 alcoholic, and 210 watery.

Medical use.—Turmeric, when taken internally, tinges the urine of a deep yellow colour, and acts as a gentle stimulant. It has been celebrated in diseases of the liver, jaundice, cachexy, dropsy, intermittent fevers, &c. But its internal use in Great Britain is almost confined to its being a principal ingredient in the composition of curry powder, in which form it is used in immense quantities in the East Indies. It is also a valuable dye-stuff, and an excellent chemical test of the presence of uncombined alkalies; for the yellow colour of turmeric is changed by them to a reddish brown.

CYNARA SCOLYMUS. *Folia. Ed.*

Artichoke. The leaves.

Willd. g. 1436. *sp.* 2. *Syngenesia Polygamia æqualis.*—Nat. ord. *Compositæ capitatæ.*

The artichoke is a perennial plant, indigenous in the south of Europe, but very frequently cultivated in our gardens for culinary purposes.

The leaves are bitter, and afford by expression a considerable quantity of juice, which is said to be diuretic, and to have been successfully used in dropsy.

D.

DAPHNE MEZEREUM. *Radicis Cortex.* E. L. D.

Mezereon, or spurge olive. The bark of the root.

Willd. g. 773. *sp.* 1. *Smith, Flor. Brit. g.* 194. *sp.* 1 *Octandria Monogynia.*—Nat. ord. *Veprecula.*

Mezereon is a shrub which grows in woody situations in the northern parts of Europe, and is admitted into our gardens from its flowering in winter. The bark, which is taken from the trunk, larger branches, and root, is thin, striped reddish, commonly covered with a brown cuticle, has no smell, and when chewed, excites an insupportable sensation of burning in the mouth and throat. When applied to the skin in its recent state, or infused in vinegar, it raises blisters. Its acrid principle is said to be soluble in ether.

Medical use.—The root was long used in the Lisbon diet-drink, for venereal complaints, particularly nodes and other symptoms resisting the use of mercury. The bark of the root contains most acrimony, though some prefer the woody part. Mezereon has also been used with good effects in tumours and cutaneous eruptions not venereal.

Dr. Cullen says that it acts upon the urine, sometimes giving it a filamentous appearance, and upon the perspiration, without diminishing the strength remarkably; and that in irritable habits it quickens the pulse, and increases the heat of the whole body. But Mr. Pearson of the Lock Hospital says, that excepting a case or two of lepra, in which a decoction of this plant conferred temporary benefit, he very seldom found it possessed of medicinal virtues, either in syphilis, or in the sequelæ of that disease. In scrofula, or in cutaneous affections, it is employed chiefly under the form of decoction; and it enters the decoctum sarsaparillæ compositum of the London college; but it has also been used in powder, combined with some inactive one, as that of liquorice-root. It is apt to occasion vomiting and purging; so must be begun in grain doses, and gradually increased. It is often combined with mercury.

The berries are still more acrid than the bark, and they have even been known to produce fatal effects on children, who have been tempted by their beauty to eat them. It is said that they are sometimes infused in vinegar, to make it more pungent, and appear stronger.

Officinal Preparations.

Decoctum daphnes mezerei, E. - -	*Vide Decocta.*
sarsaparillæ compositum, L. D. -	*Idem.*

DATURA STRAMONIUM. *Herba. Semina. Ed.* D.

Stramonium Officinale.

Thorn-apple. James-town weed. The leaves and seed.

Willd. g. 377. *sp.* 2. *Smith, Flor. Brit. g.* 98. *sp.* 1. *Pentandria Monogynia.*—Nat. ord. *Solanaceæ.*

The Thorn-apple is an annual plant, a native of America, but now growing wild on dry hills and uncultivated places in England and other parts of Europe. The leaves are dark green, sessile, large, egg-shaped, pointed, angular, and deeply indented, of a disagreeable smell and nauseous taste. Every part of the plant is a strong narcotic poison, producing vertigo, torpor, death. The best antidote to its effects is said to be vinegar.

Medical use.—Dr. Stork first tried it as a remedy in mania and melancholy with considerably success. Several cases of the same diseases were also cured or relieved by it, under the direction of different Swedish physicians; and although in other experiments it frequently failed, it deserves the attention of practitioners, and well merits a trial, in affections often incurable by other means.

Besides maniacal cases, the stramonium has been also employed and sometimes with advantage, in convulsive and epileptic affections. It is not only taken internally, but has also been used externally. An ointment prepared from the leaves of the stramonium has also been said to give ease in external inflammations and hæmorrhoids.

The inspissated juice of the leaves has been commonly used, but its exhibition requires the greatest caution. At first, one-fourth of a grain is a sufficient dose.

The powder of the leaves or seeds promises to furnish a more certain or convenient formula than the inspissated juice.

According to Professor Barton, the stramonium is a southern plant, which is gradually diffusing itself, where, a few years since it was entirely unknown. In 1797, the Doctor adds, he was shown a solitary plant, at Wilkesbarre, in the Wyoming settlement, where it was deemed a great curiosity, and a new-comer. Taken in large quantities, this vegetable sometimes induces tetanus. Dr Barton mentions the cases of three British soldiers, who ate the stramonium by mistake for lambs-quarters (Chenopodium album). One became furious and ran about like a madman. A second was seized with genuine tetanus, of which he died. The fate of the third person is not remembered.

Dr. Barton considers the stramonium as a medicine of great and invaluable powers. He begins its use, in doses of a few grains, increasing it in a few days to 15 or 20 grains. In one case of mania he gave it to the extent of 60 grains, at a dose. In a case, in which it was exhibited to 30 grains, it dilated the pupil of one eye, and produced palsy of the palpebra of the same, which was removed by a blister.*

Hufeland gave it in the form of a tincture, prepared of two ounces of the seeds in four ounces of wine, and one of diluted alcohol, in diseases of the mind. The inspissated juice of the leaves has been most commonly used; but its exhibition requires the greatest caution. At first, a quarter of a grain is a sufficient dose. An ointment prepared from the leaves has been said to give ease in external inflammations and hæmorrhoids. And the bruised leaves, according to Plenk, soften hard and inflamed tumours, and discuss tumours in the breasts of nurses, from indurated milk.

The smoke of the stramonium has lately been much extolled for the cure of asthma. Its use in this manner has been derived from the East Indies, where, however, other species of *datura*, the *fatuosa* and *ferox*, are employed. Dr. Anderson of Madras recommended these to General Gent, who made the practice known in Britain, where the stramonium seems first to have been substituted by Mr. Sills. This gentleman received so much benefit from inhaling its smoke, that he published his case in the Monthly Magazine, and recommended it it very freely. According to all those who have employed it, it is the root only and the lower part of the stem which is to be used. These are to be dried as quickly as possible, cut into slips, and beat so as to divide the fibres. The manner of using them is by filling the bowl of a tobacco-pipe, as with tobacco, and inhaling the smoke. The saliva excited, is directed to be swallowed, but its safety may be considered doubtful. Used in this way, it is however said to excite a sense of heat in the chest, followed by copious expectoration, and sometimes attended with temporary vertigo or drowsiness, and rarely nausea. It frequently gives relief when a pipe is thus smoked upon a paroxysm being threatened, or even after its commencement: the patient falls asleep, and awakes recovered from the paroxysm. In some cases, a perfect cure is effected, but more commonly the relief is only temporary. It seems however valuable as a palliative, and the direct application of the remedy to the seat of the disease is rational at least.

* Barton's Medical and Physical Journal, Vol. I. p. 146.—Collections, Part I. p. 46. See also Dr. Cooper's "Inaugural dissertation on the properties and effects of the Datura Stramonium, &c. Philadelphia: 1797."

DAUCUS CAROTA. *Semen. Ed.* L. D.

Carrot. The seed.

Willd. g. 530. *sp.* 1. *Smith, g.* 128. *sp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

This is a biennial plant, which grows wild in Britain, and is cultivated in great quantities as an article of food. The seeds, especially of the wild variety, have a moderately warm pungent taste, and an agreeable aromatic smell. They are carminative, and are said to be diuretic. The roots, especially of the cultivated variety, contain much mucilaginous and saccharine matter, and are therefore highly nutritious and emollient. When beaten to a pulp, they form an excellent application to carcinomatous and ill-conditioned ulcers, allaying the pain, checking the suppuration and fetid smell, and softening the callous edges.

DECOCTA.—*DECOCTIONS.*

Decoctions differ from infusions only in the action of the menstruum being assisted by a boiling heat. At the same time, however, that the increase of temperature facilitates and expedites the solution of some fixed principles, it gives others a tendency to decomposition, and dissipates all volatile matters. Decoction, therefore, can only be used with advantage for the extraction of principles which are neither volatilized nor altered by a boiling heat.

To promote the action of the menstruum, infusion is sometimes premised to decoction.

In compound decoctions it is sometimes convenient not to put in all the ingredients from the first, but in succession, according to their hardness, and the difficulty with which their virtues are extracted; and if any aromatic, or other substances containing volatile principles, enter into the composition, the boiling decoction is to be simply poured upon them, and covered up until it cool.

Decoctions should be made in vessels sufficiently large to prevent any risk of boiling over, and should be continued without interruption, and gently.

DECOCTUM ALTHÆÆ OFFICINALIS. *Ed.*

Decoction of Marshmallows.

Take of
Dried marshmallow roots, four ounces;
Raisins of the sun, stoned, two ounces;
Water, seven pounds.

Boil to five pounds; place apart the strained liquor till the feces have subsided, then pour off the clear liquor. (E.)

Marshmallow roots contain nothing soluble in water except mucilage, which is very abundant in them. This decoction is therefore to be considered merely as an emollient, rendered more pleasant by the acidulous sweetness of the raisins.

DECOCTUM ANTHEMIDIS NOBILIS; vulgo, Decoctum Chamæmeli sive Commune. *Ed.*

Common Decoction, or Decoction of Chamomile.

Decoctum Chamæmeli; sive, Decoctum pro Enemate. D.

Decoction of Chamomile, or Decoction for Clysters.

Decoctum pro Enemate. L. *Decoction for Clysters.*

Take of
 Chamomile flowers, dried, one ounce;
 Caraway seeds, half an ounce;
 Water, five pounds.
Boil a quarter of an hour, and strain. (E.)

DECOCTUM PRO FOMENTO. L.

Decoction for Fomentations.

Take of
 The leaves of southernwood, dried,
 The tops of sea-wormwood, dried,
 Chamomile flowers, dried, each one ounce;
 Bay leaves, dried, half an ounce;
 Distilled water, six pints.
Boil them a little, and strain. (L.)

These decoctions are merely solutions of bitter extractive, combined with essential oils. In making them, the aromatic substances should not be added until the decoction is nearly completed; for otherwise their flavour would be entirely dissipated.

It must, however, be acknowledged, that these impregnations are for the most part unnecessary for the purpose of clysters; and in ordinary cases, the bulk and warmth produce a discharge before these medicines can have any effect.

As fomentations, their virtues are also in a great measure to be ascribed to the influence of the warm water: and when the herbs themselves are applied, they act only as retaining heat and moisture for a longer time.

DECOCTUM CICHONÆ OFFICINALIS; E. L. D.

Vulgo, DECOCTUM CORTICIS PERUVIANI. *Ed. Decoction of Cinchona Bark.*

Take of
  Cinchona bark, in powder, one ounce;
  Water, a pound and a half.
Boil for ten minutes in a covered vessel, and strain the liquor while hot. (E.)

CINCHONA bark readily yields its active principles to the action of boiling water, and in greater quantity than cold water is capable of retaining dissolved; therefore, when a saturated decoction cools, it becomes turbid, and there is always a deposition of a yellowish or reddish powder, while the supernatant liquor is reduced to the strength of a saturated cold infusion. Decoction therefore presents us with an easy means of obtaining immediately an active preparation of cinchona bark, and with one of greater strength than a cold or even a warm infusion, provided it be drunk while tepid, and before it forms any deposition, or if the precipitate be diffused by agitation, after it is formed. As the precipitate contains no woody fibre, or other inert matter, it is extremely probable that in very small doses it would prove, if dried, a very powerful preparation of cinchona bark.

Formerly it was supposed that the strength of a decoction of cinchona bark, and similar substances, was increased by continuing the boiling for a great length of time; but this is now known to be a mistake; and indeed, after a certain time, the decoction becomes weaker instead of stronger, because water at different temperatures is capable of dissolving only a determinate proportion of its active principles; and therefore, as soon as it is saturated, any farther decoction is unnecessary. But moreover, these principles, when dissolved in water, are liable to be decomposed and become inert, by the absorption of atmospheric oxygen, and this decomposition is increased by increase of temperature; and as boiling constantly presents new surfaces to the action of the air, it is evidently hurtful when protracted longer than what is just necessary to saturate the water. Ten minutes is supposed by the colleges to be sufficient for that purpose.

DECOCTUM CORNU CERVI. L.

Decoction of Hartshorn.

Take of
  Burnt and prepared hartshorn, two ounces;
  Gum arabic, six drachms;
  Distilled water, three pints.
Boil, constantly stirring, to two pints; and strain. (L.)

PREPARED hartshorn is phosphat of lime in a minute state of mechanical division. By boiling in a mucilaginous liquid, it will be diffused and imperfectly suspended, but not a particle of it will be dissolved. This is therefore an extremely injudicious preparation; for phosphat of lime would be much more easily and effectually suspended by triturating it with a large proportion of gum arabic, and adding the water gradually But we believe that this preparation has no other action than that of a weak mucilage.

DECOCTUM DAPHNES MEZEREI. *Ed.*

Decoction of Mezereon.

Take of
  The bark of Mezereon root, two drachms;
  Liquorice root, bruised, half an ounce;
  Water, three pounds.
Boil it, with a gentle heat, down to two pounds, and strain it. (E.)

FROM four to eight ounces of this decoction may be given four times a-day. in some obstinate venereal and rheumatic affections. It operates chiefly by perspiration.

DECOCTUM DIGITALIS. D.

Decoction of Foxglove.

Take of
  Foxglove leaves, dried, one drachm;
  Water, as much as will furnish a strained decoction of eight ounces, by measure.
Place the vessel upon a slow fire, and, as soon as the liquor boils, remove it. Digest for a quarter of an hour, and strain.

THIS decoction, according to the proportion employed, is twenty times weaker than that so much praised by Dr. Darwin; but with a medicine of so great activity, it is an advantage to be able to regulate the doses easily; and it is probable that the strength of decoctions is not increased in proportion as the quantity of the menstruum is diminished.

DECOCTUM GEOFFRÆÆ INERMIS. *Ed.*

Decoction of Cabbage-tree bark.

Take of
  Bark of the cabbage-tree, powdered, one ounce;
  Water, two pounds.
Boil it with a gentle fire down to one pound, and strain. (E.)

THIS is a powerful anthelmintic. It may be given in doses of one table-spoonful to children, and four to adults. If disagreeable symptoms should arise from an over-dose, or from drinking cold water during its action, we must immediately purge with castor-oil, and dilute with acidulated drinks.

DECOCTUM GUAIACI OFFICINALIS COMPOSITUM;

vulgo, Decoctum Lignorum. *Ed.*

Compound Decoction of Guaiacum, commonly called *Decoction of the Woods.*

Take of
  Guaiacum raspings, three ounces;
  Raisins, stoned, two ounces;
  Sassafras root,
  Liquorice, each one ounce;
  Water, ten pounds.

Boil the guaiacum and raisins with the water, over a gentle fire, to the consumption of one half; adding, towards the end, the sassafras and liquorice. Strain the liquor, without expression. (E.)

This decoction is of use in some rheumatic and cutaneous affections. It may be taken by itself, to the quantity of a quarter of a pint twice or thrice a-day, or used as an assistant in a course of mercurial or antimonial alteratives; the patient in either case, keeping warm, in order to promote the operation of the medicine.

DECOCTUM HORDEI DISTICHI. *Ed.*

Decoctum Hordei. L. *Decoction of Barley. Barley water.*

Take of
  Pearl barley, two ounces;
  Water, five pounds.

First wash the barley, from the mealy matter that adheres to it, with some cold water; then boil it a little with about half a pound of water, to extract the colouring matter. Throw this away; and put the barley thus purified into five pounds of boiling water, which is to be boiled down to one half, and strained. (E.)

DECOCTUM HORDEI COMPOSITUM. L. D.

Compound Decoction of Barley.

Take of
  The decoction of barley, two pints;
  Figs, sliced, two ounces;
  Liquorice root, sliced and bruised, half an ounce;
  Raisins, stoned, two ounces;
  Distilled water, one pint.

Boil to two pints, and strain. (L.)

These liquors are to be used freely, as diluting drinks, in fevers and other acute disorders: hence it is of consequence that they should be prepared so as to be as elegant and agreeable as possible; for this reason they are inserted in the pharmacopœia, and the several circumstances which contribute to their elegance set down: if any one of them be omitted, the beverage will be less grateful. However trivial medicines of this class may appear to be, they are of greater importance in the cure of acute diseases than many more elaborate preparations.

Barley water, however, is much more frequently prepared by nurses than apothecaries, particularly in its simple state.

DECOCTUM LICHENIS ISLANDICI. *Dub.*

Decoction of Iceland Moss.

Take of
Iceland moss, half and ounce;
Boiling water, a pint.
Boil to a pint, and strain.

As in the present preparation the bitter principle is not removed, it may have some action as a tonic; but it renders it at the same time too nauseous to be used in sufficient quantity to have much effect as an article of diet.

DECOCTUM POLYGALÆ SENEGÆ. *Ed.* L.

Decoction of Seneka.

Take of
Seneka root, one ounce,
Water, two pounds.
Boil to sixteen ounces, and strain. (E.)

THE virtues of this decoction will be easily understood from those of the root from which it is prepared. The dose in hydropic cases, and rheumatic or arthritic complaints, is two ounces, three or four times a-day, according to its effect. It is recommended in affections of the lungs, attended with debility, and inordinate secretion.

DECOCTUM SMILACIS SARSAPARILLÆ. *Ed.*

DECOCTUM SARSAPARILLÆ. L. D. *Decoction of Sarsaparilla.*

Take of
The root of sarsaparilla, sliced, six ounces;
Distilled water, eight pounds.
Digest for two hours, with a heat of about 195°; then take out the root, and bruise it; return the bruised root to the liquor, and again macerate it for two hours. Then, the liquor being boiled to the measure of four pints, press it out, and strain. (E.)

ITS diaphoretic effects are probably owing to its being drunk warm. It is totally incapable of curing syphilis; but by some it is thought useful in the sequelæ of that disease, and in syphiloid affections.

DECOCTUM SARSAPARILLÆ COMPOSITUM. L. D.

Compound Decoction of Sarsaparilla

Take of
The root of sarsaparilla, sliced and bruised, $1\frac{1}{2}$ ounces;
Bark of the root of sassafras,
Shavings of guiacum wood,
Liquorice root, bruised, of each two drachms;
Bark of Mezereon root, one drachm;
Boiling water, three pints.

Macerate, with a gentle heat, for six hours; then boil it down to one half, adding, towards the end of the boiling, the liquorice and mezereon, and strain the liquor. (L.)

This compound decoction is an elegant mode of preparing an article once highly celebrated under the title of the Lisbon diet drink, which, for a long time after its first introduction into Britain, was kept a secret; but an account of the method of preparing it was at length published in the physical and literary Essays of Edinburgh, by Dr. Donald Monro.

It operates as a diaphoretic, and may be given with advantage in rheumatic cases, and in some of the sequelæ of syphilis. Three or four ounces may be taken four times a-day.

DECOCTUM ULMI. L. D.

Decoction of Elm.

Take of
The fresh inner bark of elm, bruised, four ounces;
Water, four pints.

Boil to two pints, and strain. (L).

Under this form, the elm bark has been employed for combating those cutaneous eruptions, against which it has of late been so highly celebrated. Experience however, in actual practice, by no means confirms the very favourable account which some have given of its use.

DELPHINIUM STAPHISAGRIA. *Semen.* L. D.

Stavesacre. The seed.

Willd. g. 1061. *sp.* 13. *Polyandria Trigynia.*—Nat. ord. *Multisiliquæ.*

Stavesacre is a biennial plant, a native of the south of Europe. The seeds are usually brought from Italy. They are large and rough, of an irregular triangular figure, of a blackish colour on the outside, and yellowish or whitish within; they have a disagreeable smell, and a very nauseous, bitterish, burning taste.

Neumann got from 480 parts, 45 alcoholic extract, besides 90 of fixed oil, which separated during the process, and afterwards 44 insipid watery, and inversely 95 watery, and then by alcohol only one, besides 71 of oil.

Medical use.—Stavesacre was employed by the ancients as a cathartic; but it operates with so much violence, both upwards and downwards, that its internal use has been, among the generality of practitioners, for some time laid aside. It is chiefly employed in external applications for some kinds of cutaneous eruptions, and for destroying lice and other insects; insomuch, that from this virtue it has received its name, in different languages.

DIANTHUS CARYOPHYLLUS. *Flores. Ed.* D.

Clove Gilly-flower. Clove Pink or Carnation. The flowers.

Willd. g. 893. *sp.* 9. *Smith, g.* 209. *sp.* 3. *Decandria Digynia.*—Nat. ord. *Caryophylleæ.*

This species of dianthus is a native of Italy, and is perennial. By cultivation, its varieties have increased to a very great number, and they form one of the greatest ornaments of our gardens. Most of these are termed Carnations, but the variety which is officinal surpasses all the others in the richness of its smell, and is also distinguished by its colour, being of a uniform deep crimson. Their only use in pharmacy is to give a pleasant flavour and beautiful colour to an officinal syrup.

Officinal Preparation.

Syrupus dianthi caryophilli, E. L. - *Vide Syrupi.*

DIGITALIS PURPUREA. *Folia. Ed.* L. D.

Foxglove. The leaves.

Willd. g. 1155. *sp.* 1. *Didynamia Angiospermia.*—Nat. ord. *Solanaceæ.*

This is an indigenous biennial plant, very common on hedge-banks, and sides of hills, in dry, gravelly, or sandy soils, and the beauty of its appearance has gained it a place in our gardens and shrubberies. The leaves are large, oblong, egg-shaped, soft, covered with hairs, and serrated. They have a bitter, very nauseous taste, with some acrimony. Destouches analysed foxglove. Four ounces of the dried leaves yielded successively 9 drachms of watery, and 78 grains of alcoholic extract. The first was brown, smooth, and of a consistence fit for making pills. The second had a very deep green colour, a virose and disagreeable smell, the consistence of tallow, but more tenacious; did not furnish ammonia by distillation, and was not acted upon by acids. The ashes contained salts of lime and potass.

Medical use.—Its effects when swallowed are,

1. To diminish the frequency of the pulse.
2. To diminish the irritability of the system.

3. To increase the action of the absorbents.
4. To increase the discharge by urine.

In excessive doses, it produces vomiting, purging, dimness of sight, vertigo, delirium, hiccough, convulsions, collapse, death. For these symptoms the best remedies are cordials and stimulants.

Internally, digitalis has been recommended,

1. In inflammatory diseases, from its very remarkable power of diminishing the velocity of the circulation.
2. In active hemorrhagies, in phthisis.
3. In some spasmodic affections, as in spasmodic asthma, palpitation, &c.
4. In mania from effusion on the brain.
5. In anasarcous and dropsical effusions.
6. In scrofulous tumours.
7. In aneurisms of the aorta, it has alleviated the most distressing symptoms.

Externally, it has been applied to scrofulous tumours.

It may be exhibited,

1. In substance, either by itself, or conjoined with some aromatic, or made into pills with soap or gum ammoniac. Withering directs the leaves to be gathered after the flowering stem has shot up, and about the time when the blossoms are coming forth. He rejects the leaf-stalk, and middle rib of the leaves, and dries the remaining part either in the sunshine or before the fire. In this state they are easily reduced to a beautiful green powder, of which we may give at first one grain twice a-day, and gradually increase the dose until it act upon the kidneys, stomach, pulse, and bowels, when its use must be laid aside or suspended.

2. In infusion. The same author directs a drachm of the dried leaves to be infused for four hours in eight ounces of boiling water, and that there be added to the strained liquor an ounce of any spiritous water, for its preservation. Half an ounce or an ounce of this infusion may be given twice a-day.

3. In decoction. Darwin directs that four ounces of the fresh leaves be boiled from two pounds of water to one, and half an ounce of the strained decoction be taken every two hours, for four or more doses.

4. In tincture. Put one ounce of the dried leaves coarsely powdered into four ounces of diluted alcohol; let the mixture stand by the fireside twenty-four hours, frequently shaking the bottle; and the saturated tincture, as Darwin calls it, must then be separated from the residuum by straining or decantation. Twenty drops of this tincture may be taken twice or thrice a-day. The Edinburgh college use eight ounces of diluted alcohol to one of the powder, but let it digest seven days. A tincture of the flowers is said by Dr. Barton to be equally or more powerful.

5. The expressed juice and extract are not proper forms of exhibiting this very active remedy.

When the digitalis is disposed to excite looseness, opium may be advantageously conjoined with it; and when the bowels are tardy, jalap may be given at the same time, without interfering with its diuretic effects. During its operation in this way, the patient should drink very freely. An ointment of the flowers is said to have been useful in scrofulous ulcers.

In a letter from Dr. Gregg to Dr. Walmsley, published in the Philadelphia Medical and Physical Journal, two cases of phthisis are mentioned, in which this remedy induced a copious ptyalism, which lasted some time, but without producing any beneficial effect. In the second case, the ptyalism was a second time induced by its use.

There is a singular anomaly attending the operation of foxglove noticed by a writer in the third volume of the Edinburgh Medical Journal, and also by Dr. Hamilton in his treatise on digitalis, and some others, which appears to merit attention in its administration. That its action is considerably influenced by the different positions of the patient's body, whether erect or recumbent. In one case of phthisis, after taking this medicine, the pulse was not lessened in frequency when the patient stood erect, being 120. When he sat down it fell to 70, and when lying on his back it fell to 40. The experiment was repeated many times, and always with the same effect.

Dr. Mease, of Philadelphia, being of opinion that not unfrequently disappointment to the expectations of the prescriber is to be attributed to the improper manner of preparing and exhibiting digitalis, advises physicians to cultivate the plant for their own use, and to observe the greatest care in preserving the leaves, rejecting the leaf-stalk and middle rib. Some farther observations relative to this important plant will be found under its several preparations;* and a number of interesting experiments and observations on this powerful plant, are to be found in the first volume of Orfila's Toxicology.

Officinal Preparations.

Infusum digitalis purpureæ, E. - - *vide Infusa.*
Tinctura digitalis purpureæ, E. - - *Tincturæ.*

DIOSPYROS VIRGINIANA.

Persimmon.

This has been found useful in intermittents. Dr. Barton has used it in ulcerous sore throat. The ripe fruit is said to be useful in the worm cases of negro and other children.†

* Disappointment more probably ensues, from other plants being mistaken for Digitalis. Cox in his treatise on Insanity speaks of the apothecaries drying *mullein* leaves for it. And a species of Cynoglossum has likewise been used for it.

† Barton's Collections, Part I. p. 11. Part II. p. 52. See also Professor Woodhouse's Inaugural Dissertation on this subject.

DIRCA PALUSTRIS. *Lin.*

Moose-wood. Leather-wood.

The bark of this plant is said to produce a blister. It is allied to the genus daphne, all the species of which are blisters.*

DOLICHOS PRURIENS. *Pubes leguminis rigida. Ed.* L. D.

Cow-itch. The stiff hairs which cover the pods.

Willd. g. 1349. *sp.* 16.—*Diadelphia Decandria.*—Nat. ord. *Papilionaceæ.*

The dolichos is a climbing plant, resembling our common scarlet runner, growing in great abundance in warm climates, particularly in the West Indies. The pods are about four inches long, round, and as thick as a man's finger. On the outside they are thickly beset with stiff brown hairs, which, when applied to the skin, occasion a most intolerable itching. In the choice of cow-itch, we must reject all those pods which are shrivelled, brown, and diminutive in size, have lain long in damp warehouses, and are musty, or of a bad colour.

Medical use.—The ripe pods are dipped in syrup, which is again scraped off with a knife. When the syrup is rendered by the hairs as thick as honey, it is fit for use. It acts mechanically as an anthelmintic, occasions no uneasiness in the primæ viæ, and may be safely taken, from a tea-spoonful to a table spoonful in the morning, fasting. The worms are said to appear with the second or third dose; and by means of a purge, in some cases the stools have consisted entirely of worms. For further information, the publications of Mr. Chamberlayne may be consulted, or the Philadelphia Medical Museum.

DORSTENIA CONTRAYERVA. *Radix. Ed.* L.

Contrayerva. The root.

Willd. g. 244. *sp.* 5. *Tetrandria Monogynia.*—Nat. ord. *Scabridæ.*

This plant is perennial, and grows in South America, and some of the Caribæan islands.

The root is knotty, an inch or two long, and about half an inch thick, of a reddish brown colour externally, and pale within: long, rough, slender fibres shoot out from all sides of it; and are generally loaded with small round knots. It has a peculiar kind of aromatic smell, and a somewhat astringent, warm, bitterish taste, with a slight and sweetish kind of acrimony, when long chewed; the fibres have little taste or smell; the tuberous part, therefore, should be alone chosen.

* Barton's Collections.

This root contains so much mucilage, that a decoction of it will not pass through the filter. Neumann got from 480 parts, 190 watery extract, and afterwards with alcohol 7, and inversely, 102 alcoholic, and 60 watery. The tincture reddens infusion of lithmus, is precipitated by water, and has no effect on the salts of iron.

Medical use.—Contrayerva is a gentle stimulant and diaphoretic, and is sometimes given in exanthematous diseases, typhus, and dysentery. Its dose is about half a drachm.

Officinal Preparation.

Pulvis contrayervæ compositus, L. *vide Pulveres.*

DRACONTIUM PERTUSUM.

The leaves of this plant (which is a good deal allied to the Arum triphyllum), are employed by the Indians of Demarara, in a very singular manner, in the treatment of general dropsy. The whole body of the patient is covered with the leaves. A universal sweat, or rather vesication, is induced, and the patient often recovers.*

E.

EAU MEDICINALE, - - *Vide Veratrum album.*

ELECTUARIA & CONFECTIONES.
ELECTUARIES AND CONFECTIONS.

Electuaries are composed chiefly of powders mixed up with syrups, &c. into such a consistence, that the powders may not separate in keeping, that a dose may be easily taken up on the point of a knife, and not prove too stiff to swallow.

Electuaries are composed chiefly of the milder alterative medicines, and such as are not ungrateful to the palate. The more powerful drugs, as cathartics, emetics, opiates, and the like, (except in officinal electuaries to be dispensed by weight,) are seldom trusted in this form, on account of the uncertainty of the dose: disgustful ones, acrids, bitters, fetids, cannot be conveniently taken in it; nor is the form of an electuary well fitted for the more ponderous substances, as mercurials, these being apt to subside on keeping, unless the composition be made very stiff.

* Barton's Collections, Part I. p. 21.

The lighter powders require thrice their weight of honey, or syrup boiled to the thickness of honey, to make them into the consistence of an electuary: of syrups of the common consistence, twice the weight of the powder is sufficient.

Where the common syrups are employed, it is necessary to add likewise a little conserve, to prevent the compound from candying and drying too soon. Electuaries of Peruvian bark, for instance, made up with syrup alone, will often in a day or two grow too dry for taking. This is owing to the crystallization of the sugar. Deyeux, therefore, advises electuaries, confections, and conserves, to be made up with syrups from which all the crystallizable parts have been separated. For this purpose, after being sufficiently evaporated, they are to be exposed to the heat of a stove as long as they form any crystals. The syrup which remains, probably from the presence of some vegetable acid, has no tendency to crystallize, and is to be decanted and evaporated to a proper consistence. In hospital practice, the same object may be obtained much more easily by using molasses instead of syrups.

The quantity of an electuary, directed at a time, in extemporaneous prescription, varies much according to its constituent parts, but is rarely less than the size of a nutmeg, or more than two or three ounces.

ELECTUARIUM AROMATICUM. *Ed.* D.

Confectio Aromatica. L.

Aromatic Electuary. Aromatic Confection.

Take of

Aromatic powder, one part;
Syrup of orange-peel, two parts.

Mix and beat them well together, so as to form an electuary. (E.)

This simple compound serves all the purposes of a cordial, or as a vehicle for more active substances, as well as the complicated formulæ of the London and Dublin colleges. It is given in form of a bolus, in doses of from 5 grains to 20 and upwards.

ELECTUARIUM CASSIÆ FISTULÆ. *Ed.*

Electuarium Cassiæ. L. D. *Electuary of Cassia.*

Take of

Pulp of cassia fistularis, six ounces;
Pulp of tamarinds,
Manna, each an ounce and a half;
Syrup of pale roses, six ounces.

Having beat the manna in a mortar, dissolve it with a gentle heat, in the syrup; then add the pulps, and evaporate them with a regularly continued heat, to the consistence of an electuary. (E.)

This composition is a very convenient officinal, to serve as a basis for purgative electuaries and other similar purposes. The tamarinds give it a pleasant taste, and do not subject it, as might be expected, to turn sour. After standing for four months, the composition has been found no sourer than when first made. This electuary, likewise, is usefully taken by itself, to the quantity of two or three drachms occasionally, for gently loosening the belly in costive habits.

ELECTUARIUM CASSIÆ SENNÆ; olim, Electuarium Lenitivum. *Ed.*

Confectio Sennæ, L. D.

Electuary of Senna, commonly called *Lenitive Electuary.*

Take of
- Senna leaves, in very fine powder, four ounces;
- Pulp of French prunes, one pound;
- ——— tamarinds, two ounces;
- Molasses, a pound and a half;
- Essential oil of caraway, two drachms.

Boil the pulps in the syrup to the thickness of honey; then add the powders, and, when the mixture is cooled, add the oil; then beat them all well together, so as to form an electuary. (D.)

This electuary is a very convenient laxative, and has long been in common use among practitioners. Taken to the size of a nutmeg or more, as occasion may require, it is an excellent laxative for loosening the belly in costive habits.

ELECTUARIUM CATECHU; olim, Confectio Japonica. *E.*

Electuary of Catechu, formerly *Japonic Confection.*

Electuarium Catechu Compositum. D.

Compound Electuary of Catechu.

Take of
- Extract of mimosa catechu, four ounces;
- Kino, three ounces;
- Cinnamon,
- Nutmeg, each one ounce;
- Opium, diffused in a sufficient quantity of Spanish white wine, one drachm and a half;
- Syrup of red roses, boiled to the consistence of honey, two pounds and a quarter.

Reduce the solids to powder; and having mixed them with the opium and syrup, make them into an electuary. (E.)

This electuary is an extremely useful astringent medicine, and is often given in doses of a tea-spoonful, frequently repeated, in cases of diarrhœa, &c. Ten scruples contain one grain of opium.

ELECTUARIUM SCAMMONII. D.

Electuary of Scammony.

CONFECTIO SCAMMONII. L.

Take of
- Scammony, in powder, one ounce and a half;
- Cloves, bruised,
- Ginger, in powder, of each six drachms;
- Essential oil of caraway, half a drachm;
- Syrup of roses, as much as is sufficient.

Mix the spices, well powdered together, with the syrup; then add the scammony, and lastly, the oil of caraway. (L.)

THIS electuary is a warm brisk purgative. A drachm and a half contain fifteen grains of scammony.

ELECTUARIUM OPIATUM; olim, ELECTUARIUM THEBAICUM. *Ed.*

Opiate Electuary, commonly called *Thebaic Electuary.*

CONFECTIO OPII. L. *Confection of Opium.*

Take of
- Aromatic powder, six ounces;
- Virginia snake root, in fine powder, three ounces;
- Opium diffused in a sufficient quantity of Spanish white wine, half an ounce;
- Syrup of ginger, one pound.

Mix them and form an electuary. (E.)

THE action which this electuary will produce on the living system is abundantly apparent from the nature of the ingredients. They are combinations of aromatics with opium; one grain of opium being contained in forty-three of the Edinburgh electuary.

CONFECTIO AURANTIORUM. L.

Confection of Orange-peel.

Take of
- Fresh orange-peel, grated off, one pound;
- Refined sugar, three pounds.

Bruise the peel in a stone mortar with a wooden pestle; then, adding the sugar, beat them into a homogeneous mass.

CONSERVA ROSÆ. *Dub.*

Conserve of Red Roses.

Pluck the petals of red rose buds from the calyces; and having cut off the heels, beat them, gradually adding three times their weight of refined sugar.

La Grange says that by infusing the red rose leaves in four times their weight of water, and squeezing them out of the infusion, they lose their bitterness, and are more easily reduced to a pulp, which he then mixes with a thick syrup, prepared by dissolving the sugar in the expressed liquor, and boiling it down to the consistence of an electuary.

It is scarcely necessary to make any particular remarks on these conserves. Their taste and virtues are compounded of those of sugar, and the substance combined with it. The hips are acidulous and refrigerant, the orange rind bitter and stomachic, and the red rose buds astringent.

EMPLASTRA, - - - - *Vide Unguenta.*

EMULSIONES, - - - - *Vide Mixturæ.*

ERIGERON PHILADELPHICUM.

Philadelphia Flea-bane.

This is one of the most common plants in many parts of the United States. It has been used in decoction or infusion in Philadelphia, for gouty and gravelly complaints, and in some instances with much benefit. It operates powerfully as a diuretic and sudorific. It is known by the name of Skevish in Pennsylvania, which Dr. Barton suspects to be a corruption of the word Scabious. This plant is employed by the Cochin-Chinese, according to Father Lureiro; who speaks of it as an active emmenagogue.*

ERYNGIUM AQUATICUM.

Water-Eryngo.

This plant is nearly allied to the contrayerva of the shops, and acts more especially as a sudorific. It is used in decoction by the southern Indians.†

ERYNGIUM MARITIMUM. Eryngium. *Radix.* D.

Sea-Holly. Sea Eryngo. The root.

Willd. g. 518. *sp.* 6. *Smith, g.* 121. *sp.* 1.—*Pentandria Monogynia.*—Nat. ord. *Umbellatæ.*

This plant grows plentifully on some of the sandy and gravelly shores of Great Britain: the roots are slender, and very long; of a pleasant sweetish taste, which, on chewing them for some time, is followed by a slight degree of aromatic warmth and acrimony. They are accounted aperient and diuretic, and have also been celebrated as aphrodisiac: their virtues, however, are too weak to admit them under the head of medicines.

* Barton's Collections, Part II. p. 46. † Barton's Collections, Part I. p. 20.

EUGENIA CARYOPHYLLATA. D. L.

Floris germen, et oleum ejus volatile. Ed.

CARYOPHYLLUS AROMATICUS. E.

The clove tree. The flower-bud and its essential oil.

Willd. g. 972. *sp.* 54.—*Icosandria Monogynia.*—Nat. ord. *Hesperideæ.*

D.	*Kruidnagelen, Geroffles.*	P.	*Cravos da India, Cravos girofes.*
DA.	*Nelliker, Krydenelliker.*	POL.	*Gozdziki kramne.*
F.	*Cloux de Girofle.*	R.	*Gwosdika.*
G.	*Gewürznelken.*	S.	*Clavos de Especia, Clavillos.*
I.	*Chiovi di Garofano, Garofani, Garoffoli.*	SW.	*Kryddeneglikor.*

THIS is a beautiful tall tree, a native of the Molucca islands. The Dutch, from the desire of monopolizing the valuable spice produced by it, destroyed all the trees except in Amboyna, where it is carefully cultivated. But their scheme has been frustrated, and the clove is now thriving in the Isle of France and other places. Every part of this tree is highly aromatic, but especially the leaf-stalk. Cloves are the flower-buds, which are gathered in October and November, before they open, and when they are still green, and which are exposed to smoke for some days, and then dried in the sun.

Cloves have somewhat the form of a nail, consisting of a globular head, formed of the four petals of the corolla, and four leaves of the calyx not yet expanded; but this part is often wanting, being easily broken off; and a germen situated below, nearly round, but somewhat narrower towards the bottom; scarcely an inch in length, and covered with another thicker calyx, divided above into four parts. Their colour should be of a deep brown; their smell strong, peculiar, and grateful; their taste acrid, aromatic, and permanent. The best cloves are also large, heavy, brittle, and when pressed with the nail, exude a little oil. When light, soft, wrinkled, dirty, pale, and without smell or taste, they are to be rejected.

The Dutch from whom we had this spice, frequently mix it with cloves from which the oil has been distilled. These, though in time they regain from the others a considerable share both of taste and smell, are easily distinguishable by their weaker flavour and lighter colour.

Cloves yield by distillation with water about one-seventh of their weight of volatile oil; 960 parts also gave to Neumann 380 of a nauseous, somewhat astringent, watery extract. The same quantity gave only 300 of excessively fiery alcoholic extract. When the alcoholic extract is freed from the volatile oil by distillation with water, the oil that arises proves mild, and the resin that remains insipid. Its pungency therefore seems to depend on the combination of these principles. The Dutch oil of cloves is extremely hot and fiery, and of a reddish brown colour, but it is greatly adulterated, both with fixed oils and resin of cloves; for the genuine oil when recently distilled, is comparatively quite mild, and colourless, although it gradually acquires a yellow colour. It is heavier than water, and rises in distillation with some difficulty, so that it is proper to use a very low-headed still, and to return the distilled water several times upon the residuum.

Medical use.—Cloves, considered as a medicine, are very hot stimulating aromatics, and possess in an eminent degree the general virtues of substances of this class.

Officinal Preparations.

Spiritus lavendulæ compositus, E. L. D.	*vide Tincturæ.*
ammoniæ compositus, L.	*Tincturæ ammoniat.*
Confectio aromatica, L. - - -	*Electuaria.*
Electuarium scammonii, L. D. - -	*Idem.*
Pilulæ aloës cum colocynthide, E.	*Pilulæ.*

EUPATORIUM AYA-PAYNA.

This plant has of late excited attention amongst the French physicians, through the means of Captain Augustin Baudin, by whom it was carried from Brazil to the Isle of France. In Brazil it has received the name of the *miraculous plant*, from its many real or attributed virtues in the cure of disease.

This plant, is particularly described by Mr. De Ventenat, in his superb work, entitled "Le Jardin de la Malmaison." He refers it to the genus Eupatorium. It belongs to the Corymbiferæ of Jussieu, and to the Polygamia æqualis of Linnæus. It grows plentifully on the River of Amazons, and is easily propagated by slips. It is reputed to be an alexipharmic, emmenagogue, diaphoretic, &c. It is also said to possess lithontriptic virtues. It is chiefly on account of its first mentioned property that it is so highly esteemed by the South Americans; in confirmation of which numerous well authenticated cases have been published. In two cases, the one of the sting of a scorpion, the other from the prick of the fish called the *Last* in fishing, both detailed in the Colonial Gazette, the application of the pounded leaves to the wounded parts, speedily removed the pain and inflammation, and the persons were soon restored. The latter case is particularly remarkable, since it is said so dangerous is the wound of the Last, and so generally considered as mortal, that the only remedy hitherto employed was excision or amputation.

It has been successfully employed as a diuretic in ascites; and is eminently useful in rheumatism and in gout. Its external application produces redness and inflammation.

As yet we know too little of this plant to credit the high encomiums bestowed upon it; yet they are fully sufficient to induce a wish to see the plant naturalized amongst us; and it is to be hoped that by the intermedium of our captains or physicians who visit Brazil, the Aya-Payna may not be long a stranger to us.

EUPATORIUM PERFOLIATUM.

Thorough Wort. Leaves and flowers.

This plant is known by the name of Thorough-stem, Cross-wort, Bone-set, and Indian sage. It is one of the remedies of the Indians; and acts powerfully as a sudorific and emetic, and has been successfully employed in intermittents and other fevers, either in decoction or the leaves in powder. The *aya-payna*, so celebrated of late, is a species of the same family. Every part of the eupatorium may be advantageously employed, though the flowers appear most active. A watery infusion of the leaves is a powerful and not disagreeable bitter, and the flowers are deemed superior in this respect to those of the anthemis nobilis, by Dr. Barton.*

This is a native annual plant, flourishing abundantly in wet meadows and other moist places. The stalk is hairy and rises from two to four feet, perforating the leaves at each joint, from which it is sometimes called thorough stalk or stem. The flowers are white and appear in July and August, forming a corymbus at the termination of the branches. The leaves at each joint are horizontal, serrated and rough, from three to four inches long, and about an inch broad at their base, gradually lessening to a very acute point, of a dark green, and covered with short hairs. Thorough wort certainly possesses active properties, and deserves the attention of American physicians. It acts powerfully as a sudorific and emetic, and sometimes as a purgative, and has been successfully employed in intermittents and other fevers, either in decoction or the leaves in powder. Every part of the plant may be advantageously employed, though the flowers appear most active. A watery infusion of the leaves is a powerful and not disagreeable bitter, and the flowers are deemed superior in this respect to those of camomile, and ought to be kept in the shops. The dried leaves in powder, or made into pills with lenitive electuary, given in doses of twelve or fifteen grains, are of excellent effect as a mild laxative, obviating costiveness without inducing debility or heat; correcting bile and promoting perspiration. This plant is frequently employed in the country as a drench in diseases of cattle. There are several species in the United States.

Dr. Andrew Anderson, of New York, in his inaugural dissertation, thus designates the species in the following botanical terms:

E. Perfoliatum. *Lin.*
E. Virginianum. *Morris Hist.*
E. Virginianum. *Pluk. Alm.*
E. Connatum. *Mich. Flor. Bor. Amer.*

He then proceeds to enumerate the various trivial names by which the plant has long been familiarly known throughout the United States, such as thorough wort, Indian-sage, cross-wort, bone-set, vegetable antimony, &c. The chemical properties of this plant the author has ascertained by accurate analysis, and its medicinal virtues by practical experiment. According to his chemical experiments it seems to be satisfactorily proved, that the E. Perfoliatum contains

* Barton's Collections, Part I. p. 52. Part II. p. 22.

firstly, a free acid; secondly, tannin; thirdly, extractive matter; fourthly, a gummy matter; fifthly, a resin; sixthly, azote; seventhly, lime, probably the acetat of lime; eighthly, gallic acid, probably modified; ninthly, a resiniform matter, soluble in water and in alcohol, and which seems to contain a bitter principle. Hence he deems it warrantable to conclude that this plant possesses active medicinal properties; that many of them are similar to those which characterize the cinchona officinalis, the anthemis nobilis, and other valuable articles of the materia medica; but that these virtues reside in greatest quantity in the *leaves.*

As pharmaceutical preparations of this plant the author recommends the decoction of the flowers and of the leaves; infusions of the same parts; the leaves in substance pulverized; and a tincture of the flowers and of the leaves, prepared with proof spirits. This last form is the most pleasant and convenient, and at the same time the most powerful, for proof spirits was ascertained to be the best menstruum. Our author does not hesitate to assert that the chemical properties of E. Perfoliatum as deduced from experiment are in very many respects exactly similar to the Peruvian bark; and that for its active medicinal virtues, particularly as a sudorific and as a tonic, it will not suffer by comparison with any of the articles drawn from the vegetable kingdom. In addition to his own opportunities of witnessing the employment of this plant, in different diseases in the New York Alms-house, he appeals to the observations and experience of several distinguished practitioners, particularly of Dr. Barton and of Dr. Hosack, for the importance and efficacy of this remedy in the treatment of most febrile disorders, particularly in intermitting and remitting fevers, yellow fever, and in other disorders of specific contagion; in many cutaneous affections, and in diseases of general debility. It may however be observed, that if it be exhibited as a warm decoction, it often proves emetic, and acts especially upon the skin, in producing diaphoresis: if in the form of cold infusion or decoction, or in substance, it acts as a powerful tonic. Dr. Anderson proceeds to detail six cases of intermittent fever in which after a single evacuant, the thoroughwort effected radical cures, and adds that the same remedy was administered in almost all the instances of intermittents that occurred in the New York alms-house in the year 1812 to the exclusion of the Peruvian bark, and with uniform success. It was given either in decoction, or in powder from 20 to 30 grains every second hour during the intermission. In remitting fever, as a sudorific it produced the most salutary effects, and in those cases where tonics were indicated it proved no less advantageous. In the treatment of yellow fever he adduces the high authority of Dr. Hosack and Dr. Bard, who after proper evacuations placed almost exclusive dependence on sudorifics, and among this class of medicines the eupatorium administered in the form of decoction was deservedly considered of great value. The disease called by some the *petechial* or *spotted fever*, and by others the *malignant pleurisy* or *typhoid peripneumony*, has been more successfully treated by the class of remedies denominated sudorifics than by any other, and in many cases of this epidemic which occurred in the city of New York in the winter of 1812-13, after the proper evacuations had been employed, the eupatorium was resorted to, and its sudorific, its tonic and its cordial properties were clearly demonstrated, and much benefit was derived from its use. In some obstinate cutaneous diseases, according to Dr. Barton, eupatorium has produced very beneficial effects. During the author's attendance in the New York alms-house in the year 1812, very liberal recourse was had to this remedy in diseases arising from general debility. In anasarcous affections of the extremities, and in ascites when it may be considered as a disease of debility, the alcoholic tincture of eupatorium may be safely recommended as an excellent tonic; and in addition to its tonic effects, the properties of a diuretic render the employment of it still more advantageous in cases of this description.

EUPATORIUM PILOSUM. *Wild Horehound. The leaves.*

This species of Eupatorium is also an annual plant; it rises from one to two feet. It grows wild in abundance in the southern states, where it has acquired great repute as a domestic remedy in the prevalent fevers of that climate. We are indebted to the honourable George Jones, Esq. president of the Georgia medical society, for the following sketch of its medical virtues. "It serves as an excellent substitute for the Peruvian bark; indeed, among the planters on or near the sea-board it supersedes the use of the bark in the cure of fevers. It is tonic, diaphoretic, diuretic, and mildly cathartic, and does not oppress the stomach as the Peruvian bark is apt to do; hence it may often be exhibited where the cinchona is inadmissible. It is usually exhibited in the form of infusion; one ounce of the dried leaves infused in a quart of water may be taken daily in doses of from two to four ounces every hour or two. It may be advantageously combined with Peruvian bark; and although it may sometimes fail of producing the desired effect, it well deserves a station among the articles of the Materia Medica.

EUPHORBIA IPECACUANHA.

Spurge.

This species of Euphorbia grows spontaneously in various parts of the United States. It is pretty common in the dry and sandy soil of New Jersey, within a few miles of Philadelphia. This is an extremely active plant, the root of which is employed as an emetic by some of the country people. The dose is not known, though Dr. Barton supposes it is small, as it belongs to the head of drastic emetics.*

* Barton's Collections, Part I. p. 25.

EUPHORBIA OFFICINARUM. L. *Gummi-resina.*

OFFICINAL EUPHORBIA. *Gum-resin.*

Willd. g. 959. *sp.* 7. *Dodecandria Trigynia.*—Nat. ord. *Tricoccæ.*

THE London college have restored this drastic and corrosive substance to the list of officinals. It is produced from several species of the African genus Euporbia; such as the *E. officinarum* of the Cape of Good Hope, the *E. antiquorum* which grows in Egypt, Arabia, and the East Indies, and which is said to have furnished the Euphorbium of the ancients, and the *E. Canariensis*. Mr Jackson, in his account of Morocco, has described it, but unfortunately not in the language of science *Furbiune*, he says, is the Arabic name of this gum, which is produced by a very curious succulent plant, growing on the Atlas mountains, and called by the Shellahs and Arabs *Dergmuse*. From the main body of the plant, proceed several solid leafless branches, about three inches in circumference and one in diameter, from the top of which shoot out similar ones, each bearing on its summit a vivid crimson flower; these branches are scolloped, and have on their outer side small knots, from which grow five extremely sharp-pointed thorns, about one-third of an inch in length. The stalk is at first soft and succulent, but becomes hard in a few years, when the plant assumes the above-mentioned form, and may then be considered as at its maturity The inhabitants of the lower regions of Atlas make incisions in the branches of the plant with a knife, from which a corrosive lacteous juice issues, which, after being heated by the sun, becomes a substance of a whitish yellow colour, and in the month of September drops off, and forms the gum Euphorbium. The plants produce abundantly only once in four years; but this fourth year's produce is more than all Europe can consume; for, being a very powerful cathartic, it is there little used. The people who collect the gum are obliged to tie a cloth over their mouth and nostrils, to prevent the small dusty particles from annoying them, as they produce incessant sneezing. The branches are used in the tanning of Morocco leather, and it is in great request among the women as a *depilatory*.

The gum is brought to us immediately from Barbary, in drops of an irregular form; some of which, on being broken, are found to contain little thorns, small twigs, flowers, and other vegetable matters; others are hollow, without any thing in their cavity; the tears, in general, are of a pale yellow colour externally, but somewhat white within: they break easily between the fingers Braconnot has analysed euphorbium. He got from 100 parts, 37 of resin, 19 of wax, 20.5 of malate of lime, 2 of malate of potass, 13.5 of woody matter, 5 of water, and there was 3 of loss. Euphorbium is extremely troublesome to pulverize; the finer part of the powder, which flies off, affecting the head in a violent manner. The acrimony of this substance is so great, as to render it unfit for internal use. It burns with an agreeable smell and a bright flame. When applied to the tongue, it seems at first to have no taste, but on being held some time in the mouth, it excites a very violent biting and burning, which lasts a long time, and cannot be abated by washing the mouth.

EXTRACTA ET RESINA.—*EXTRACTS AND RESINS.*

Extract, in pharmacy, has long been used, in the common and true acceptation of the term, to express a thing extracted, and therefore it was applied to substances of all kinds which were extracted from heterogeneous bodies, by the action of any menstruum, and again reduced to a consistent form, by the evaporation of that menstruum. Lately, however, Extract has been used in a different and much more limited sense, as the name for a peculiar principle, which is often indeed contained in extracts, and which before had no proper appellation. It is in the former sense that we employ it here, and in which we wish it to be only used, while a new word should be invented as the name of the new substance. Till a better be proposed, we shall call it *Extractive*.

The London college have also added to the confusion in their last edition, by applying the term extract to what are commonly called inspissated juices, where no menstruum is employed.

Extracts are of various kinds, according to the nature of the substances from which they are obtained, and the menstruum employed: but they commonly consist of gum, sugar, extractive, tannin, cinchonin, gallic acid, or resin, or several of them mixed in various proportions. The menstrua most commonly employed are water and alcohol. The former is capable of extracting all the substances enumerated, except the resin, and the latter all except the gum. Wine is also sometimes employed, but very improperly; for as a solvent it can only act as a mixture of alcohol and water, and the principles which it leaves behind, on evaporation, are rather injurious than of advantage to the extract.

Water is the menstruum most economically employed in making extracts, as it is capable of dissolving all the active principles except resin, and can have its solvent powers assisted by a considerable degree of heat.

Watery extracts are prepared by boiling the subject in water, and evaporating the strained decoction to a thick consistence.

It is indifferent, with regard to the medicine, whether the subject be used fresh or dry; since nothing that can be preserved in this process will be lost by drying. With regard to the facility of extraction, however, there is a very considerable difference; vegetables in general giving out their virtues more readily when dried than when fresh.

In many cases, it is necessary to assist the action of the menstruum by mechanical division, but it should not be carried so far as to reduce the substance to a very fine powder; as Fabbroni found that cinchona, at least, yielded a larger proportion of extract, when only coarsely powdered.

The quantity of water ought to be no greater than is necessary for extracting the virtues of the subject. This point, however, is not very easily ascertained; for, although some of the common principles of extracts be soluble in a very small proportion of water, there are others, such as the tannin, of which water can dissolve only a certain proportion, and cannot be made to take up more by any length of boiling; besides, we have no very good method of knowing when we have used a sufficient quantity of water; for vegetable substances will continue to colour deeply successive portions of water boiled with them, long after they are yielding nothing to it but colouring matter. One of the best methods is to boil the subject in successive quantities of water, as long as the decoctions form a considerable precipitate with the test which is proper for detecting the substance we are extracting, such as a solution of gelatin for tannin, of alum for extractive, &c.

The decoctions are to be evaporated after they have been filtered boiling hot, without any farther depuration; because some of the most active principles of vegetable substances, such as tannin, are much more soluble in boiling than in cold water, and because almost all of them are very quickly affected by exposure to the atmosphere. Therefore, if a boiling decoction, saturated with tannin, be allowed to cool, the greatest part of the very principle on which the activity of the substance depends, will separate to the bottom, and, according to the usual directions, will be thrown away as sediment. The same objection applies more strongly to allowing the decoction to cool, and deposite a fresh sediment, after it has been partially evaporated. Besides, by allowing the decoctions to stand several days before we proceed to their evaporation, we are, in fact, allowing the active principles contained in the decoction to be altered by the action of the air, and to be converted into substances, perhaps inactive, which also are thrown away as sediment.

The evaporation is most conveniently performed in broad shallow vessels; the larger the surface of the liquor, the sooner will the aqueous parts exhale. This effect may likewise be promoted by agitation.

When the matter begins to grow thick, great care is necessary to prevent its burning. This accident, almost unavoidable if the quantity be large, and the fire applied, as usual, under the evaporating basin, may be effectually prevented, by pouring the extract, when it has acquired the consistence of a syrup, into shallow tin or earthen pans, and placing these in an oven with its door open, moderately heated; which, acting uniformly on every part of the liquid, will soon reduce it to any degree of consistence required. This may likewise be done, and more securely, by setting the evaporating vessel in boiling water; but the evaporation is in this way very tedious. Dr. Powell has figured a modification of the common tin sauce-pan for this purpose. It is nothing but putting a tin evaporating dish over a sauce-pan filled with water, which is made to boil.

Alcohol is much too expensive to be employed as a menstruum for obtaining extracts, except in those cases where water is totally inadequate to the purpose. These cases are,

1st, When the nature of the extract is very perishable when dissolved in water, so that it is liable to be decomposed before the evaporation can be completed; especially if we cannot proceed immediately to the evaporation.

2dly, When water is totally incapable of dissolving the substance to be extracted; and, *3dly*, When the substance extracted can bear the heat of boiling alcohol without being evaporated, but would be dissipated by that of boiling water; that is, when it requires a heat greater than 176°, and less than 212°, for its evaporization.

In the last case, the alcohol must be perfectly free from water, because the heat necessary to evaporate it at the end of the process would frustrate the whole operation. Hence, also, the subject itself ought always to be dry: those substances, which lose their virtue by drying, lose it equally on being submitted to this treatment with the purest alcohol.

In this way the alcoholic extract of some aromatic substances, as cinnamon, lavender, rosemary, retain a considerable degree of their fine flavour.

In the second case, the alcohol need not be so very strong, because it is capable of dissolving resinous substances, although diluted with a considerable proportion of water.

In the first case, the alcohol may be still much weaker; or rather, the addition of a small proportion of alcohol to water will be sufficient to retard or prevent the decomposition of the decoction.

The alcohol employed in all these cases should be perfectly free from any unpleasant flavour, lest it be communicated to the extract.

The inspissation should be performed from the beginning, in the gentle heat of a water-bath. We need not suffer the alcohol to evaporate in the air: the greatest part of it may be recovered by collecting the vapour in common distilling vessels. If the distilled spirit be found to have brought over any flavour from the subject, it may be advantageously reserved for the same purposes again.

When diluted alcohol is employed, the distillation should only be continued as long as alcohol comes over; and the evaporation should be finished in wide open vessels.

In this chapter we have also included the processes intended for purifying inspissated juices and resinous substances.

Pure resins are prepared, by adding, to spiritous tinctures of resinous vegetables, a large quantity of water. The resin, incapable of remaining dissolved in the watery liquor, separates and falls to the bottom; leaving in the menstruum such other principles of the plant as the spirit might have extracted at first along with it. But this is only practised for the purpose of analysis.

Extracts made with Water.

EXTRACTUM ALOES PURIFICATUM. L.

Purified Extract of Aloes.

Take of
Socotorine aloes, in powder, half a pound;
Boiling water, four pints.

Macerate in a gentle heat for three days, then strain, and set it at rest till the fæces subside. Pour off the clear liquor, and evaporate to a proper thickness.

This is supposed to be less irritating than the aloes itself, but it appears to be an unnecessary refinement.

EXTRACTUM ANTHEMIDIS. L.

Extract of Chamomile.

Take of
Chamomile flowers, dried, one pound;
Water, one gallon.
Boil down to four pints, and filter the liquor while hot. Then evaporate to a proper thickness.

EXTRACTUM CINCHONÆ. D. L.

Extract of Cinchona.

Take of
Cinchona, in coarse powder, one pound;
Water, six pints.
Boil, for a quarter of an hour, in a vessel almost covered; filter the decoction while hot through linen, and set it aside. Boil the residuum again, in the same quantity of water, and filter it in the same manner. This may be repeated a third time, and all the decoctions are to be mixed and reduced to a proper degree of thickness by evaporation.
This extract ought to be kept in two states; one soft, adapted for making pills; and the other hard, capable of being pulverised. (D).

EXTRACTUM COLOCYNTHIDIS. L.

Extract of Colocynth.

Take of
Pulp of colocynth, one pound;
Water, one gallon.
Boil to four pints, and filter the liquor while hot. Lastly, evaporate to a proper thickness.

Mr. Phillips says, that it is scarcely possible to boil the colocynth in the assigned quantity of water, and that the extract obtained is remarkably spongy, and very soon becomes hard and mouldy.

EXTRACTUM COLOCYNTHIDIS COMPOSITUM. D.

Compound Extract of Colocynth.

Take of
Pith of colocynth, cut small, six drachms;
Hepatic aloes, one ounce and a half;
Scammony, half an ounce;
Lesser cardamom seeds, husked, one drachm;
Castile soap, softened with warm water, so as to have a gelatinous consistence, three drachms;
Warm water, one pint.

Digest the colocynth in the water, in a covered vessel with a moderate heat, for four days. To the liquor, expressed and filtered, add the aloes and scammony, separately reduced to powder: then evaporate the mixture to a proper thickness for making pills, having added, towards the end of the evaporation, the soap-jelly and powdered seeds; and mix all the ingredients thoroughly together.

EXTRACTUM GENTIANÆ. L.

Extract of Gentian.

Take of
Gentian root, one pound;
Boiling water, one gallon.

Macerate for twenty-four hours; then boil down to four pints, and filter the liquor while still hot; lastly, evaporate it to a proper thickness.

EXTRACTUM GLYCYRRHIZÆ. L.

Extract of Liquorice.

Take of
Liquorice root, sliced, one pound;
Boiling water, one gallon.

Macerate for twenty-four hours; then boil down to four pints, and filter the liquor while still hot; lastly, evaporate it to a proper thickness.

EXTRACTUM HÆMATOXYLI. L.

Extract of Logwood.

Take of
Logwood, bruised, one pound;
Boiling water, one gallon.

Macerate for twenty-four hours, then boil to four pints.—Strain the liquor while hot, and evaporate to a proper consistence.

EXTRACTUM HUMULI. L.

Extract of Hops.

Take of
Hops, four ounces;
Water boiling, a gallon.
Boil down to four pints, strain the hot ſiquor, and evaporate it to a proper consistence.

In the former edition, 1809, the quantity of hops was half a pound, in regard to which Mr. Phillips says that the proportion of water ordered was considerably too small. It has accordingly been corrected.

EXTRACTUM OPII AQUOSUM. D.

Watery Extract of Opium.

Take of
Opium, two ounces;
Boiling water, one pint.
Triturate the opium in the water, for ten minutes; then, after waiting a little, pour off the liquor, and triturate the remaining opium with the same quantity of boiling water, pouring off the infusion in the same manner. This may be repeated a third time. Mix the decanted liquors, and expose the mixture to the air, in an open vessel, for two days. Lastly, filter through linen, and, by slow evaporation, form an extract.

EXTRACTUM PAPAVERIS. L.

Extract of Poppy.

Take of
Poppy heads, bruised without the seeds, one pound;
Boiling water, a gallon.
Macerate for twenty-four hours; then boil to four pints: strain the liquor while hot, and evaporate to a proper thickness.

EXTRACTUM SARSAPARILLÆ. L.

Extract of Sarsaparilla.

Take of
Sarsaparilla root, sliced, one pound;
Boiling water, one gallon.
Macerate for twenty-four hours; then boil to four pints, and filter the liquor while hot; lastly, evaporate to a proper thickness.

EXTRACTUM TARAXACI. L.

Extract of Dandelion.

Take of
Fresh dandelion root, bruised, one pound;
Boiling water, one gallon.

Macerate for twenty-four hours; then boil to four pints, and filter the liquor while hot; lastly, evaporate to a proper thickness.

EXTRACTUM VALERIANÆ. D.

Extract of Valerian.

Take of
Valerian root, in coarse powder, six ounces;
Boiling water, three pints.

Mix and digest, with a moderate heat, twenty-four hours, in a covered vessel; and then express the liquor, and evaporate it to a proper thickness.

EXTRACTS made with ALCOHOL.

EXTRACTUM CINCHONÆ OFFICINALIS. *Ed.*

Extract of Cinchona.

Take of
Cinchona bark, in powder, one pound;
Alcohol, four pounds.

Digest for four days, and pour off the tincture.

Boil the residuum in five pounds of distilled water, for fifteen minutes, and filter the decoction, boiling hot, through linen. Repeat this decoction and filtration, with the same quantity of distilled water, and reduce the liquor, by evaporation, to the consistence of thin honey.

Draw off the alcohol from the tincture, by distillation, until it also become thick; then mix the liquors, thus inspissated, and evaporate them in a bath of boiling water, saturated with muriat of soda, to a proper consistency.

EXTRACTUM CONVOLVULI JALAPÆ. *Ed.*

Extract of Jalap,

Is prepared in the same way, from the root.

EXTRACTUM CINCHONÆ RESINOSUM. L.

Resinous Extract of Cinchona.

Take of
  Lance-leaved Cinchona, bruised, one pound;
  Rectified spirit of wine, four pints.

Macerate for four days, and strain; distil the tincture, in a water-bath, to a proper thickness.

EXTRACTUM COLOCYNTHIDIS COMPOSITUM. L.

Compound Extract of Colocynth.

Take of
  Pulp of colocynth, sliced, six drachms;
  Socotorine aloes, in powder, one ounce and a half;
  Scammony, in powder, half an ounce;
  Cardamom seeds, powdered, one drachm;
  Proof-spirit, one pound.

Macerate the pulp of colocynth in the spirit, with a gentle heat, for four days. Strain the liquor, and add to it the aloes and scammony. Then evaporate to a proper thickness, adding, towards the end of the operation, the cardamom seeds.

EXTRACTUM RHEI. L.

Extract of Rhubarb.

Take of
  Rhubarb root, in powder, one pound;
  Proof-spirit, one pint;
  Water, seven pints.

Macerate, with a gentle heat, for four days; then filter and set it aside, until the fæces subside. Pour off the liquor clear, and evaporate to a proper thickness.

EXTRACTUM JALAPÆ. L.

Extract of Jalap.

Take of
  Jalap, in powder, one pound;
  Rectified spirit, four pints;
  Water, two pints.

Macerate the jalap in the spirit, for four days, and pour off the tincture. Boil the residuum in the water to two pints. Then filter the tincture and decoctions separately, and evaporate the latter, and distil the former until both thicken; lastly, mix the extract with the resin, and evaporate to a proper thickness.

This extract is to be kept in two states, one *soft*, proper for making pills, and one *hard* and pulverizable.

EXTRACTUM CASCARILLÆ RESINOSUM. D.

Resinous Extract of Cascarilla.

Take of
 Cascarilla, in coarse powder, one pound;
 Rectified spirit of wine, four pints.

Digest for four days; then pour off the tincture, and strain; boil the residuum, in ten pints of water, to two: evaporate the filtered decoction, and distil the tincture, in a retort, till both begin to grow thick; then mix them, and evaporate them to a state fit for making pills. Lastly, they are to be intimately mixed.

In this way are prepared

EXTRACTUM CINCHONÆ RUBRÆ RESINOSUM. D.

Resinous Extract of Red Cinchona Bark.

EXTRACTUM JALAPÆ RESINOSUM. D.

Resinous Extract of Jalap.

OPIUM PURIFICATUM. D.

Purified Opium.

Take of
 Opium, cut into small pieces, one pound;
 Proof-spirit of wine, twelve pints.

Digest with a gentle heat, stirring now and then till the opium be dissolved; filter the liquor through paper, and distil in a retort until the spirit be separated: Pour out the liquor which remains, and evaporate, until the extract acquires a proper thickness.

Purified opium must be kept in two forms; one *soft*, proper for forming into pills; the other *hard*, capable of being reduced into powder.

All these extracts are supposed to contain the virtues of the substances from which they are prepared, in a very pure and concentrated form; but this supposition is, probably in several instances, erroneous; and the directions for preparing them are frequently injudicious and uneconomical.

As the changes which opium and aloes undergo by solution, and subsequent evaporation, have never been ascertained by careful and satisfactory experiments, well-selected pieces of these substances are to be preferred to the preparations in which they are supposed to be purified. As a farther proof of the superiority of good opium over all its preparations, I may also remark, that the latter, however well prepared, soon become mouldy, the former never does.

Mr. Phillips, however, prefers the preparing of an extract of opium, by first submitting it to the action of boiling water, as long as any portion of it continues to be dissolved, and then digesting the residuum in rectified spirit, and mixing the watery and alcoholic extracts thus obtained. He found, that 72 parts of opium, dried by steam till it became pulverizable, yielded to cold water 30 parts, then to boiling water 9, and, lastly, to alcohol 7. The first solution or cold infusion was of a deep brownish-red colour, remained transparent, and smelt strongly of opium; the second or decoction was of a pale brown colour, deposited on cooling the greater part of what had been dissolved, and had no smell of opium; and the third or tincture very much resembled common tincture of opium, and furnished, on the addition of water, an abundant yellowish-white precipitate. Dr. Powell also says, that proof-spirit by heat dissolves 9-12ths of opium; and water, although heated, only 5-12ths.

Cinchona bark is a medicine of very great importance; but, unfortunately, the proportion of woody fibres, or inert matter, which enters into its composition, is so great, that weak stomachs cannot bear it, when given in quantity sufficient to produce any very powerful effects. On this account the preparation of an extract, which may contain its active principles in a concentrated form, is a desirable object. On this subject there is still much room for experiment. The London college, in its former Pharmacopœia, certainly erred in two important particulars; in the first place, in desiring the decoction to be continued until the greatest part of the menstruum was evaporated; and, in the second place, in separating, by filtration, the powder which separated from the decoction after it had cooled. The first error probably originated in the idea, that, by continuing the boiling for a great length of time, more of the bark would be dissolved; but it is now known, that water is incapable of dissolving more than a certain quantity of the active principles of cinchona; and that after the water has become saturated, by continuing the decoction we diminish the quantity of the menstruum, and therefore also diminish the quantity of bark dissolved. It is not easy to account for the second error; for, according to the old idea, that the powder which separated, on cooling, from a saturated decoction of cinchona, was a resinous substance, it surely ought not to have been rejected from what were supposed to be resinous extracts. This precipitate is now known to be caused by the much greater solubility of its active principles in boiling than in cold water; so that the precipitate is not different from what remains in solution. Accordingly, I ascertained, by experiment, that cinchona gave at least one half more extract when the decoction was conducted according to the directions of the Edinburgh college; and the London college, in their present Pharmacopœia, have improved their processes on the same principles.

The real advantage of so expensive an agent as alcohol, in preparing any of these extracts, has not been demonstrated; and, if I be not misinformed, it is seldom employed by the apothecaries in preparing even what is called the Resinous Extracts.

RESINA FLAVA. D.

Yellow Resin.

This remains in the retort after the distillation of the oil of turpentine.

Turpentines are combinations of volatile oil and resins, which are easily separated by distillation. The process, however, cannot be carried so far as to separate the whole of the oil, without charring and burning part of the resin. In this state it has a brown colour, and a certain degree of transparency, and is well known under the name of Fiddler's Rosin. But if water be added to the residuum of the distillation, and be thoroughly mixed with it by agitation, it becomes opaque, and is called Yellow Rosin.

Yellow rosin is a useful ingredient in the composition of plasters and hard ointments.

GUMMI RESINÆ. L.

Gum Resins.

Those gum-resins are to be reckoned the best which are selected so pure, that they do not stand in need of purification. But if they seem impure, boil them in water until they grow soft; then squeeze them through a canvas bag, by means of a press. Let them remain at rest till the resinous part subside; then evaporate, in a water-bath, the part of the water decanted off; and towards the end of the evaporation, mix the resinous part with the gummy into a homogeneous mass.

Gum-resins which melt easily may be purified by putting them into an ox bladder, and holding it in boiling water till they become so soft, that they can be separated from impurities by pressing them through a hempen cloth.

As one, and perhaps the most active, constituent of gummy resins, as they are called, is of a volatile nature, it is evident that it must be, in a great measure, dissipated in the process just described, and that we cannot expect the same virtues in these substances after they are purified, which they possess in their crude state. This process is, therefore, contrary to the principles of good pharmacy; and such specimens of these gummy resins as stand in need of it to give them an apparent degree of purity, should not be admitted into the shop of the apothecary. Besides, many of the impurities which they usually contain are easily separated, in compounding the preparations or extemporaneous prescriptions into which they enter.

F.

FERRUM.—*IRON.*

D.	*Yzer.*	P.	*Ferro.*
DA.	*Iern.*	POL.	*Zelazo.*
F.	*Fer.*	R.	*Sheleso.*
G.	*Eisen.*	S.	*Hierro.*
I.	*Ferro.*	SW.	*Iern.*

Iron is of a bluish-grey colour; texture either fine-grained, fibrous, or dense plates; sapid and odorous; specific gravity 7.600; the hardest and most elastic and most tenacious metal; very ductile; fusing at 158° Wedgwood; fusion at first clammy, afterwards very fluid; igniting by strong percussion, and inflaming by the collision of flint; magnetic. It is oxydized slowly in the air, especially when moist; when heated in contact with air, it is changed to a black oxyd, containing 20 to 27 of oxygen; fusible, hard, brittle, lamellated, still attracted by the magnet; afterwards into a brown, red, fine, pulverurent oxyd, not attracted by the magnet, containing 0.40 to .49 of oxygen. It burns with splendour and deflagration in oxygen gas, and is converted into a fused, black oxyd; it decomposes water slowly, and when ignited, very rapidly. In some instances it is dissolved in hydrogen gas. Carbon united to iron, converts it into steel.

Steel is of a grey colour, brilliant and granular in its fracture; specific gravity 7.795; harder than any of the metals, and more elastic, ductile, malleable, and fusible at a lower temperature than pure iron. Its characteristic property is, that after being heated, if suddenly plunged into cold water, it becomes harder, more elastic, less pliable and brittle; but by being again heated and cooled slowly, it acquires its former softness, pliability and ductility. Steel contains only some hundredth parts of carbon, and is known chemically, by letting a drop of acid fall upon it, which produces a grey or black spot.

Plumbago consists of about 0.1 of iron, combined with carbon in its first degree of oxydizement. The phosphuret of iron is white, granulated, brittle, permanent in the air. Its sulphuret is yellow, hard, brittle, and very fusible, oxydizing slowly in a humid atmosphere. Iron forms alloys with arsenic, cobalt, manganese, bismuth, antimony, zinc, and tin. Iron is oxydized and dissolved by almost all the acids; oxyds, black, brown, red. It gives glasses a brown, smoky, deep green, or black colour.

Iron is the most common of all metals. It seems even to be a constituent of organic substances, and is the only metal which when taken into the body, exerts no deleterious action upon it, the numerous ores of it which are found in every part of the globe, may be reduced to the following genera.

1. Native iron. Immense isolated masses of this have been found

in Siberia and in South America. Their origin is still perfectly problematical.

2. Carbureted iron. Plumbago.
3. Sulphureted iron. Pyrites.
4. Oxydized iron.

    a. Protoxyd. Magnetic iron ore; colour black or grey.
    b. Peroxyd. Not magnetic; colour red or brown.
    c. Carbonated.
    d. Arseniated.
    e. Tungstated.

As its mechanical division is extremely difficult, it is directed to be kept in the shops in the state of filings or wire, and the scales of black oxyd, which are found around the smith's anvil. Soft malleable iron is the only kind fit for internal use, as steel and cast iron always contain impurities, and often arsenic.

Iron is prescribed,

I. In its metallic state.

Ferri limatura. *Ed.*
——— purificata. *Ed.*
Ferri ramenta et fila. *Lond.*
Ferri scobs. *Dub.*

II. Oxydized.

1. Protoxyd,
   Ferri squamæ. *Ed.*
   Ferri oxydi squamæ. *Dub.*
   Oxydum ferri nigrum purificatum. *Ed.*
   Oxydum ferri nigrum. *Dub.*
2. Peroxyd.
   Oxydum ferri rubrum. *Ed. Dub.*
3. Supercarbonated; as in the chalybeate mineral waters.
4. Carbonated,
   a. Carbonas ferri præparatus. *Ed.*
   Ferri rubigo. *Dub.*
   b. Carbonas ferri præcipitatus. *Ed.*
   Carbonas ferri. *Lond. Dub.*
5. Sulphated,
   Sulphas ferri. *Ed. Lond. Dub.*
6. Subsulphated,
   Sulphas ferri exsiccatus. *Ed. Dub.*
7. Muriated,
   a. Tinctura muriatis ferri. *Ed. Lond. Dub.*
   b. Tinctura muriatis ferri cum oxydo rubro. *Dub.*
8. With muriat of ammonia,
   Murias ammoniæ et ferri. *Ed. Dub.*
   Ferrum ammoniatum. *Lond.*
   Tinctura ferri ammoniati. *Lond.*
9. With nitrat of potass,
   Liquor ferri alkalini. *Lond.*

10. Acetated,
   Acetas ferri. *Dub.*
      Tinctura acetatis ferri. *Dub.*
      Tinctura acetatis ferri cum alcohol. *Dub*
11. With tartrat of potass,
   Ferrum tartarizatum. *Lond.*
   Tartarum ferri. *Dub.*
   Vinum ferri. *Dub.*

Medical use.—The general virtues of this metal, and the several preparations of it, are, to constringe the fibres, to quicken the circulation, to promote the deficient secretions in the remoter parts, and at the same time to repress inordinate discharges into the intestinal tube. After the use of them, if they take effect, the pulse is very sensibly raised; the colour of the face, though before pale, changes to a florid red; the alvine, urinary, and cuticular excretions are increased. Fetid eructations, and the fæces voided of a black colour, are marks of their taking due effect.

When given improperly or to excess, iron produces headach, anxiety, heats the body, and often causes hemorrhages, or even vomiting, pains in the stomach, and spasms and pains of the bowels.

Iron is given in most cases of debility and relaxation,

1. In passive hemorrhagies.
2. In dyspepsia, hysteria, and chlorosis.
3. In most of the cachexiæ.
4. In general debility produced by disease, or excessive hemorrhage.

Where either a preternatural discharge, or suppression of natural secretions, proceed from a languor and sluggishness of the fluids, and weakness of the solids; this metal, by increasing the motion of the former, and the strength of the latter, will suppress the flux, or remove the suppression; but where the circulation is already too quick, the solids too tense and rigid, where there is any stricture or spasmodic contraction of the vessels, iron, and all the preparations of it, will aggravate both distempers.

FERRI LIMATURÆ. *Ed.*

FERRUM. L. FERRUM IN FILA DEDUCTUM. D.

Iron-filings. Iron. Iron-wire.

IRON probably has no action on the body when taken into the stomach, unless it be oxydized. But during its oxydizement, hydrogen gas is evolved; and accordingly we find that fetid eructations are considered as a proof of the medicine having taken effect. It can only be exhibited internally in the state of filings, which may be given in doses of from five to twenty grains, either in the form of powder, with some aromatic, or made into an electuary or bolus or pills with any bitter extract. Iron-wire is to be preferred for pharmaceutical preparations, both because it is the most convenient form, and because it is always made of the purest iron.

Officinal Preparations.

Ferri limatura purificata, E.
Carbonas Ferri, E. L. D.
Aqua ferri aërati, D.
Sulphas ferri, E. L. D.
Tinctura ferri muriati, D. - - *vide Tincturæ.*
Ferrum ammoniacale, L.
Ferrum tartarisatum, L.
Vinum ferri, L. D. - - - *Vina medicata.*
Hydrargyrum purificatum, E. L. - *Hydrargyrum.*

FERRI OXYDI SQUAMÆ. D. Ferri Squamæ. *Ed.*

The scales of Iron, or of the Oxyd.

When iron is heated to redness in the smith's forge, to render it more malleable, its surface becomes oxydized by the action of the atmospheric air; and as the oxyd formed does not adhere to the iron, it is easily separated by percussion on the anvil, and flies off in the state of sparks which, on cooling, constitute the scales of iron. In these the iron is oxydized to that degree in which it is soluble in acids, without the production of hydrogen gas; therefore, when taken into the stomach, they do not produce the distention and flatulence occasioned by the use of filings.

Officinal Preparations.

Ferri oxydum nigrum purificatum, E.
Tinctura muriatis ferri, E. - - *vide Tincturæ.*

SULPHAS FERRI. *Ed.* L. D.

Sulphat of Iron. Green vitriol. Copperas. Vitriolated Iron, formerly *Salt of Steel.*

D.	*Groene vitriool, Yzervitriool.*	P.	*Caparroza verde.*
DA.	*Grönt kobberwand.*	POL.	*Koperwas z zelaza.*
F.	*Couperose verte.*	R.	*Selenüi kuparos.*
G.	*Kupferwasser, Eisenvitriol.*	S.	*Vitriolo de Marte.*
I.	*Copparosa verde.*	SW.	*Grön Victriol, Jernvitriol.*

The sulphat of iron of commerce is commonly obtained by the spontaneous oxydizement of sulphureted iron, and subsequent lixiviation and crystallization. It is never pure, and often contains zinc or copper. The copper may be separated by adding some metallic iron to the solution, but we have no means of separating the zinc.

Although the native sulphat of iron may be purified by solution, filtration and crystallization, sufficiently, for many purposes, yet it cannot be procured perfectly pure except by the direct union of sulphuric acid and iron; and as it is of consequence that it should be pure when administered internally, directions for its preparation have been given. The following is the formula of the Edinburgh college.

Take of
  Purified filings of iron, six ounces;
  Sulphuric acid, eight ounces;
  Water, two pounds and a half.
Mix them, and after the effervescence ceases, digest the mixture for some time upon warm sand; then strain the liquor through paper, and after due evaporation set it at rest to crystallize. (E.)

The crystals of sulphat of iron are transparent rhomboidal prisms, of a fine green colour. They are soluble in two parts of cold, and in less than their own weight of boiling water. They are insoluble in alcohol.

They are composed of

Black oxyd of iron,	28	36 Green hydro-oxyd of iron.
Water of composition,	8	
		26 Sulphuric acid.
		38 Water of crystallization.
		100

Green sulphat of iron is decomposed by all the earths and alkalies, and by those salts whose base forms an insoluble compound with sulphuric acid. It is also decomposed by exposure to the air, especially when in solution, and by all substances which part readily with their oxygen. The oxyd of iron absorbs oxygen, and passes to the state of red oxyd, which forms a red sulphat, possessing properties very different from those of the green sulphat.

Taken into the stomach, the green sulphat is apt to excite pain in the stomach, and spasms in the bowels; and in large doses it causes vomiting. In small doses, however, of from one to three grains, it is sometimes given as a tonic, astringent, or anthelmintic.

Officinal Preparations.

Acidum acetosum forte, E. - *vide Acidum acetosum.*
Carbonas ferri præcipitatus, E.
Tinctura ferri acetati, D. - - *Tincturæ.*
Pulvis aloëticus cum ferro, L. - - *Pulveres.*

SULPHAS FERRI EXSICCATUS. *Ed.*

Dried Sulphat of Iron.

Take of
  Sulphat of iron, any quantity.
Expose it to the action of a moderate heat in an unglazed earthen vessel, until it become white and perfectly dry. (E.)

The heat applied here must not be so great as to decompose the sulphat of iron, but only to deprive it of its water of crystallization.

FERRI LIMATURÆ PURIFICATÆ. *Ed.*

Purified Filings of Iron.

Place a sieve over the filings, and apply a magnet, so that the filings may be attracted upwards through the sieve. (E.)

This process does not fulfil the purpose for which it is intended. For the adhesion of a very small particle of iron renders brass and other metals attractable by the magnet. The filings of iron got from the shops of different artificers, which are always mixed with solder, and other metals, cannot be purified in this way, so as to render them fit for internal use; and indeed the only way they can be obtained sufficiently pure, is by filing a piece of pure iron with a clean file.

Officinal Preparation.

Hydro-sulphuretum ammoniæ, E. - *vide Ammonia.*

OXYDUM FERRI NIGRUM PURIFICATUM;

Olim, Ferri Squamæ Purificatæ. *Ed.*

Purified Black Oxyd of Iron, formerly *Purified Scales of Iron.*

Let the scales of the oxyd of iron, which are to be found at the foot of the blacksmith's anvil, be purified by the application of a magnet. For the magnet will attract only the smaller and purer scales, and will leave those which are larger and less pure. (E.)

Here the application of the magnet is useful, because these scales contain no foreign metal, but are mixed with earthy and other impurities, which could be separated in no other way.

CARBONAS FERRI PRÆPARATUS. *Ed.* D.

Carbonat of Iron.

Olim, Ferri Rubigo, formerly *Rust of Iron.*

Moisten purified filings of iron frequently with water, that they may be converted into rust, which is to be ground into an impalpable powder. (E.)

Iron is one of the most easily oxydized of the metals. It is capable of attracting oxygen from the air, and of decomposing water even in the cold. By exposure at the same time to air and moisture, it is very quickly oxydized, while it also absorbs carbonic acid, and is converted into a reddish brown pulverulent substance, well known by the name of rust of iron. For medical use it is prepared as the other substances insoluble in water.

Officinal Preparation.

Tinctura ferri muriati, L. - - *vide Tincturæ.*

CARBONAS FERRI PRÆCIPITATUS. *Ed.*

Precipitated Carbonat of Iron.

Ferri Subcarbonas. *Subcarbonat of Iron.* L.

Take of
Sulphat of iron, four ounces,
Carbonat of soda, five ounces,
Water, ten pints.

Dissolve the sulphat in the water, and add the carbonat of soda, previously dissolved, in a sufficient quantity of water, and mix them thoroughly.

Wash the carbonat of iron, which is precipitated, with warm water, and afterwards dry it. (E.)

On mixing the solution of these salts together, there is an immediate mutual decomposition. Sulphat of soda is formed, which remains in solution, and carbonat of iron, which is precipitated of a green colour. The precipitate when first formed, is the carbonat of black oxyd of iron, or contains the iron in the state of black oxyd, the state in which it exists in the green sulphat of iron; but in the process of drying, it absorbs more oxygen, becomes of a red colour, and is converted into the carbonat of red oxyd of iron. As the precipitate is extremely light and bulky, it is not easily separated by allowing it to subside, and pouring off the clear liquor; filtration should therefore be employed. The carbonat of soda is used in preference to the carbonat of potass, on account of the greater solubility of sulphat of soda than of sulphat of potass, which renders the subsequent ablution of the salt more easy.

Mr. Phillips found very great differences in the results, from very slight differences in conducting the process, as appears from the following table, to which is added the results when subcarbonat of potass was employed instead of subcarbonat of soda.

Precipitated in	washed in	Dried by	Carb. acid *per cent.*	Subcarbonat of Soda.	Carb. acid *per cent.*	Subcarbonat of Potass.
Hot w.	Hot w.	steam.	14.5	Chocolate br.	7	Orange br.
......	.....	the air	14.5	Yellowish br.		
.....	Cold w.	steam	1.5	Orange br.	2	Brick red
Cold w.	Hot w.	.....	8.0	Purplish br.		
.....	Cold w.	.....	1.0	Reddish br.		
......	......	the air	none	Ochre yel.		
Water kept near 212° for an hour.		steam.	1.3	Blackish br.	3	Orange br.

These differences indicate the precipitates to be mixtures of peroxyd, protoxyd, and subcarbonat of protoxyd of iron, in various proportions. The peroxyd is deep red or yellow, as the oxygen is quickly or slowly absorbed; the protoxyd is black, and its carbonat brown. When cold water only is used in this process, carbonat of iron remains in the solution, from which the oxyd has been precipitated; when hot water is used, part of the carbonic acid is expelled, the subcarbonat is precipitated mixed with oxyd; but when heat is long applied, the subcarbonat itself is decomposed, and the precipitate is chiefly oxyd. Mr. Phillips concludes, that it is more economical to use hot water in every part of the process, and to use potass instead of soda in the preparation.

Medical use.—The carbonat of iron is an excellent and safe chalybeate. It may be given in doses of from five grains to sixty; but all chalybeates answer better in small doses, frequently repeated, than in large doses. Q. E. D.

AQUA FERRI AERATI. D.

Water of Aërated Iron.

It is prepared in the same manner as the water of fixed air, by suspending in the water half an ounce of iron wire. (D.)

This is a very elegant chalybeate. The iron is in the state of black oxyd, and is dissolved by means of carbonic acid. It was first prepared by Bergmann, in imitation of the natural chalybeate waters, and it forms an excellent substitute for them.

OXYDUM FERRI RUBRUM. *Ed.* D.

Red Oxyd of Iron.

Expose dried sulphat of iron to an intense heat, until it is converted into a very red matter. (E.)

By the violent heat applied in this preparation, the sulphat of iron is completely decomposed, and copious white fumes are expelled. The iron is converted into the red oxyd; part of the sulphuric acid is therefore reduced to the state of sulphurous acid, and the rest of the acid is expelled in a very concentrated state. This process was formerly employed in Great Britain, and still is employed in Germany, for the preparation of sulphuric acid; which, however, from the presence of the sulphurous acid, was possessed of some peculiar properties, such as emitting fumes and crystallizing. The residuum is composed of red oxyd of iron, combined with a little red sulphat of iron, which renders it deliquescent. To obtain the oxyd perfectly pure, the residuum must therefore be washed with water, and dried quickly, to prevent the absorption of carbonic acid.

Officinal Preparation.

Murias ammoniæ & ferri, E.

MURIAS AMMONIÆ ET FERRI. *Ed.*

Muriat of Ammonia and Iron.

FERRUM AMMONIATUM. L. *Ammoniated Iron.*

Take of
Red oxyd of iron, washed and again dried;
Muriat of ammonia, equal weights;
Mix them thoroughly, and sublime. (E.)

ALTHOUGH at a low temperature ammonia decomposes the muriat of iron, at a high temperature iron and its oxyds decompose muriat of ammonia. But as muriat of ammonia is itself a volatile salt, great part of it escapes undecomposed; so that the product is a mixture of muriat of ammonia with red muriat of iron. According to the formula of the Edinburgh college, the decomposition is effected by simple affinity. As soon as the oxyd of iron acts on the muriat of ammonia, the ammonia which is separated comes over: then as the heat increases, undecomposed muriat of ammonia is sublimed; which, as the process advances, is mixed with an increasing proportion of muriat of iron. In the process of the London college, the decomposition is more complex; and a considerable quantity of hydrogen gas is produced. Both colleges employ a much larger quantity of iron than is necessary. According to the German pharmaceutists, if the iron be equal to one sixteenth of the muriat of ammonia, it is sufficient. The new Prussian Dispensatory directs one ounce of iron to be dissolved in two ounces of muriatic acid, and one of nitrous acid; this solution of red muriat of iron to be mixed with a watery solution of twelve ounces of muriat of ammonia, and the whole evaporated to dryness; and the dry mass to be sublimed in a wide-necked retort, with a heat increased to redness.

Whatever process be employed, the heat must be applied as quickly as possible; and the sublimed product thoroughly mixed by trituration, and kept in well-stopt glass vessels. It should have a deep orange colour, and a smell resembling saffron, and should deliquesce in the air.

Medical use.—This preparation is supposed to be highly aperient and attenuating; though no otherwise so than the rest of the chalybeates, or at most only by virtue of the saline matter joined to the iron. It has been found of service in hysterical and hypochondriacal cases, and in distempers proceeding from a laxity, and weakness of the solids, as the rickets. From two or three grains to ten may be conveniently taken in the form of a bolus.

FERRUM TARTARISATUM. L.

Tartarized Iron.

TARTARUM FERRI. D. *Tartar of Iron.*

Take of
Carbonat of iron, half an ounce;

Crystals of tartar, in very fine powder, one ounce;
Distilled water, a pint.

Boil them in a glass vessel over a slow fire for an hour, and filter the liquor through paper. When cool, and filtered a second time, evaporate it until a pellicle appears on the surface. In cooling, it will form a saline mass, which is to be powdered, and kept in close vessels. (D.)

This is in fact a triple tartrat of iron and potass, the excess of acid in the super-tartrat of potass being saturated by oxyd of iron. In this process the combination is direct; in that of the London college, the iron is oxydized during the first part of the process, in which it is moistened and exposed to the action of the air.

Mr. Phillips has examined this preparation attentively. He says, that as usually prepared it has a light green colour, and is readily attracted by the magnet, unalterable by exposure to the air, and with difficulty soluble in water, and that one-fifth of the iron filings employed remain unaltered, so that it must be considered as merely a mixture of metallic iron with super-tartrat of potass, coloured by oxyd of iron.

Dr. Perceval of Dublin says, that when prepared according to the directions of the Irish college, and the precipitated carbonat was found to answer best, it forms a mass of concreted spicular crystals of an olive colour, which attracts humidity from the air. In solution it destroys the colour of litmus, and its taste is rather sweetish than sour.

To prepare a real tartarized iron, Mr. Phillips digests 32 parts of filings of soft iron in 64 parts of tartar, adding water occasionally to the mass during the action of the tartar upon the iron, until it appear by the test of litmus paper that the acid is perfectly saturated. During this process, 15 parts of the iron are dissolved, being converted into nearly 22 parts of peroxyd. To this he adds seven times its weight of water, (532 parts), which easily dissolves the tartarized iron by trituration, forming a solution which readily passes through the filter, and contains one-eighth part of its weight of tartarized iron or nearly 16 grains of oxyd in the fluidounce. This solution is of a deep greenish-brown colour, remains for a great length of time without undergoing any change, (except at first the deposition of the tartrat of lime of the tartar.) It is precipitated by alcohol, and decomposed by lime-water, by solutions of potass and soda and their subcarbonats, when heated, but not when cold; nor by ammonia or its subcarbonat, hot or cold. It is not crystallizable, but when dried, is of a dark greenish brown colour, and attracts moisture from the atmosphere, but does not deliquesce, is exceedingly tenacious, resembling gum, and can scarcely be made to form a perfect solution.

It is evident, that when properly prepared, tartarized iron cannot be exhibited in powder as commonly directed, and the advantage of exhibiting this preparation in solution is, that when the acid is perfectly saturated, the taste of the iron is scarcely perceptible; and hence it can be exhibited with success to persons to whom the common solutions of iron are nauseous. It deserves notice, that when there is acid in excess, the taste of the iron is much more easily detected.

ACETAS FERRI. *Dub.*

Acetat of Iron.

Take of
Carbonat of iron, half an ounce;
Acetic acid three ounces by measure;
Digest for three days, and strain.

Dr. Perceval found, that in experiments made to determine the comparative solubility of iron in its different states in acetic acid, that two drachms of the acid acquired a light amber tinge from ten grains of scales of iron, and left a residuum of 9½; a reddish amber colour from iron-filings, residuum 6¾; a light red from the red oxyd, residuum 8¾; and from the precipitated carbonat a deep claret colour, and the whole was dissolved. Hence the last was preferred for making directly an acetat of iron.

FERULA ASSA FŒTIDA. *Gummi-resina. Ed. L. D.*

Assa fœtida. A gum-resin.

Willd. g. 539. *sp.* 11. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

D. *Duivelsdreck.*
DA. *Dyvelsdræk.*
F. *Asa-fetida, Asse, Merde de diable.*
G. *Teufelsdreck.*
I. *Assa-fetida, Zaffetica.*
P. *Assa fetida.*
POL. *Snrodzieniec, Czarzie la no.*
S. *Asa fetida.*
SW. *Dyfvelsträck.*

The plant which furnishes assa fœtida is perennial, and a native of Persia. It has, however, borne fertile seeds in the open air in the botanical garden of Edinburgh.* The gum-resin is procured from the roots of plants which are at least four years old. When the leaves begin to decay, the stalk is twisted off, and the earth removed from about their large tapering roots The top of the root is some time afterwards cut off transversely; and forty-eight hours afterwards, the juice, which has exuded is scraped off, and a second transverse section is made. This operation is repeated until the root be entirely exhausted of juice. After being scraped off, the juice is exposed to the sun to harden.

It is brought to us in large irregular masses, composed of various little shining lumps or grains, which are partly of a whitish colour,

* It is said in the last edition of the London Pharmacopœia that the plant raised in the Edinburgh garden, is the Ferula Persica, the seeds of which were obtained from the mountains of Ghian, in Persia. They are different species only, of the same plant, and this is stated in the last edition of the Edinburgh Dispensatory.

partly reddish, and partly of a violet hue. Those masses are accounted the best which are clear, of a pale reddish colour, and variegated with a number of elegant white tears.

This drug has a strong fetid smell, somewhat like that of garlic; and a bitter, acrid, biting taste. It loses some of its smell and strength by keeping: a circumstance to be particularly regarded in its exhibition.

Neumann got from 1920 parts, 1350 alcoholic extract, and afterwards 190 watery, and inversely 550 watery. The smell resides entirely in an essential oil which rises in distillation, both with alcohol and water. Neumann got more than 60 from 1920 grains.

Medical use.—It is the most powerful of all the fetid gums, and is a most valuable remedy. It acts as a stimulant, antispasmodic, expectorant, emmenagogue and anthelmintic. Its action is quick and penetrating.

It is often serviceable,

1. In croup.
2. In dyspepsia, amenorrhœa and chlorosis.
3. In asthma, dyspnœa and hysteria.
4. In tympanites and worms.

It is exhibited,

1. In substance, in the form of pills; in doses of from five to twenty grains, either alone, or combined with bitter extracts or purgatives.
2. Dissolved in some simple distilled water.
3. Dissolved in alcohol.
4. In the form of clyster, to the extent of about two drachms.

OFFICINAL PREPARATIONS.

Assa fœtida purificata, L.	-	*vide Amoniacum purificatum.*
Lac assæ fœtidæ, L.	-	*Mixturæ.*
Tinctura assæ fœtidæ, E. L. D.	-	*Tincturæ.*
castorei composita, E.		*Idem.*
Spiritus ammoniæ fœtidus, E. L. D.	-	*Spiritus destillati.*
Pilulæ aloës cum assa fœtida, E.		*Pilulæ.*
assæ fœtidæ compositæ, E.	-	*Idem.*
galbani compositæ, L.	-	*Idem.*
Emplastrum assæ fœtidæ, L.	-	*Unguenta.*

FICUS CARICA. *Fructus. Ed.* L. D.

The fig tree. The fruit.

Willd. g. 1931. *sp.* 1. *Polygamia Diœcia.*—Nat. ord. *Scabridæ.*

D.	*Vygen.*	P.	*Figos.*
DA.	*Figen.*	POL.	*Fiki.*
F.	*Figues.*	R.	*Winnüa jagodi.*
G.	*Feigen.*	S.	*Higos.*
I.	*Fichi.*	SW.	*Fikon.*

This tree is probably a native of Asia, but grows plentifully in the south of Europe. As the fruit is very pulpy, it is dried when it is to be preserved. To this country they are chiefly brought from the Levant. They consist almost entirely of sugar and mucilage, and are therefore demulcent. They are also esteemed by some as suppuratives; and they are sometimes applied by themselves, heated as warm as they can easily be borne, to promote the suppuration of a phlegmon, particularly when so situated that other cataplasms cannot easily be kept applied.

Figs ripen very well by the middle of September in Philadelphia, when enjoying a free exposure to the sun. In the Southern states they flourish luxuriantly, and might become an article of extensive exportation, and home consumption, if pains were taken to introduce the large Levant fig.

Officinal Preparations.

Decoctum hordei compositum, L. - *vide Decocta.*
Electuarium sennæ, E. L. - - *Electuaria.*

FRASERA CAROLINIENSIS. *Walter.*

Frazera Walteri. *Michaux.*

Columbo of Marietta. The root.

This plant is nearly allied in botanical habits, to the genus gentiana. It is a native of the states of New-York, Carolina, &c. and is furnished with a large tuberous root, of a yellow colour, which promises to be little inferior, as a bitter, to the gentian of the shops.*

This species of columbo is produced in the vicinity of Marietta in Ohio, and we are indebted to Dr. S. P. Hildreth of that place for a partial description of the plant. According to him the Columba Americana is a regular and very elegant proportioned plant, growing to the height of seven feet.

It is a production of high land, a rich and loamy soil that is covered with white oak, white thorn, and tufts of prairie grass. The stalk is covered with a smooth delicate membrane of a deep purple colour at the root, but becoming lighter as it ascends towards the top. Beneath this is a pulpy coat, fibrous and vascular, which covers another that is entirely ligneous, which is the chief support of the stalk. The remainder is medullary, and completely fills the woody circle. The columbo of Marietta is a triennial plant. The radical leaves, when it springs from the seed, are five in number, to these are added the second season five more. The third spring it sends up a stalk with five whorls of leaves, when each whorl consists of *five leaves*, and *four*, when each whorl consists of *four*, before it puts out any flowering branches. The leaves are in whorls smooth and spear shaped. The branches are axillary, upright, and of the same number with the leaves, from the

* Barton's Collections, Part II. p. 16.

basis of which they immediately rise and send out opposite fruit stalks. From the whorls where the flowering branches commence to the top of the stalk, if it consists of five leaves, there are ten whorls growing gradually less to the apex, which ends with five peduncles. It flowers in July. The root as soon as it enters the earth shoots out in a horizontal direction; is spindle shaped; and when well grown is from eighteen to thirty inches in length, and two in diameter at the turn. Near the surface of the earth the root is wrinkled; its colour in the young plant is a light yellow; and is solid and brittle. After the stalk is grown the root becomes softer and less bitter. The proper time for collecting it seems to be in the spring of the third year. Dr. Hildreth asserts that from the experiments he has made with American columbo, he is induced to believe it fully equal, if not superior to the imported. It is in common use there, and has in one instance, in the heat of summer, put a stop to a wide spreading gangrene, on one of the lower extremities, by internal use and external application, when bark and other remedies had failed.

The columbo plant is undoubtedly to be estimated as a valuable acquisition to our Materia Medica. The root, however, is found on examination to be of a lighter colour, and to possess less of the bitter principle than the imported root; its comparative efficacy is therefore doubtful, and yet to be ascertained.

FRAXINUS ORNUS. *Succus concretus. Ed.* L. D.

Manna-ash. The Concrete juice. Manna.

Willd. g. 1908. *sp.* 15. *Polygamia Diœcia.*—Nat. ord. *Ascyrbidææ.*

D.	*Manna.*	P.	*Manna.*
DA.	*Manna.*	POL.	*Manna.*
F.	*Manne.*	R.	*Manna.*
G.	*Manna.*	S.	*Mana, Mangla, Almangre.*
I.	*Manna.*	SW.	*Manna.*

Manna is obtained from other species of fraxinus besides the ornus, and especially from the rotundifolia. It is principally collected in Calabria, Apulia and Sicily. In the warmest season of the year, from the middle of June to the end of July, a clear juice exudes from the stem and branches of these trees, which, when naturally concreted on the plants and scraped off, is called Manna in the tear; but if allowed to exude on straws, or chips of wood fastened to the tree, it is called canulated or flaky manna. The common, or fat manna, is got by incisions made after the spontaneous exudation is over, and is in larger masses and of a redder colour. The best Calabrian manna is in oblong, light, friable pieces or flakes, of a whitish or pale yellow colour, and somewhat transparent. The inferior kinds are moist, unctuous, and dark coloured.

Denon, in his travels in Sicily, has given an account of the manna produced there, which, though less known, is dearer than that of Calabria, and preferred to it. As soon as the trees are seven or eight years old, and about eight feet high, horizontal incisions are begun to be made in the bark one over the other, from the surface of the earth to the top of the tree. The operation is repeated every two days, from the 15th July, until the rains or fogs of autumn suspend the circulation or deteriorate the quality of the saccharine juice which exudes. The liquor first appears like a white froth extremely light, pleasing to the palate, and of a very agreeable flavour. The heat of sun coagulates this frothy juice, and gives it the form of stalactites. The glutinous and more highly coloured liquor that now distils from the wounds, is received on leaves of the Indian fig, placed for the purpose at the foot of the tree. This too becomes at length congealed by the sun, and being then taken up in lumps, forms what is called *fat manna*, which is heavier, more purgative, and of much less value.

The wood of the manna-ash is hard, heavy, and bitter, and the decoction of it is said to be aperient, and of great efficacy in the dropsy.

Olivier mentions mentions different kinds of manna found in Persia, one called *Cherker*, more purgative than Calabrian manna, got from the North of Khorassan and Little Tartary; another very good to eat, which must be collected before sunrise, because it melts with the heat of the sun; and a third, called *Therenjabri*, the product of the *Hedysarum alagi*, in the warmest provinces of Persia and Arabia. It is gathered during a month at the end of summer. It is found in all parts of the plant, especially the young shoots, in little round grains, which have the taste and consistence of well-crystallized sugar, and like it crackle under the teeth. It is very common, and found in all the druggists' shops of Persia, but commonly mixed with leaves and other impurities. It is not more purgative than honey, but is much used as a pectoral.

Manna appears often to be formed and deposited by insects. Manna is said to be sometimes counterfeited by a composition of sugar and honey, mixed with a little scammony: there is also a factitious manna, which is white and dry, said to be composed of sugar, manna, and some purgative ingredient, boiled to a proper consistence. This may be distinguished by its weight, solidity, and transparent whiteness, and by its taste, which is different from that of manna.

According to Neumann, manna dissolves in alcohol. On setting the solution in a digesting heat, it gradually deposites 5-8ths of the manna, of a fine white colour, light, spongy, and in some degree crystalline, melting instantly upon the tongue, and impressing an agreeable sweet taste, without any of the nauseousness of the manna. By further evaporation 1-4th more is obtained, similar to manna; and on continuing the evaporation, a thick extract is formed, of the consistence of a balsam, which can scarcely be fully exsiccated, but continues moist, and resembles civet grown brown by age. This extract, which is about 1-8th, contains all the nauseous matter of the manna. The experiments which Dr. Duncan has made verify these observations. The quantity of matter which a hot alcoholic solution of manna deposites on cooling is various: a saturated solution concretes into a perfectly dry, white, spongy, crystallized mass. When much less concentrated, it deposites a congeries of most beautiful snow white acicular crystals. A saturated solution in boiling water also forms a solid crystallized mass on cooling. Fourcroy says, that when a solution of manna is clarified with whites of eggs, and sufficiently concentrated, crystals of sugar may be obtained from it. But with Dr. Thomson the experiment did not succeed: its crystals were always acicular, and more difficultly formed.

Medical use.—Manna is a mild agreeable laxative, and may be given with safety to children and pregnant women: nevertheless, in some particular constitutions, it acts very unpleasantly, producing flatulency, and distension of the viscera: these inconveniences may be prevented by the addition of any grateful warm aromatic. Manna operates so weakly as not to produce the full effect of a cathartic, unless taken in large doses; and hence it is rarely given by itself with this intention. It may be commodiously dissolved in the purging mineral waters, or joined with the cathartic salts, senna, rhubarb, or the like.

Officinal Preparations.

Syrupus mannæ, D. - - - - - *vide Syrupi.*
Electuarium cassiæ, E. L. D. - - - *Electuaria.*

FUCUS VESICULOSUS. L. D.

Quercus marina, fructibus præsentibus. D. *Yellow bladder wrack.*

Murray, g. 1205. *sp.* 8.—Nat. ord. *Algæ.*

This is one of the most common sea-weeds found on our shores. Its value in the manufacture of kelp is well known. In medicine it is little used; but the charcoal obtained by burning it in close vessels has in some places got the name of Æthiops vegetabilis. It is to be considered as a compound of charcoal and carbonat of soda.

Officinal Preparation.

Pulvis quercus marinæ. D.

FULIGO LIGNI COMBUSTI. D.

Wood-soot.

This substance is inflammable, of a shining black colour, a disagreeable smell, and an empyreumatic, bitter, nauseous taste.

It varies somewhat according to the nature of the substance, and the strength of the fire employed in its production. But it consists principally of charcoal, empyreumatic oil, and acetous acid. It sometimes contains ammonia, and the other alkalies and earths. Its medical properties are to be ascribed solely to the empyreumatic oil it contains.

FUMARIA OFFICINALIS. Fumaria. *Herba.* D.

Common Fumitory. The plant.

Diadelphia Hexandria.—Nat. ord. *Lomentaceæ.*

This is a common annual weed in shady cultivated grounds. It is very juicy, of a bitter taste, without any remarkable smell. The alleged medical effects of this herb are, to strengthen the tone of the bowels, gently loosen the belly, and promote the urinary and other natural secretions. It is principally recommended in melancholic, scorbutic, and cutaneous disorders.

G.

GALBANUM. *Vide Bubon.*

GALEGA VIRGINIANA. *Virginia Goats-rue.*

This is one of the most beautiful of the known North American plants of the class Diadelphia. It is common in many parts of Pennsylvania, New Jersey, &c. It is called cat-gut in Jersey, from the resemblance of its roots to that article. A decoction of the roots is a powerful anthelmintic.*

GALLÆ. *Vide Quercus Cerris.*

GAMBOGIA. *Vide Stalagmitis.*

GAULTHERIA PROCUMBENS. *Mountain-Tea.*

It is also called berried-tea, grouse-berry, and deer-berries; and is one of the principal articles of the materia medica of some Indian tribes. It is extensively spread over the more barren, mountainous parts of the United States. In infusion it possesses a stimulant and anodyne quality, and is said to be useful in cases of asthma.†

* Barton's Collections, Part I. p. 64. † Barton's Collections, Part I. p. 19.

GENTIANA LUTEA. *Radix. Ed.* L. D.

Gentian. The root.

Willd. g. 512. *sp.* 1.—*Pentandria Digynia.*—Nat. ord. *Rotaceæ.*

D.	*Gentiaan.*	P.	*Genciana.*
DA.	*Entian, Södrod.*	POL.	*Goryczka.*
F.	*Gentiane.*	R.	*Enzian.*
G.	*Enzian, Gentian.*	S.	*Jenciana.*
I.	*Genziana.*	SW.	*Bagsöta.*

Gentian is a perennial plant, which grows upon the Alps, Pyrenees, Appenines, and other mountainous situations in the temperate parts of Europe.

The roots are long, thick, externally of a brown colour, and wrinkled; internally spongy, and of a yellow colour, without any remarkable smell, but surpassing in bitterness all other European vegetables. Alcohol dissolves only the bitter extractive, water both the extractive and mucilage.

Neumann got from 960 grains 390 alcoholic, and afterwards 210 insipid watery extract, and inversely 540 watery, and only 20 alcoholic.

Medical use.—Gentian possesses the general virtues of bitters in an eminent degree, and is totally devoid of astringency. On dead animal matter it acts as an antiseptic. Taken into the stomach, it proves a powerful tonic, and in large doses it evacuates the intestines. It is useful in debility of the stomach, in general debility, and in gout. Combined with astringents it cures intermittents. Externally, it is applied to putrid ulcers.

Officinal Preparations.

Infusum gentianæ compositum, E. L. D.	*vide Infusa.*
Tinctura gentianæ composita, E. L. - -	*Tincturæ.*
rhei cum gentiana, E. - - -	*Idem.*
Vinum gentianæ compositum, E. - - -	*Vina Medicata.*
Extractum gentianæ, E. L. D. - - -	*Extracta.*

GEOFFRÆA INERMIS. *Cortex. Ed.* D.

Cabbage tree. The bark.

Willd. g. 1362. *sp.* 3. *Diadelphia Decandria.*—Nat. ord. *Papilionaceæ.*

The bark of this tree, which grows in the low savannas of Jamaica, is of a grey colour externally, but black and furrowed on the inside. The powder looks like jalap, but is not so heavy. It has a mucilaginous and sweetish taste, and a disagreeable smell.

Medical use.—Its medical effects are much greater than its sensible qualities would lead us to expect. It is given in cases of worms, especially for lumbrici, in form of powder, decoction, syrup, and extract. The decoction is preferred; and is made by slowly boiling an ounce of the fresh dried bark in a quart of water, till it assume the colour of Madeira wine. This sweetened, is the syrup; evaporated, it forms an extract. It commonly produces some sickness and purging; sometimes violent effects, as vomiting, delirium, and fever. These last are said to be owing to an overdose, or to drinking cold water; and are relieved by the use of warm water, castor oil, or a vegetable acid.

OFFICINAL PREPARATION.

Decoctum geoffrææ inermis, E. *vide Decocta.*

GERANIUM MACULATUM. *Spotted Geranium.*

THIS is improperly called crow-foot in some parts of the United States. It grows plentifully about Philadelphia. The root boiled in milk is an excellent medicine in the cholera of children. In Kentucky it has been collected for the tormentil of the shops. It is called in some of the northwestern parts of the United States, *Racine à Becquet*, after a person of this name. The western Indians say it is the most effectual of all their remedies for the cure of the venereal disease.

An aqueous infusion of the roots forms an excellent injection in gonorrhea, and old gleets.*

Dr. Mease mentions its efficacy in stopping bleedings, by applying the root to the bleeding orifice.†

GEUM URBANUM. D.

Common Avens, or Herb-bennet. The root.

Willd. g. 1002, *sp.* 3. *Smith, g.* 237. *sp.* 1. *Icosandria Polygynia.*— Nat. ord. *Senticosæ.*

AVENS is a common perennial plant in shady uncultivated places, and flowers from May to August. The root is fibrous, externally of a dark red colour, internally white, and has the flavour of cloves, with a bitterish astringent taste. Its virtues are said to be increased by cultivation, and the large roots are preferred to the smaller fibres. It must be dug up in the spring, when the leaves begin to appear, for the smell is then strongest; indeed it is hardly to be perceived when it flowers. It must be dried in the air, but not with a strong heat, as its flavour would be dissipated, and its virtues diminished. It tinges both water and alcohol red. Half an ounce yielded 30 grains of resinous, and 20 of gummy extract; the former had the smell of the root, the latter was without smell, and merely astringent. Water distilled from it has a pleasant flavour, and carries over a little thickish essential oil. It has been more recently analyzed by Melandri and Moretti, who got from two ounces 118 grains of tannin, 181 extractive,

* Barton's Collections, Part I. p. 8, 43. Part II. p. 1.
† Philadelphia Medical Museum, Vol. II. p. 163.

61 of saponaceous extract and saline matter, 92 of mucous extract, 23 of resin, 496 of woody fibres, and 76 of volatile oil, water and loss.

The blossoms are purplish. In boggy meadows. May. The root is powerfully astringent. A decoction of it has been used, with good success, as a gargle, and a drink, in inflamed and ulcerated sore throats, and cankers. It is said, that the powdered root will cure tertian agues, and that it is much used by the Canadians for that purpose.

Medical use.—Avens is an old febrifuge mentioned by Ray, but again brought into notice by Buckhave. It is recommended as a substitute for cinchona, in intermittent fevers, dysentery, and chronic diarrhœas, flatulent colic, affections of the primæ viæ, asthmatic symptoms and cases of debility. Half a drachm or a drachm of the powder may be given four times a-day, simply, or made up into an electuary with honey or rhubarb. Two table spoonfuls of the decoction may be given every hour; or a table spoonful of a tincture, made with an ounce of the root to a pound of alcohol, three or four times a-day. As an indigenous remedy it deserves notice.

GLYCYRRHIZA GLABRA. *Radix. Ed.* L. D.

Liquorice. The root.

Willd. g. 1366. *sp.* 4. *Diadelphia Decandria.*—Nat. ord. *Papilionaceæ.*

D.	*Zoethout.*	P.	*Regoliz, Rogoliz, Alcacuz.*
DA.	*Lakrizrod.*	POL.	*Lakrycia, Slodki korzen.*
F.	*Reglisse.*	R.	*Koren soledkowoi.*
G.	*Süssholzsaft.*	S.	*Regaliz, Orozuz.*
I.	*Pasta liquirizia.*	SW.	*Lakritsrot.*

Liquorice is a perennial plant, and a native of the south of Europe, but it is cultivated in considerable quantities in England for medical purposes; and the roots which are raised there, are preferred to those imported from abroad, which are very frequently mouldy and spoiled, which this root is extremely apt to be when not well preserved in a perfectly dry place. The roots are very long, about an inch thick, flexible, fibrous, externally of a brown colour, internally yellow, and, when fresh, juicy. Their taste is very sweet, combined with a slight degree of bitter, when long kept in the mouth. They are prepared for use by peeling them, cutting away all the fibres and spoiled or mouldy parts.

The powder of liquorice usually sold is often mingled with flour, and perhaps also with substances not quite so wholesome: the best sort is of a brownish yellow colour, the fine pale yellow being generally sophisticated, and it is of a very rich sweet taste, much more agreeable than that of the fresh root.

Neumann got from 960 parts of dried liquorice, 300 alcoholic extract, and afterwards 210 watery, and inversely 540 watery, and only 30 alcoholic. The original alcoholic extract is the sweetest.

Robiquet obtained from liquorice root, 1. Amylaceous feculum; 2.

A saccharine substance having no resemblance to sugar; 3. A new crystalline substance; 4. A resinous oil, which is the cause of the acrimony in the decoctions; 5. Phosphat and malat of lime and magnesia; 6. Woody fibre.

Medical use.—Its predominant constituents being saccharine and mucilaginous matter, its only action is that of a mild demulcent, and as such it is frequently used in catarrh, and in some stomach-complaints, which seem to arise from a deficiency of the natural mucus, which should defend the stomach against the acrimony of the food, and the fluids secreted into it.

On account of its bulk it is rarely exhibited in substance, but more frequently in infusion or decoction.

Officinal Preparations.

Extractum glycyrrhizæ, E. L. D. - -	*vide Extracta.*
Decoctum daphnes mezerei, E. - -	*Decocta.*
guaiaci compositum, E. - -	*Idem.*
hordei compositum, L. - - -	*Idem.*
sarsaparillæ compositum, L. D. - -	*Idem.*
Electuarium sennæ, E. L. - - - -	*Electuaria.*
Trochisci amyli, L. - - - -	*Trochisci.*
Tinctura rhabarbari composita, L. - -	*Tincturæ.*
Pilulæ hydrargyri, L. D. - - - -	*Pilulæ.*

EXTRACTUM GLYCYRRHIZÆ GLABRÆ. *Ed.*

Extract of Liquorice.

As this extract is never prepared by the apothecary, but commonly imported from other countries, the Edinburgh college have inserted it in their list of materia medica. It is imported in cylindrical rolls, covered with bay-leaves. It should be perfectly black, brittle when cold, and break with a smooth and glossy fracture, have a sweet taste, with empyreuma, and be entirely soluble in water. It is prepared from the fresh roots by expression, decoction, and inspissation.

The best foreign extract of liquorice is prepared in Catalonia, but it is not so pure or so agreeable as the refined liquorice sold in the shops in small cylindrical pieces, not thicker than a goose-quill.

This article is much employed in cases of catarrh, &c. in combination with other substances, as paragoric elixir, &c. to allay the cough. It is troublesome to dissolve it in water in the solid masses in which we receive it. An excellent mode of keeping it for use, is to pulverize it in very cold weather, and mix it with about one-fourth part of the powdered root, which prevents its agglutinating; and a mixture is readily made with it, even in cold water.

Neumann got from 480 parts of Spanish extract 460 watery extract, and the residuum was not affected by alcohol, and inversely he got 280 alcoholic, and 180 watery extract. In this last case the alcoholic extract contained all the sweetness, the watery having scarcely any taste. From the similarity of their taste, Dr. Thomson has made it a species of his new genus sarcocoll, but Neumann's more accurate analysis shows that it is a compound.

The extract possesses the same properties with the root, and is used for the formation of several kinds of troches.

Officinal Preparations.

Tinctura aloës, E. L. D. - - - -	*vide Tincturæ.*
Trochisci glycyrrhizæ, E. L. D. - - -	*Trochisci.*
cum opio, E. D. - -	*Idem.*

GRATIOLA OFFICINALIS. *Herba. Ed.* D.

Hedge-Hyssop. The plant.

Willd. g. 49. *sp.* 1.—*Decandria Monogynia.*—Nat. ord. *Personatæ.*

This is a perennial plant, a native of marshy situations in the south of Europe. It is gathered for use when in flower. It has no smell, but a very bitter somewhat nauseous taste. It is a drastic purgative and emetic, and a very powerful anthelmintic, but its use requires caution. In substance it may be given to the extent of half a drachm, and in infusion to three drachms.

Vauquelin has analysed hedge-hyssop. Its expressed juice contains, in a state of solution. 1. A brown gummy matter; 2. A particular resinous matter extremely bitter; 3. A small quantity of animal matter; 4. Muriat of soda, and perhaps malat of potass. What remains after expression, contains malat and phosphat of lime and iron, probably in the state of phosphat. M. Vauquelin thinks, that the active and purgative ingredient is the substance soluble in alcohol, which he has called a resinoid, as it is the only one possessing taste. Its solubility in water, which is increased by the gum and salts, explains why the infusion, and still more the decoction, are drastic purgatives.

GUAJACUM OFFICINALE. *Lignum, Gummi-resina. Ed.* L. D.

Guaiac. The wood, and gum-resin.

Willd. g. 819. *sp.* 2.—*Decandria Monogynia.*—Nat. ord. *Gruinales.*

D.	*Pockhout.*	P.	*Guaiaco, Poa sancto.*
DA.	*Pokkentræe, Fransostræe.*	POL.	*Gwaiak.*
F.	*Gayac, Bois saint.*	R.	*Bakaut.*
G.	*Pockholz.*	S.	*Guayaco, Palo santo.*
I.	*Guajaco, Legno santo.*	SW.	*Pockenholts, Fransosenholts.*

This tree is a native of the West-Indies, where it grows to a middling size. The wood is heavier than water, very hard, resinous, and of a greenish black colour. Its taste is bitterish, and when kindled it gives out a pleasant smell. It is brought either in pieces, which are sometimes covered with a pale yellow alburnum, or already rasped, when by division its colour appears greenish, brown, or yellow. The bark is thin, of an ash-grey or blackish colour, and apparently composed of several laminæ. It is less resinous than the wood. Neumann got from 7680 parts of the wood 1680 alcoholic, and 280 watery extract, and inversely 740 watery, and 960 alcoholic; from 3840 of the bark he got 560 alcoholic, and 320 watery, and inversely 6 0 watery, and 240 alcoholic. The resin exudes spontaneously in tears, but is principally obtained by sawing the wood into billets about three feet long, which are then bored with an auger longitudinally. One end of these is laid upon a fire, so that a calabash may receive the melted resin, which runs through the hole as the wood burns. It may be also obtained by boiling the chips or sawings of the wood, in water and muriat of soda. The resin swims at the top, and may be skimmed off.

Guaiac resin has a brownish yellow colour externally; when held against the light is transparent, breaks with an uniform smooth shining fracture, of a bluish-green colour, is pulverizable, and the powder has a white colour, gradually becoming bluish-green; is fusible in a moderate heat, but not softened by the heat of the fingers; without proper smell or taste, but when thrown on hot coals diffusing an agreeable odour, and when swallowed in a state of minute division, causing an insufferable burning and prickling in the throat. Its specific gravity is 1.23. Neumann got from 480 parts, 400 alcoholic, and only 10 watery extract; and inversely, 80 watery, and 280 alcoholic. Mr. Brande has more lately investigated this substance with much care. Digested with water, about one-tenth of it is dissolved, the water acquiring a sweetish taste and greenish-brown colour. The liquid, when evaporated, leaves a brown substance, soluble in hot water and alcohol, but scarcely in sulphuric ether, and precipitating the muriats of alumina and tin. Alcohol readily forms with guaiac a deep brown-coloured solution, rendered milky by water, and precipitated pale green by the muriatic and sulphuric acids, brown by the nitric, and pale blue by the oxy-muriatic, but not by the acetic acid or alkalies. The solution in ether exhibits nearly the same properties. Guaiac is soluble in about 15 parts of solution of potass, and in 38 of ammonia; and the solutions are precipitated by the nitric, muriatic, and diluted sulphuric acids. Sulphuric acid dissolves it, and nitric acid converts it into oxalic acid. On being burnt it leaves a large proportion of charcoal. Dr. Wollaston has discovered a curious property of guaiac. By exposure to air and light, it acquires a green colour. This effect is produced in the greatest degree by the most refrangible rays. In the least refrangible rays it is disoxydized, and the yellow colour is restored. The same effect is produced by hot metal. According to this analysis, it differs from the resins in the changes of colour produced on it by air and light, and the action of the acids, in not forming tannin but oxalic acid when treated with nitric acid, and in the large proportion of charcoal it affords when burnt. It is sometimes adulterated with colophony or common resin; but the fraud is easily detected by the smell of turpentine emitted when thrown on live coals.

Medical use.—Taken internally, guaiac commonly excites a sense of warmth in the stomach, a dryness of the mouth, with thirst. It increases the heat of the body, and quickens the circulation. If the patient be kept warm, it produces diaphoresis; if exposed freely to the air, an increased flow of urine. In large doses it is purgative.

Guaiac is a useful remedy,

1. In rheumatism and gout.
2. In certain venereal symptoms, as in foul indolent ulcers, and a thickened state of the ligaments or periosteum, remaining after the body is reduced by a mercurial course. Guaiac will also suspend the progress of some of the secondary symptoms; but it is totally incapable of eradicating true syphilis.
3. In cutaneous diseases.
4. In ozena, and scrofulous affections of the membranes and ligaments.

The wood is always exhibited in decoction. From the resinous nature of the active constituent of this substance, this cannot be a very active preparation, as the menstruum is totally incapable of dissolving, though it may suspend a little of the resin. The decoction of an ounce may be drunk in cupfuls in the course of a day.

The resin may be exhibited,

1. In substance, either made into pills, or suspended in water in the form of an emulsion. In this way from 10 to 30 grains of the resin may be taken in the day.
2. In solution; in alcohol. About half an ounce of the tincture, with three ounces of water, is a sudorific dose for an adult, if he attend to keeping himself warm.
3. Combined with an alkali.

Officinal Preparations.

Tinctura guaiaci officinalis, E.	*vide Tincturæ.*
ammoniata, E. L. D.	*Tincturæ ammoniatæ.*
Pulvis aloëticus cum guaiaco, L.	*Pulveris.*
Decoctum guaiaci officinalis compositum, E.	*Decocta.*
sarsaparillæ compositum, L. D.	*Idem.*

GUMMI ARABICUM. - *Vide Mimosa.*

GUMMI TRAGACANTHA. - *Vide Astragalus.*

H.

HAMAMELIS VIRGINIANA.

Witch-hazel. The bark.

THIS tree is a native of the United States. The leaves are nearly inversely ovate. Blossoms, yellow: stand three or four together on short flower stalks. In loamy land. Blossoms, September and October. This singular shrub does not commonly bloom until its leaves are destroyed by frost, when its numerous blossoms make a gay and agreeable appearance; and continue until the weather becomes very cold, often until snow falls. The germen endures the severity of our winters uninjured; for the fruit does not ripen until the next September, the time of its blossoming again, when ripe fruit and blossoms will be found on the same tree. The Indians consider this tree as a valuable article in their *Materia Medica*. They applied the bark, which is sedative and discutient, to painful tumors and external inflammations. A cataplasm of the inner rind of the bark, is found to be very efficacious in removing painful inflammations of the eyes. The bark chewed in the mouth is, at first, somewhat bitter, very sensibly astringent, and then leaves a pungent, sweetish taste, which will remain for a considerable time. The specific qualities of this tree seem by no means to be accurately ascertained. It is probably possessed of very valuable properties.

HÆMATOXYLON CAMPECHIANUM. *Ed.* L. D.

Lignum. Logwood-tree. The wood.

Willd. g. 830. *sp.* 10.—*Decandria Monogynia.*—Nat. ord. *Lomentaceæ.*

D.	*Kampechehout.*	P.	*Pao de Campeche.*
DA.	*Blauholt, Campeschetræ.*	POL.	*Kampesza.*
F.	*Bois de Campeche.*	R.	*Kampetschkoe derewo.*
G.	*Blauholz.*	S.	*Paolo de Campeche.*
I.	*Campeggio, legno tauro.*	SW.	*Campescheträ.*

THIS tree was introduced from the Honduras into Jamaica, where it is now very common. The wood is firm, heavy, and of a dark red colour. Its taste is sweet, with a slight degree of astringency. It forms a precipitate with solution of gelatin, very readily soluble in excess of gelatin, and Dr. Duncan says, that with sulphat of iron it strikes a brighter blue than any other astringent he tried. It is used principally as a dye-wood, but also with considerable advantage in medicine.

Its extract is also sweet and slightly astringent; and is, therefore, useful in obstinate diarrhœas, and in chronic dysentery.

HELLEBORUS.

Willd. g. 1089. *Smith, g.* 256.—*Polyandria Polygynia.*—Nat. ord. *Multisiliquæ.*

HELLEBORUS NIGER. *Willd. sp.* 2. *Radix. Ed.* L. D.

Black Hellebore. The root.

D.	*Nieswortel.*	P.	*Helleboro.*
DA.	*Nyserod.*	POL.	*Ciemierzyca.*
F.	*Hellebore.*	R.	*Tschemeriza.*
G.	*Nieswurz.*	S.	*Vedegambre.*
I.	*Elleboro.*	SW.	*Prustrot.*

THIS plant, formerly called *Melampodium*, is perennial, and grows wild in the mountainous parts of Austria, and on the Pyrenees and Appenines: the earliness of its flowers, which sometimes appear in December, has gained it a place in gardens.

The roots consist of a black furrowed roundish head, about the size of a nutmeg, from which short articulated branches arise, sending out numerous corrugated fibres, about the thickness of a straw, from a span to a foot in length, deep brown on the outside, white, or yellowish-white within, and of an acrid, nauseous and bitterish taste, exciting a sense of heat and numbness in the tongue, and of a nauseous acrid smell. These fibres only are used in medicine, and the head, and decayed parts are rejected. For the roots of the real black hellebore, the roots of the Adonis vernalis, Trollius Europæus, Actæa spicata, Astrantia major, Helleborus viridis fœtidus, Veratrum album, and Aconitum neomontanum, are often substituted. The last is a most virulent poison, and may be distinguished by its roots being fusiform, or nearly globular, sending out numerous very brittle fibres, of a greyish black or brown colour, as thick as a man's finger, and repeatedly divided. But the surest way to avoid mistakes, is by the apothecary cultivating the plant itself in his own garden.

Neumann got from 2880 grains 380 alcoholic, and 181 watery extract, and inversely 362 watery and 181 alcoholic.

Medical use.—In large doses, hellebore is a drastic purgative; in smaller doses it is diuretic and emmenagogue.

It is principally used as a purgative in cases of mania, melancholy, coma, dropsy, worms and psora, and as an emmenagogue. But its use requires very great caution, for its effects are very uncertain, and affected by many circumstances.

It is commonly exhibited in the form of extract, although its activity be much dissipated by the preparation. An infusion or tincture certainly promise to be medicines of more uniform powers. Willdenow says, that the black hellebore of the ancients is his fifth species, the Helleborus orientalis.

OFFICINAL PREPARATION.

Tinctura hellebori nigri, E. L. D. - *vide Tincturæ.*

HELLEBORUS FOETIDUS L. D. *Willd. sp. 6. Smith, sp. 2.*

Folium. L.

Bears-foot. Stinking Hellebore. Settiswort. The leaves.

This species is a native of England. It is perennial, and grows in shady places, and under hedges. The leaves have an acrid, bitter, nauseous taste, and unpleasant smell, especially when they are fresh. When dried, they are frequently given as a domestic medicine to destroy worms; but they must be used sparingly, being so violent in their operation that instances of their fatal effects are recorded.

HERACLEUM SPHONDYLIUM. *Common Cow Parsnip.*

This article was brought into notice by the late Dr. Joseph Orne, of Salem. In a communication to the Massachusetts Medical Society, October, 1803, he thus describes it: Common Cow Parsnip. (*Sphondylium vulgare hirsutum. Park. C. B.*) It grows in hedges; the stalk is large and tubular, invested with a down which also covers the leaves, that are large and jagged, five on each stalk, and of the colour of wormwood; it is umbelliferous, and flowers in June; the root is divided into several long and fibrous branches, resembling a large parsley root; and the height of the plant, in its maturity, may be from two to four feet: the root has a rank strong smell, and a pungent and almost caustic taste; it should be carefully distinguished from the common parsnip, that grows wild in gardens, and hedges; and indeed, it has a very different appearance.

The particular disease in which Dr. Orne commends the Cow Parsnip, is that of epilepsy. Three of the five cases which are exhibited in his communication, were cured by the use of this medicine. The author judiciously observes, that in the three successful cases, the patients were remarkably liable to flatulence, with symptoms of morbid sensibility of the stomach, and date their first relief from the sensation of a more firm and healthful tone of that organ, and the carminative effects of the medicine. He commonly prescribed two or three drachms of the pulverized root, to be taken every day for a great length of time, and a strong infusion of the leaves and tops to be drunk at bed time.

In the hands of other practitioners, this plant has manifested considerable efficacy, exerting its peculiar powers immediately on the stomach, as an excellent carminative, and, if it does not cure epilepsy, it generally mitigates the distressing symptoms attending that disease. In some cases of dyspepsia, accompanied with flatulencies and cardialgia, a strong decoction of this plant has been given by Dr. Mann with satisfactory success.

HEUCHERA AMERICANA. *American Sanicle. Alum root.*

The root is an intense astringent; and is the basis of a powder which has lately acquired some reputation in the cure of cancer. It is one of the articles in the materia medica of our Indians. They apply the powdered root to wounds and ulcers and cancers.*

HIRUDO MEDICINALIS. *Dub. The Leech.*

Cl. Vermes. Ord. *Helmintheca.*

ONLY one species of leech is used in medicine. It has a flat and slimy body, composed of rings, tapering towards the head, which is turbinated, commonly about two or three inches long, and of the thickness of a goosequill, but capable of elongating or contracting itself very much. Its back is of a dull olive-green colour, divided into three nearly equal parts by four yellow longitudinal lines, the two lateral entire, the two central broken with black. Besides these, between the lateral and central lines on each side, there are two others, resembling a chain of black and yellow. The belly is turkey blue, irregularly marked with yellow spots. It attaches itself to solid substances by either end, being furnished with a circular sucker at the anal extremity, and a horse-shoe one at the head, with a triangular mouth in the centre.

They should be collected in summer, in waters having a clear sandy bottom, as the bite of those found in stagnant waters and marshes is said to cause pain and inflammation. For the same reason, the horse leech, which is entirely brown, or only marked with a marginal yellow line, is commonly rejected, although they are used frequently in the north of Europe, and during the late scarcity of leeches have occasionally been employed, without any bad consequences, in this country. The vulgar story of their drawing the whole blood out of the body, by evacuating it at one end as fast as they sucked it in at the other, if true, would give them a superiority over the others, as when a sufficient quantity of blood was drawn, there could be no difficulty in making them quit, even without passing a ligature round their necks.

Leeches are best preserved for use in a bottle half filled with pure spring or river water, and covered with gauze or muslin, although they are said not to die even in an exhausted receiver, nor in a vessel filled with oil. It is advisable frequently to change the water in which they are kept, although there are instances of their being many months and even years in the same water; and it is remarkable, that water in which they are, keeps much longer sweet, than by itself. It is scarcely necessary to observe, that whenever the water becomes turbid or foul, or gets an unpleasant smell, or any of the leeches die in it, it should be changed. They should always be kept in a moderate temperature, about 50° Fahr. Some recommend throwing a little bran into the water; but it is so well ascertained that they will live for years without any such addition, that it is better not to attempt to feed them, until we are better acquainted with their natural food.

* Barton's Collections, Part I. and II.

Though apparently so hardy, leeches are sometimes subject to great mortality from unknown causes, as in 1798 and 1799. Infection in some cases, seems evident. To avoid danger from this source, they should be kept rather in several small vessels, than in one large reservoir; and when fresh leeches are procured, they should always be kept by themselves, and their health ascertained, before they are added to the general stock. When they have gorged themselves with blood, they frequently die of indigestion, and cause a great mortality even among those who have not been used. To avoid this danger, leeches which have recently sucked, should also be kept by themselves, until they have recovered their usual vigour. The treatment of the individuals which have performed their office, has been the subject of some controversy. One recommends using no means to make them disgorge the blood they have sucked, but only to immerse them for half an hour in milk warm-water, and to change their water regularly every second day for some time; others advise stripping them, as it is called, that is, taking hold of the tail between the finger and thumb of the left hand, and drawing the animal through those of the right, so as to evacuate the blood; while others, again, apply salt to their heads until they vomit all the blood they have sucked. Leeches change their skin frequently. At that time they are subject to indisposition, and will not bite. The removal of the old cuticle may sometimes be assisted by wiping them with a bit of soft linen.

Medical use.—Leeches are a very old and useful remedy in every case requiring local blood-letting. They cause less irritation than cupping, and can often be applied nearer to the part.

They are used,

1. In inflammation of all kinds, ophthalmia, phrenitis, cynanche, rheumatismus, odontalgia, podagra.
2. In some cases of rubeola and scarlatina.
3. In suppressed natural or habitual hæmorrhagies, especially piles.
4. In plethora of the head, chincough, in mania from suppressed discharges.
2 Dysuria phlogistica.

The application of leeches is sometimes attended with difficulty. When changing their skin they will not bite, and are averse to it in cloudy rainy weather, and in the evening. When kept out of the water some minutes before they are applied, and allowed to crawl on dry linen, they are said to bite more eagerly. The part to which they are to be applied should be very well washed, first with soap and water, and afterwards with water, or milk and water, and if covered with strong hairs, should be shaved. When they are not inclined to bite, the part may be moistened with milk, or a little blood drawn from it by a scratch with a lancet. When they fix, they inflict, without causing much pain, a wound of three minute flaps, meeting at equal angles, from which they suck blood until they are gorged, and drop off spontaneously, or are forced to quit their hold by sprinkling on them a little salt. A large leech will draw about an ounce of blood; but the quantity may be much increased by bathing the wounds with tepid water, or applying over them cupping glasses. Sometimes it is more difficult to stop the bleeding; but it will always cease on applying a little lint, and continuing pressure a sufficient length of time.

HORDEUM DISTICHON. *Semen nudatum. Ed.* D. L.

Barley. The seed, called Pearl barley.

Willd. g. 151. *sp.* 3. *Triandria Digynia.*—Nat. ord. *Gramina.*

Barley is an annual plant, cultivated in almost every country of Europe. Linnæus says that it is a native of Tartary, but without adducing sufficient proof.

Pearl barley is prepared by grinding off the husks of rough barley, and forming the grain into little round granules, which appear of a kind of pearly whiteness. In this state barley consists almost solely of amylaceous matter, and when boiled forms an excellent article of nourishment; while a decoction of it, properly acidulated, is one of the best beverages in acute diseases.

Barley meal, according to Fourcroy and Vauquelin, contains a little unctuous coagulable oil, sugar, starch, an animal substance partly soluble in water, and partly in glutinous flocculi; phosphat of lime and magnesia, silica, iron, and a little acetic acid.

Officinal Preparation.

Decoctum hordei distichi, E. L. - *vide Decocta.*

HUMULUS LUPULUS. *Strobili.* L.

Hop. The strobiles dried.

Willd. g. 1795. *sp.* 415. *Smith, g.* 415. *sp.* 1. *Diœcia Pentandria.*—Nat. ord. *Scabridæ.*

The hop is an indigenous perennial climbing plant, cultivated to a great extent in Kent, and some other countries in England, for its leafy tops, which are used in the brewing of ale and porter; and as a very considerable revenue arises from the duty imposed on them, the use of all other bitters, such as quassia, &c. is prohibited by act of parliament; as, indeed, hops themselves once were. In the north of Europe the young shoots are eaten instead of asparagus.

Hops are intensely bitter, aromatic, and astringent. By simple infusion the aroma is extracted; by short boiling the bitter, and by long-continued boiling, the aroma is dissipated, and the astringency predominates. The aroma resides in a volatile oil, and the astringency in a species of tannin, for sulphat of iron is blackened by it. It also contains a resin from which it has its bitterness, and a nauseous mucilaginous extractive, which alcohol precipitates from the infusion. Crystals of nitrat and muriat of potash appear in a long kept extract. The old writers say, that hops are added to malt liquors on account of the lithontriptic virtues which they were supposed to possess; thus Ray affirms, that since the Londoners added hops to their beer, they have been less subject to calculous complaints; and if we were to believe Lobb, a very hard urinary calculus was softened by a decoction of hops. Their evident effects are to impart an aromatic bitter, and to retard the acetous fermentation; for malt liqours keep longer in proportion to the quantity of hops added, and the bitterness decreases as the liquor becomes ripe, and disappears as it verges to acidity. Bergius supposes that the sweetness of the malt would hurt the stomach, were it not corrected by the bitterness of the hop. It also probably communicates a narcotic quality. A pillow stuffed with hops is said to have long been a popular remedy, and recent experiments have confirmed the fact, and led to the employment of various preparations of hops in medicine. The dose of the powder is about three grains, although it may be remarked that it is very difficult to powder. It produced sleep, in the experiments of Dr. De Roches, in rheumatic, syphilitic, and pectoral complaints. The tincture seemed to possess the same anodyne virtues, but it was not so uniform in its action. Dr. Maton gave it in the form of tincture and extract with the best effects, in articular rheumatisms. He did not observe that it had any influence in relaxing the bowels, but the contrary; and he is disposed to believe that the pulse is reduced in frequency, and increased in firmness, by this medicine, in a very direct manner. An ointment compounded with the hop is said, by Mr. Freake, to have eased the violent pain in the last stage of cancer, when all other applications were ineffectual.

HYDRARGYRUM. D. L.

HYDRARGYRUS. *Ed. Mercury. Quicksilver.*

D.	*Kwikzilver.*	P.	*Azougue.*
DA.	*Quecksölv.*	POL.	*Zywe srebro.*
F.	*Vifargent.*	R.	*Rtut.*
G.	*Quecksilber.*	S.	*Azogue.*
I.	*Argento vivo.*	SW.	*Quicksilfver.*

MERCURY is very bright white; specific gravity 13.568; freezing at — 39; boiling at 660°, partly ductile and malleable; oxydizable by trituration in the air, and in a farther degree by the action of the air and heat; does not decompose water; forms amalgams with many metals; and is oxydized and dissolved by the sulphuric, nitric, and oxy-muriatic acids. Oxyds, black, red.

It is found,

I. In its metallic state:

a. Uncombined.
b. Alloyed with silver.
c. Alloyed with copper.
d. Combined with sulphur, (Cinnabar.)
e. Combined with hydrogureted sulphur, (Æthiops minerale.)

H. Oxydized:

a. Combined with muriatic acid.
b. ———— sulphuric acid.

There are considerable mines of mercury in Hungary, Spain, and South America; and what is employed in England is principally imported from the former country.

Mercury taken into the stomach in its metallic state has no action on the body, except what arises from its weight or bulk. It is not poisonous as was vulgarly supposed, but perfectly inert.* But in its various states of combination, it produces certain sensible effects. It quickens the circulation, and increases all the secretions and excretions. According to circumstances, the habit of the body of the patient, the temperature in which he is kept, the nature of the preparation and the quantity in which it is exhibited, its effects are indeed various; it sometimes increases one secretion more particularly, sometimes another, but its most characteristic effect is the increased flow of saliva, which it generally excites, if given in sufficient quantity. Its particular effects, and means of producing each of them, will be noticed hereafter.

Mercury, or some of its preparations, is exhibited,

1. As an errhine. The sub-sulphat of mercury.
2. As a sialagogue. Mercury, in almost any form.
3. As a cathartic. The sub-muriat of mercury, (calomel).
4. As a diuretic. The oxyds, the muriat, and the sub-muriat, combined with other diuretics.
5. As a sudorific. Calomel, conjoined with a sudorific regimen.
6. As an emmenagogue.
7. As an astringent. Muriat of mercury.
8. As a stimulant. Muriat of Mercury.
9. As an antispasmodic.
10. As an anthelmintic.

With some of these views mercury is frequently exhibited,

1. In febrile diseases; in obstinate agues.
2. In inflammatory diseases; in indolent and chronic inflammations, especially of the glandular viscera, as the liver, spleen, &c.
3. In exanthematous diseases; variola.
4. In profluvia; in dysentery.
5. In spasmodic diseases; tetanus, trismus, hydrophobia, &c.
6. In cachectic diseases; anasarca, ascites, hydrothorax, hydrocephalus, &c.
7. In impetigines; scrofula, syphilis, lepra, icterus, &c.
8. In local diseases; in caligo corneæ, amaurosis, gonorrhœa, obstipatio, amenorrhœa suppressionis, tumours of various kind, herpes, tinea, psora, &c.

Mercury occasionally attacks the bowels, and causes violent purg-

* This is somewhat doubtful, from the observations of Orfila. See his Toxicology, Vol. I.

ing, even of blood. The effect is remedied by intermitting the use of the medicine, and by exhibiting opium.

At other times it is suddenly determined to the mouth, and produces inflammation, ulceration, and an excessive flow of saliva. In this case, too, the use of the mercury must be discontinued for a time; when, according to Mr. Pearson's advice, the patient should be freely exposed to a dry cold air, with the occasional use of cathartics, Peruvian bark, and mineral acids, and the assiduous application of astringent gargles. On the other hand, the sudden suppression of ptyalism is not without danger. It is most frequently caused by cold liquids being taken into the stomach, or exposure to cold and moisture, while under the influence of mercury. The danger is to be obviated by the quick introduction of mercury, so as to affect the gums, with the occasional use of the warm bath.

Sometimes also a morbid condition of the system occurs during a mercurial course, and tends to a fatal issue. Mr. Pearson has termed it Erethismus. It is characterized by great depression of strength; a sense of anxiety about the præcordia; frequent sighing; trembling, partial or universal; a small quick pulse; sometimes vomiting; a pale contracted countenance, a sense of coldness, while the tongue is seldom furred, or the vital or natural functions much disordered. In this state, a sudden or violent exertion of muscular power will sometimes prove fatal. To prevent dangerous consequences, the mercury must be discontinued, whatever may be the stage, extent, or violence of the disease for which it has been exhibited, and the patient must expose himself freely to a dry and cool air, in such a manner as shall be attended with the least fatigue; and in the course of ten or fourteen days, he will sometimes be so far recovered, that he may safely resume the use of mercury.

In some particular habits it also produces an exanthematous disease, which sometimes proves fatal, well known by the name of erythema or eczema mercuriale and hydrargyria.

From many motives, both laudable and culpable, mercury has been tortured into a greater variety of forms than any other article of the materia medica. Of these Swediaur has given a complete table, in the last edition of his works on the venereal disease. It is too long for insertion in this place: we therefore give a systematic view of those mercurial preparations only which enter at least one of the British Pharmacopœias.

Mercury is exhibited,

I. Purified by distillation.

Hydrargyrum purificatum. D. L.
Hydrargyrus purificatus. E.

II. Oxydized.

A. Protoxyd.

1. By precipitation, from its solution in nitrous acid, by ammonia.

Oxydum hydrargyri cinereum. E. L.
Pulvus hydrargyri cinereus. D.

2. By trituration,
   a. With unctuous substances,
      Unguentum hydrargyri. E. D.
      ———————— fortius. L.
      ———————— mitius. L. D.
      Linimentum hydrargyri. L.
      Emplastrum ammoniaci cum hydrargyro. L. D.
      ———— hydrargyri. E. L.
   b. With saccharine substances,
      Pilulæ hydrargyri. L. D. E.
   c. With carbonat of lime,
      Hydrargyrum cum creta. L. D.
   d. With carbonat of magnesia,
      Hydrargyrum cum magnesia. D.

B. Peroxyd.
   1. By the action of heat and air,
      Oxydum hydrargyri. D.
      Hydrargyri oxydum rubrum. L.
   2. By the action of nitrous acid,
      Oxydum hydrargyri rubrum per acidum nitricum. E.
      Oxydum hydrargyri nitricum. D.
      Hydrargyri nitrico-oxydum. L.
      Unguentum oxydi hydrargyri rubri. E.
      ———— subnitratis hydrargyri. D.
      ———— hydrargyri nitrico-oxydi. L.

III. Oxydized and combined with acids.

A. Protoxyd.
   1. With nitrous acid:
      Unguentum nitratis hydrargyri. L. E.
      ———— supernitratis hydrargyri. D.
   2. With sulphuric acid:
      Sub-sulphas hydrargyri flavus. E.
      Oxydum hydrargyri sulphuricum. D.
   3. With muriatic acid:
      a. By sublimation,
         Sub-murias hydrargyri. E. L.
         ———————— sublimatum. D.
         Pilulæ hydrargyri sub-muriatis. L.
      b. By precipitation,
         Sub-murias hydrargyri præcipitatus. E. D.
   4. With acetic acid:
      Acetas hydrargyri. E.
      Acetis hydrargyri. D.

B. Peroxyd.
   1. Muriat.
      Murias hydrargyri. E.
      ———————— corrosivum. E.

Oxymurias hydrargyri. L.
Liquor oxymuriatis hydrargyri. L.
2. Sub-muriat with ammonia.
Sub-murias hydrargyri ammoniatum. D.
Hydrargyrum præcipitatum album. L.
Unguentum sub-muriatis hydrargyri ammoniati. D.
———— hydrargyri præcipitati albi.

IV. Combined with sulphur:
1. By trituration,
Sulphuretum hydrargyri nigrum. E. D.
2. By sublimation,
Hydrargyri sulphuretum rubrum. L.
Sulphuretum hydrargyri rubrum. D.

HYDRARGYRUM PURIFICATUM. D. L. E.

Purified Quicksilver.

Take of
Quicksilver, four parts;
Filings of iron, one part.
Rub them together, and distil from an iron-vessel. (E.)

The quicksilver of commerce is often adulterated with lead, tin, or other metals, which renders it unfit for internal use, and for many preparations. It therefore becomes necessary to purify it, and fortunately its comparatively great volatility supplies us with an easy process. The Dublin college distil it simply without any addition; but, lest towards the end of the process the mercury should elevate any impurities along with it, they draw off but two thirds. The principal objection to this process is the want of economy; for although the remaining third may be used for some purposes, its value is very much depreciated. As iron has a much stronger affinity for almost all the substances with which quicksilver may be adulterated than quicksilver has, by adding iron-filings we may draw off the whole quicksilver by distillation, without any fear of the impurities rising along with it.

Glass-retorts are inadmissible in this distillation; because when the mercury begins to boil, the concussion is so great, that they would certainly be broken. Iron-retorts are the best, although strong earthen ones may be also used. The receiver may be of the same materials, or of glass, if we wish to inspect the progress of the operation; but in this case we must interpose an adopter between the retort and receiver, and fill the receiver nearly full of water, that the mercury may not crack it by falling hot into it. The retort employed should be so large, that the quicksilver should not fill above one third of it.

ACETAS HYDRARGYRI. D. E.

Acetat of Quicksilver.

Take of

Purified quicksilver, three ounces;

Diluted nitrous acid, four ounces and a half, or a little more than may be required for dissolving the mercury;

Acetat of potass; three ounces;

Boiling water, eight pounds.

Mix the quicksilver with the diluted nitrous acid; and after the effervescence has ceased, digest if necessary with a gentle heat, until the quicksilver be entirely dissolved. Then dissolve the acetat of potass in the boiling water, and immediately to this solution, still hot, add the former, and mix them by agitation. Then set the mixture aside to crystallize. Place the crystals in a funnel, and wash them with cool distilled water; and, lastly, dry them with as gentle a heat as possible. (E.) Glass vessels must be used throughout.

This process of the Edinburgh college was ascertained by very careful experiment, and if its directions be accurately followed, the preparation succeeds admirably. Nitrat of mercury is decomposed by acetat of potass; and the products are acetat of mercury and nitrat of potass. The nitrat of potass being much more soluble than the acetat of mercury, remains in solution after the latter is separated by crystallization. Mercury is capable of forming different combinations with nitrous acid, which possess each their characteristic properties. When we employ a sufficient quantity of acid to dissolve the mercury without the assistance of heat, and to retain it in solution, there is always an excess of acid; and therefore it is a solution of super-nitrat of mercury. If we evaporate this solution very gently, or if we employ a larger proportion of mercury at first, and assist the action of the acid by a gentle heat, we obtain nitrat of mercury crystallized in various forms. In these the mercury is in the state of protoxyd. But if we assist the action of the acid by boiling, the mercury is converted into peroxyd, and a larger quantity is dissolved. This solution is very apt to crystallize, both on cooling and by the diminution of the quantity of acid during the process; and if we attempt to dilute the solution with water, a copious precipitate of sub-nitrat of mercury immediately takes place, and the solution contains super-nitrat of mercury. If the dilution be made with cold water, the sub-nitrat has a white colour, which, by a very slight application of heat, passes to a beautiful yellow, the colour which it has at first when separated by boiling water.

For making the acetat of mercury, the nitrat is prepared with a very gentle heat, and with excess of acid, that it may be retained in perfect solution, and that there may be no possibility of any admixture of sub-nitrat with the acetat formed. A larger proportion of acid is used by the Edinburgh college than by the other colleges, but by careful experiment it was ascertained to be necessary for the success of the process. In mixing the solutions, we must be careful to pour the mercurial solution into that of the acetat of potass, because, by adopting the contrary procedure, the sub-nitrat of mercury will be precipitated undecomposed, if any peroxyd be contained in the mercurial solution. For dissolving the acetat of potass, the London college only use as much water as is capable of retaining the nitrat of potass in solution; the acetat of mercury is therefore precipitated, and is purified by again dissolving it in boiling water and crystallizing it. This part of the process is simplified by the Edinburgh and Dublin colleges, who use as much water for dissolving the acetat of potass as is capable of retaining, as long as it is hot, the acetat of mercury in solution, and of allowing it to crystallize as it cools. In this way, therefore, it is procured at once sufficiently pure. The exsiccation of the acetat of mercury is an operation of great delicacy; for it is so spongy, that it retains the moisture with great obstinacy; and it is decomposed so easily, that heat can scarcely be employed. It is best dried by compressing it between several folds of bibulous paper.

The Prussian Dispensatory directs acetat of mercury to be prepared by dissolving two ounces of the red oxyd of mercury in about seven ounces of concentrated acetic acid, and evaporating the solution to dryness; but this process affords a salt of a very different nature from that prepared according to the directions of the British colleges, the latter containing protoxyd, and being crystallizable; and the former the peroxyd and not crystallizable.

Acetat of mercury is scarcely soluble in cold w^ter, but dissolves readily in boiling water. It generally crystallizes in micaceous plates, and is extremely easy of decomposition.

It is supposed to be a mild preparation of mercury, and was the active ingredient of the celebrated Keyser's pills. In solution it has also been recommended externally, to remove freckles and cutaneous eruptions.

MURIAS HYDRARGYRI; olim, MERCURIUS SUBLIMATUS CORROSIVUS. *Ed.*

Muriat of Quicksilver, formerly *Corrosive Sublimate.*

HYDRARGYRUS OXYMURIAS. L.

MURIAS HYDRARGYRI CORROSIVUM. D.

Oxy-muriat of Quicksilver. Corrosive Muriat of Quicksilver.

Take of
Purified quicksilver, two pounds;
Sulphuric acid, two pounds and a half;
Dried muriat of soda, four pounds.

Boil the quicksilver with the sulphuric acid in a glass vessel placed in a sand bath, until the matter be dried. Mix the matter when cold in a glass vessel, with the muriat of soda; then sublime in a glass cucurbit, with a heat gradually increased. Lastly, separate the sublimed matter from the scoriæ. (E.)

BY boiling the quicksilver to dryness with sulphuric acid, the metal is oxydized by the decomposition of part of the acid, and combines with the rest to form sub-sulphat of quicksilver. In the second part of the process, this sub-sulphat is decomposed by dried muriat of soda;

muriat of quicksilver sublimes, and sulphat of soda remains behind. In Holland it is manufactured by subjecting to sublimation a mixture of dried sulphat of iron, nitrat of potass, muriat of soda, and quicksilver In the former editions of the Edinburgh Pharmacopœia, the mercury was oxydized by boiling it to dryness in nitrous acid, and then sublimed with muriat of soda and sulphat of iron. Bergmann recommends the sublimation of sub-nitrat of mercury and muriat of soda, and Mr. Murray seems inclined to prefer it to the new process.*

Muriat of quicksilver crystallizes by sublimation in prismatic needles, forming a white semi-transparent mass. It is ponderous. Its taste is acrid, styptic, and durable. It is soluble in 20 parts of cold water, and in 2 at 212°. It is also soluble in 3.8 parts of alcohol at 70°, and in almost an equal weight of boiling alcohol. It gives a green colour to syrup of violets. It is not altered by exposure to the air, and is sublimed, unchanged by heat. It is not decomposed by any of the acids; but is soluble, without alteration, in the sulphuric, nitric, and muriatic acids. It is precipitated by all the alkalies and earths, of an orange yellow colour, which gradually changes to a brick red; and by their carbonats, of a permanent yellow colour. Ammonia forms with it an insoluble, white, triple salt. It is also decomposed by several of the metals. It consists, according to Mr. Chenevix, of 69.7 quicksilver, combined with 12.3 of oxygen, and 18 muriatic acid; and, according to Mr. Zaboada, of 71.5 quicksilver, combined with 8.5 of oxygen, and 20 muriatic acid. Sir H. Davy has a very different opinion of the nature of this salt. He considers it as a compound of metallic mercury and chlorine, without any oxygen, in the proportion of one of mercury to two of chlorine, or 380 to 134, and in his nomenclature should be called *Mercurana*.

Medical use.—Muriat of mercury is one of the most violent poisons with which we are acquainted. Externally it acts as an escharotic or a caustic; and in solution it is used for destroying fungous flesh, and for removing herpetic eruptions; but even externally it must be used with very great caution. It has, however, been recommended to be given internally, by the respectable authorities of Boerhaave and Van Swieten; and it is the active ingredient of all the empirical antivenereal syrups. Were it really capable of curing the venereal disease, or equal in efficacy to the common modes of administering mercury, it would possess many advantages over them in other respects: but that it cannot be depended upon, is almost demonstrated by its use as an antivenereal being very much confined to the quacks, and by the testimony of the most experienced practitioners. Mr. Pearson says, that it will sometimes cure the primary symptoms of syphilis, especially if it produce considerable soreness of the gums, and the common effects of mercury; but that it will often fail in removing a chancre; and where it has removed it, that the most steady perseverance will not secure the patient from a constitutional affection. It is on some

* If a person should want this salt immediately, and be so situated as to be unable to procure it, it may be readily made by boiling muriatic acid over red precipitate, to dryness; dissolving the soluble part of the mass, and evaporating to crystallization.—It would probably be the readiest mode of formation even in the large way; for it requires no sublimation.

occasions, however, a useful auxiliary to a mercurial course, in quickly bringing the system under the influence of mercury, and in supporting its action after the use of frictions, and is peculiarly efficacious in relieving venereal pains, in healing ulcers of the throat, and in promoting the desquamation of eruptions. Corrosive sublimate in solution is often useful in croup, to excite screatus and vomiting, according to Dr. Barton. It is to be given for this purpose, guttatim.

Officinal Preparations.

Sub-murias hydrargyri, E. L. D.
Calx hydrargyri alba, L.

LIQUOR HYDRARGYRI OXYMURIATIS. L.

Solution of Oxymuriat of Quicksilver.

Take of
Oxymuriat of quicksilver, eight grains;
Distilled water, fifteen fluidounces;
Rectified spirit, one fluidounce.
Dissolve the oxymuriat of quicksilver in the water, and add to it the spirit.

This solution contains in each fluidounce, half a grain of the oxymuriat of quicksilver. The spirit is added to preserve the solution from spoiling.

SUB-MURIAS HYDRARGYRI; sive, Calomelas. *Ed.*

Sub-muriat of Quicksilver, or *Calomel.*

Sub-murias Hydrargyri Sublimatum; sive, Calomelas. D.

Sublimed Sub-muriat of Quicksilver, or *Calomel.*

Hydrargyri Sub-murias. L. *Sub-muriat of Quicksilver.*

Take of
Muriat of quicksilver, ground to powder in a glass mortar, four ounces;
Purified quicksilver, three ounces.
Rub them together in a glass mortar, with a little water, to prevent the acrid powder from rising, until the mercury be extinguished; and having put the powder, after being dried, into an oblong phial, of which it fills only one third, sublime from warm sand. After the sublimation is finished, having broken the phial, throw away both the red matter found near the bottom of the phial, and the white matter near its neck, and sublime the rest of the mass. Grind this into a very minute powder, which is lastly to be washed with boiling distilled water. (E.)

When quicksilver is triturated with muriat of quicksilver, it abstracts from the oxydized quicksilver of the muriat a part of its oxygen, and the whole mass assumes a blackish grey colour. When this is exposed to a degree of heat sufficient to convert it into vapour, the action of the different portions of quicksilver upon each other, and upon the muriatic acid, is much more complete: and the whole is converted into a solid white mass, consisting of mercury, in a state of less oxydizement, and combined with less acid than in the muriat, or of about twice the quantity of mercury, with the same quantity of oxygen and acid. According to Sir H Davy's theory, in the first part of the process, the additional mercury is merely mechanically divided, and by the sublimation twice the quantity of mercury is combined with the same quantity of chlorine.

The trituration of the muriat of mercury is a very noxious operation, as it is almost impossible to prevent the finer particles from rising and affecting the operator's eyes and nostrils. To lessen this evil, the Edinburgh college direct the addition of a little water. In the second part of the process, when the heat is applied, a small portion of quicksilver and undecomposed muriat first arise, and condense themselves in the highest part or neck of the phial; then the sub-muriat rises, and, being less volatile, condenses in the upper half of the body, while a small quantity of quicksilver, in a state of considerable oxydizement, remains fixed, or near the bottom. The Edinburgh college separates the sub-muriat from the other matters, and sublimes it again. The London and Dublin colleges triturate the whole together again, and re-sublime it twice. As in the first sublimation, a portion of the quicksilver and of the muriat of quicksilver always arise undecomposed, a second sublimation is necessary, especially if we triturate the whole products of the first sublimation together: but any farther repetition of the process is perfectly useless. Lest any portion of muriat should have escaped decomposition, the sub-muriat must be edulcorated with boiling distilled water, until the water which comes off forms no precipitate with alkalies.

Sub-muriat of mercury is generally obtained in the form of a white solid mass, but is capable of crystallizing in tetrahedral prisms terminated by pyramids. It has no taste, and is scarcely soluble in water or in alcohol. It is less volatile than muriat of mercury. It is blackened by light, and becomes brown or black when triturated with lime water or the alkalies. It is converted by oxymuriatic acid into muriat of quicksilver. According to Mr. Chenevix, it consists of 79 quicksilver, with 9.5 oxygen, and 11.5 muriatic acid; and according to Mr. Zaboada, of 85 quicksilver, with 4.4 oxygen, and 10.6 muriatic acid.

From Mr. Chenevix's analysis, we should conclude that 54 parts of quicksilver were sufficient to convert 100 of the muriat into sub-muriat; but, according to Zaboada's, 75 are necessary, which is exactly the proportion directed by the colleges, and is also more conformable to Sir H. Davy's view of their composition; for he considers the muriat, *mercurana*, as consisting of one proportion of mercury 380, and two of chlorine 134, and the sub-muriat, *mercurane*, of one of mercury 380, and one of chlorine 67; which gives us 73.9 as the quantity of mercury necessary to convert 100 of muriat into sub-muriat.

Medical use.—The sub-muriat* of quicksilver is one of the best

* This substance is very improperly called *sub*-muriat. Both it, and corro-

mercurials we possess. By proper management it may be made to increase, in a remarkable manner, almost any of the secretions or excretions. One grain mixed with sugar, and snuffed up the nostrils, is recommended as a powerful errhine in amaurosis. The same mixture is blown into the eye, to remove specks from the cornea. Given in doses of one grain morning and evening, or in larger doses combined with opium, to prevent it from acting as a purgative, it excites ptyalism. In larger doses of five grains and upwards, it is an excellent purgative. Combined with diuretics, it proves diuretic, and with sudorifics, sudorific.

It is one of the preparations of mercury which is capable of curing syphilis in every form. It also produces very powerful and salutary effects in obstructions and chronic inflammations of the viscera, especially of the liver; and, in general, it is applicable to every case in which mercurials are indicated.

Officinal Preparations.

Pulvis scammonii cum calomelane, L.	*vide Pulveres.*
stibii compositus, D.	*Idem.*

SUB-MURIAS HYDRARGYRI PRÆCIPITATUS. *Ed.*

Precipitated Sub-muriat of Quicksilver.

Sub-murias Hydrargyri Præcipitatum. D.

Precipitated Sub-muriat of Quicksilver.

Take of
- Diluted nitrous acid,
- Purified quicksilver, each eight ounces;
- Muriat of soda, four ounces and a half;
- Boiling water, eight pounds.

Mix the quicksilver with the diluted nitrous acid, and towards the end of the effervescence digest with a gentle heat, frequently shaking the vessel in the mean time. But it is necessary to add more quicksilver to the acid than it is capable of dissolving, that a perfectly saturated solution may be obtained.

Dissolve at the same time the muriat of soda in the boiling water, and into this solution pour the other while still hot, and mix them quickly by agitation, pour off the saline liquor after the precipitate has subsided, and wash the sub-muriat of quicksilver by repeated affusions of boiling water, which is to be poured off each time after the deposition of the sub-muriat until the water come off tasteless. (E.)

In the first part of this process, a perfectly saturated solution of nitrat of quicksilver is formed. In the second, there is a mutual decomposition of this nitrat, and of the muriat of soda; nitrat of soda is formed, and muriat of quicksilver with excess of oxyd: or, according to Sir H. Davy, the chlorine of the sodane combines with the mer-

sive sublimate are perfect muriats; the one of the red or higher oxyd; the other of the black or inferior oxyd. They are best distinguished as the *mild* or *corrosive* muriat in prescription.

cury of the nitrat, forming mercurane, while the hydrogen of the muriatic acid and the oxygen of the mercurial oxyd combine to form water, nitric acid, and soda. In this preparation, our object is to obtain the insoluble compound which results from the combination of the protoxyd of mercury with muriatic acid. In this view, the application of heat, in dissolving the mercury in the nitrous acid, is improper; for a portion at least of the mercury is converted into its peroxyd, which occasions, in the first place, the formation of a little sub-nitrat of mercury, when poured into the saline solution; and, secondly, the formation of a proportion of muriat of mercury (corrosive sublimate), which must be washed away. Accordingly, Mr. Murray has found, that more of mild, and less of corrosive muriat of mercury are formed, when the solution is made slowly and in the cold, than when the directions of the colleges are complied with.

In Sir H. Davy's view of the subject, according to which calomel and corrosive sublimates are compounds of metallic mercury, with different proportions of chlorine, the object in this preparation is to get the largest quantity of mercury dissolved in the nitrous acid, so that in decomposing muriat of soda, the smallest quantity of chlorine may be set at liberty; and as the peroxyd contains twice as much oxygen as the protoxyd, and acids seem to combine with a certain quantity of oxygen in oxyds, whatever be the quantity of metal united with them, the nitrat of the protoxyd of mercury will contain twice as much mercury as the nitrat of the peroxyd, and will of course give a double proportion of mercury to the chlorine set at liberty by the acid and oxygen.

When properly prepared, the sub-muriat obtained by precipitation scarcely differs from that obtained by sublimation. Göttling found no other difference than that the precipitated sub-muriat became grey, when triturated with lime-water, whereas the sublimed sub-muriat becomes black. But he exposed to heat half an ounce of the precipitated sub-muriat in a subliming apparatus; scarcely a grain of a reddish matter remained fixed; and the sublimed matter now became black when triturated with lime-water and differed in no respect from sub-muriat prepared in the ordinary way by sublimation. It therefore would seem to be an improvement in the process, to sublime the sub-muriat after it is precipitated; especially as by that operation it would be most effectually separated from any sub-nitrat which might be mixed with it.

There is still another way of preparing the sub-muriat of mercury, without using corrosive sublimate, which must be noticed. It was contrived by Hermbstaedt, and is recommended by Moench with the confidence derived from experience, as the very best process for preparing the sub-muriat of quicksilver.

Take of

Pure quicksilver, seven ounces and a half;

Sulphuric acid, four ounces;

Dried muriat of soda, five ounces and a half.

Distil in a glass retort the sulphuric acid, with four ounces of the quicksilver, until they be converted into a dry white mass. Triturate the sulphat of mercury thus formed, with the remaining three ounces and a half of quicksilver, until the globules disappear; then add the muriat of soda; mix them and sublime. As the product of the first sublimation still contains un-oxydized quicksilver, it is to be again triturated and sublimed. The sublimate being washed, is now pure sub-muriat of quicksilver, and weighs about six ounces.

The theory of this process is the same with that of the formation of the muriat of quicksilver. The difference between the two products arises from the proportion of quicksilver being greater, and that of the muriat of soda employed being less. We are not prepared to state the comparative economy of the processes described, for preparing sub-muriat of quicksilver; but of the last process, we may observe, that according to Mr. Chenevix's analysis, seven ounces and a half of quicksilver should furnish nine ounces and a half of sub-muriat of quicksilver; and according to M. Zaboada's nearly nine; so that there is evidently a considerable loss, which must be owing either to the formation of muriat of quicksilver, or of oxyd of quicksilver.

SUBMURIAS HYDRARGYRI AMMONIATUM. D.

Ammoniated Sub-muriat of Quicksilver.

Add to the liquor decanted from the precipitated sub-muriat of quicksilver, as much water of caustic ammonia as is sufficient to precipitate the whole metallic salt. Wash the precipitate with cold distilled water, and dry it on blotting paper.

HYDRARGYRUM PRÆCIPITATUM ALBUM. L.

White Precipitated Quicksilver.

Take of

Oxymuriat of quicksilver, half a pound;
Muriat of ammonia, four ounces;
Solution of subcarbonat of potass, half a pint;
Distilled water, four pints.

Dissolve first the muriat of ammonia, and afterwards the oxymuriat of quicksilver, in the distilled water, and add to these the solution of subcarbonat of potass. Wash the precipitate until it become insipid, and then dry it.

Muriat of quicksilver is about thirty times more soluble in a solution of muriat of ammonia than in pure water; and, during the solution, there takes place a considerable increase of temperature. Now, as these facts sufficiently prove a reciprocal action of the two salts, and as there is no decomposition, it is evident that they must have combined to form a triple salt; especially as they cannot be again separated either by sublimation or crystallization. This compound may therefore, with propriety, be termed muriat of mercury and ammonia. It is the sal alembroth of the alchemists. It is very soluble in water, and is sublimed by heat without decomposition. When to a solution of this salt we add a solution of an alkaline carbonat, either of potass, as directed by the London college, or of soda, as by that of

Berlin, there occurs a partial decomposition. The alkali combines with a portion of the muriatic acid, and reduces the muriat of mercury and ammonia to the state of a sub-muriat, which being insoluble, falls to the bottom of the solution. The proportion of muriat of ammonia has been reduced in edition 1815 to one-half, probably in consequence of a remark of Mr. Phillips.

The process of the Dublin college is new and well contrived, as it converts to use the washings of the precipitated sub-muriat, and thus partly obviates the objection of want of economy in the directions given by the college for preparing it. By the simple addition of ammonia, the whole muriat of mercury contained in the washings is precipitated, in the form of sub-muriat of mercury and ammonia.

The sub-muriat of mercury and ammonia thus precipitated, has at first an earthy, and afterwards a metallic taste. It is not soluble in water It is decomposed by heat, furnishing water, ammonia, and nitrogen gas, while 0.86 of sub-muriat of mercury remain behind. Sulphuric and nitric acids partially decompose it, and convert it into muriat of mercury, and triple salts of mercury and ammonia. Muriatic acid dissolves it, and converts it into muriat of quicksilver and ammonia. According to Fourcroy's analysis, it consists of

81 oxyd of mercury,
16 muriatic acid,
3 ammonia.

100

It is only used for ointments; and its principal recommendation is its white colour.

Officinal Preparation.

Unguentum calcis hydrargyri albi, L. *vide Unguenta.*

OXYDUM HYDRARGYRI CINEREUM. *Ed.* L.

Ash-coloured Oxyd of Quicksilver.

Pulvis Hydrargyri Cinereus. D. *Ash-coloured Powder of Quicksilver.*

Take of
Purified quicksilver, four parts;
Diluted nitrous acid, five parts;
Distilled water, fifteen parts;
Water of carbonat of ammonia, a sufficient quantity.

Dissolve the mercury in the nitrous acid; then gradually add the distilled water, and pour into the mixture as much water of the carbonat of ammonia as shall be sufficient to precipitate the whole of the oxyd of mercury, which is then to be washed with pure water and dried. (E.)

This process is intended to furnish a substitute for the black oxyd of quicksilver, on which the efficacy of the mercurials most frequently employed, and most certainly useful, depends. In these, the mercury is oxydized by trituration, in contact with the atmosphere; but this operation is both so tedious and troublesome, that it is often imperfectly performed or assisted by improper means.

In the process we are now explaining, it was supposed that as ammonia has a stronger affinity for nitric acid than oxyd of mercury has, it would separate oxyd of mercury from its solution in nitric acid; and, therefore, that the precipitate obtained was oxyd of mercury similar to that formed by trituration. But since the nature of the triple metalline salts has been better understood, this has been discovered to be an error, although the exact mode of their action is not yet explained. The grey precipitate which is formed, may, speaking generally, be called a sub-nitrat of mercury and ammonia; for it consists of oxyd of mercury and ammonia, not saturated with nitric acid; but even to ocular inspection it does not seem to be homogeneous; and when it is digested in acetic acid, it is partially dissolved, and the residuum acquires a very pale, or almost white colour. The portion dissolved seems to be black oxyd, and the white residuum to be pure sub-nitrat of mercury and ammonia, which, according to Fourcroy, crystallizes in brilliant polyhedral crystals, without smell, of an extremely styptic taste, scarcely soluble in water, is decomposed by heat, by the sulphuric and muriatic acids, and by lime, potass, and soda, and consists of 68.20 oxyd of mercury, 16 of ammonia, and 15.80 of nitric acid. According to these observations, this preparation ought not to be called the grey oxyd of mercury, and is not identical with the black oxyd of mercury prepared by trituration. If, however, it answered the same purposes, the identity would be of little consequence; but from its never having been introduced into general use, although so much more easily prepared, we may presume that it is not equal in point of efficacy.

Black oxyd of mercury may however be obtained, according to the direction of Saunders, by triturating with lime water, and subsequent edulcoration, the sublimed sub-muriat of mercury, or rather the precipitated sub-muriat, as proposed by Göttling; and that the decomposition may be more easy and complete, we shall venture to suggest, that for this preparation the latter sub-muriat should not be dried, but should be triturated with the lime-water as soon as it is edulcorated. This simple black oxyd certainly merits a fair trial.

This oxyd is said, however, by M. Braamcamp and Sigueira-Oliva, to be prepared in the greatest purity, by boiling the ash-coloured oxyd of the Edinburgh college, long and violently in water, until the triple salt be dissolved or decomposed. The proportion of oxygen, which protoxyd of mercury contains, has been very differently estimated by different chemists. Mr. Chenevix makes 100 parts of mercury unite with no less than twelve of oxygen, the Portuguese chemists with 8.1, M. Fourcroy with 4.16, M. Sefstrom and Sir H. Davy with 3.95, which last, besides the remarkable coincidence, is the most probable from other reasons.

The Prussian college directs a black oxyd of mercury to be prepared, by mixing four ounces of mercury with six ounces of nitrous acid, diluted with two ounces of distilled water, and occasionally agitating them, without heat, until the acid be saturated. The solution is then to be diluted with distilled water, and water of caustic ammonia to be dropt into it, as long as the precipitate formed is black.

Officinal Preparation.

Unguentum oxydi hydrargyri ciner. E. *vide Unguenta.*

HYDRARGYRUS CUM CRETA. L.

Quicksilver with Chalk.

Take of
  Purified quicksilver, three ounces;
  Prepared chalk, five ounces.
Triturate them together until the globules disappear. (L.)

Quicksilver has a strong affinity for oxygen, and absorbs it slowly from the atmosphere. But the combination may be considerably accelerated by agitation, and still more by triturating quicksilver with any substance which promotes its mechanical division, and thus increases its surface. With this view, quicksilver is triturated with viscid substances, as fats, honey, syrup, &c. or with pulverulent substances, as the chalk in the present example.

The black oxyd is the mildest, but at the same time the most efficacious of the preparations of mercury. Combined with chalk it is not in general use; but in the form of the common mercurial pill and ointment, it is more employed than any other preparations of the same metal except calomel.

HYDRARGYRUM CUM MAGNESIA. *Dub.*

Quicksilver with Magnesia.

Take of
  Quicksilver,
  Magnesia, each one ounce;
  Manna, half an ounce.
Triturate the quicksilver with the manna, in an earthen-ware mortar, adding some drops of water, to give the mixture the consistence of a syrup, until the metallic globules become no longer visible. Then add, with constant trituration, a drachm of the magnesia.
After they are thoroughly mixed, rub into them a pint of warm water, and shake the mixture: then let the liquor rest, and decant from the sediment as soon as it subsides. Repeat this washing twice, that the manna may be totally washed away, and, with the sediment still moist, mix the remainder of the magnesia. Lastly, dry the powder on blotting paper. D.

HYDRARGYRI OXYDUM RUBRUM. L.
Calcined Quicksilver.

OXYDUM HYDRARGYRI. D. *Oxyd of Quicksilver.*

Take of

Purified quicksilver, any quantity.

Put it into an open glass vessel, with a narrow mouth and wide bottom. Expose this to about the six-hundredth degree of heat, until the metal be converted into red scales (D.)

THIS is an extremely tedious, and therefore expensive operation, because mercury is incapable of absorbing from the atmosphere the quantity of oxygen necessary to convert it into the red oxyd, except when in the state of vapour. But as the form of a vessel, which will prevent the dissipation and loss of the mercurial vapour, will at the same time hinder the free access and frequent renewal of the air, the operation can only proceed slowly. The vessel most advantageously employed, is a wide, flat bottomed matrass, with a very narrow, almost capillary neck. Only so much mercury is introduced into it as will cover the bottom of the matrass; and the vessel is not inserted in the sand deeper than the mercury stands within it. A degree of heat is then applied sufficient to cause a gentle ebullition in the mercury, which is thus alternately converted into vapour, and condensed again in the upper part of the vessel. While in the state of vapour, it absorbs the oxygen of the air contained in the vessel: by which means it is gradually changed into a black, and then into a red, powder; but a complete conversion into the latter state is not effected in less than several months.

Red oxyd of quicksilver, thus prepared, consists of small crystalline grains, of a deep red colour, and very brilliant sparkling appearance. By heat, it may be sublimed in the form of a beautiful ruby-coloured vitrified substance. At a red heat it is decomposed, giving out oxygen gas, while the metal is revived, and is immediately volatilized. It is soluble in several of the acids; and during its solution, it does not decompose them or water. It is easily disoxydized It consists, according to Chenevix, of 100 of mercury and 17.65 oxygen; Zaboada, 11.11; Fourcroy, 8.69; and M. Sefstrom and Sir H. Davy, 7.9; which last is the most probable estimate.

Medical use.—It is not only an acrid substance, violently purgative and emetic but even caustic and poisonous. Its internal use is proscribed; but it is applied externally as an escharotic, being previously triturated to a very fine powder; or it is formed into a stimulating ointment with unctuous substances.

OXYDUM HYDRARGYRI RUBRUM PER ACIDUM NITRICUM; olim, MERCURIUS PRÆCIPITATUS RUBER. *Ed.*

Red Oxyd of Quicksilver by Nitric Acid, formerly *Red Precipitated Mercury.*

HYDRARGYRI NITRICO-OXYDUM. L. *Nitric Oxyd of Quicksilver.*

OXYDUM HYDRARGYRI NITRICUM. D. *Nitric Oxyd of Quicksilver.*

Take of
Purified quicksilver, one pound;
Diluted nitrous acid, sixteen ounces.

Dissolve the quicksilver, and evaporate the solution, with a gentle heat, to a dry white mass; which, after being ground into powder, is to be put into a glass cucurbit, and to have a thick glass plate laid upon its surface. Then, having adapted a capital, and placed the vessel in a sand bath, apply a gradually increased heat, until the matter be converted into very red scales. (E.)

In the first part of this process a fully saturated nitrat of mercury is formed. In the second part, the metal is oxydized to the maximum by the decomposition of the acid. When a sufficient heat is applied, the nitrat of mercury first melts, then exhales nitric oxyd gas, and changes its colour successively to yellow, orange, and brilliant purple red. If well prepared, it should have a crystalline scaly appearance; and it is entirely volatile at a red heat, and soluble without any residuum in nitrous acid. According to Fourcroy, it contains no nitrous acid, unless a sufficient heat has not been applied; but according to most other chemists it contains some nitrous acid; and differs from the red oxyd prepared by the action of heat alone, in always being more acrid.

This is an extremely difficult operation, and skilful operators not unfrequently fail to obtain it of that brilliant crystalline appearance which is esteemed. M. Paysse, who paid great attention to this preparation in Holland, where it is manufactured in large quantities, gives the following directions:—Dissolve 100 pounds of pure mercury in 140 of pure nitrous acid, of sp. gr. 1.3 to 1.37, promoting their action by a sand-bath; evaporate by distillation, and, when the formation of nitrous gas indicates the decomposition of the nitrat of mercury, remove the receiver, and apply a steady and moderate heat for about eight hours, until a match, which has been just blown out, inflames, on being introduced into the matrass, which is a proof that the operation is finished. To its success it is necessary, 1. That the nitrous acid be not mixed with muriatic; 2. That it be sufficiently strong; 3. That the evaporation be conducted with a moderate heat; 4. That the vessel be sufficiently large and flat, so that a large surface be exposed, and the whole equally heated; 5. That the heat be gradually augmented; and, lastly, That it be steadily maintained the whole time. Turf is the fittest fuel.

Medical use.—It is only used as an escharotic, and care must be taken that it is finely levigated, otherwise it only irritates, without destroying the parts to which it is applied. It is a very common application in chancres.

OFFICINAL PREPARATION.

Unguentum oxydi hydrargyri rubri, E. *vide Unguenta.*

SUB-SULPHAS HYDRARGYRI FLAVUS;

olim, TURPETHUM MINERALE. *Ed.*

Yellow Sub-Sulphat of Quicksilver, formerly *Turpeth Mineral.*

OXYDUM HYDRARGYRI SULPHURICUM. D.

Sulphuric Oxyd of Quicksilver.

Take of
Purified quicksilver, four ounces;
Sulphuric acid, six ounces.

Put them into a glass cucurbit, and boil them in a sand bath to dryness. Throw into boiling water the white matter, which is left in the bottom, after having reduced it to powder. A yellow powder will immediately be produced, which must be frequently washed with warm water. (E.)

THE action of sulphuric acid on mercury has been examined with considerable attention by Fourcroy. In the cold they have no action on each other, but on the application of heat, the sulphuric acid begins to be decomposed, sulphurous acid gas is extricated, and the metal is oxydized, and combines with the undecomposed acid, forming with it a white saline mass, covered with a colourless fluid. In this state it reddens vegetable blues, is acrid and corrosive, does not become yellow by the contact of the air, and is not decomposed by water either warm or cold. It is therefore super-sulphat of quicksilver, and the proportion of the acid in excess is variable.

By washing the saline mass repeatedly with small quantities of water, it is at last rendered perfectly neutral. It no longer reddens vegetable blues. It is white; it crystallizes in plates, or fine prismatic needles; it is not very acrid; it is not decomposed either by cold or boiling water: but is soluble in 500 parts of the former, and in about 250 of the latter. It is much more soluble in water acidulated with sulphuric acid. The following estimates of its composition have been made:

	Fourcroy.	Braamcamp and Sigueira.
Quicksilver,	75.	57.42
Oxygen,	8.	6.38
Sulphuric acid,	12.	31.8
Water,	5.	4.4
	100.	100.

But if, instead of removing the excess of acid from the super-sulphat of quicksilver, by washing it with water, we continue the action of the heat according to the directions of the colleges, there is a copious evolution of sulphurous acid gas, and the saline residuum is converted into a white mass, which therefore evidently contains both a larger proportion of mercury, and in a state of greater oxydizement, than the salt from which it was formed. But this white saline mass is farther analysed by the infusion of hot water; for one portion of it is dissolved, while the remainder assumes the form of a beautiful yellow powder. The portion dissolved is said to contain excess of acid. The yellow powder is, on the contrary, a sub-sulphat.

The sub-sulphat of quicksilver has a bright yellow colour, a considerable acrid taste, is soluble in 2000 parts of cold water, is also soluble in sulphuric acid, slightly diluted, and is decomposed by the nitric acid, and forms muriat of quicksilver with the muriatic acid, while the neutral sulphat forms sub-muriat. It oxydizes quicksilver, and is converted by trituration with it into a black powder. At a red heat it gives out oxygen gas, and the metal is revived. It consists of 76 mercury, 11 oxygen, 10 sulphuric acid, and 3 water.

Medical use.—It is a strong emetic, and with this intention operates the most powerfully of all the mercurials that can be safely given internally. Its action, however, is not confined to the primæ viæ; it will sometimes excite a salivation, if a purgative be not taken soon after it. This medicine is used chiefly in virulent gonorrhœas, and other venereal cases, where there is a great flux of humours to the parts. Its chief use at present is in swellings of the testicle from a venereal affection; and it seems not only to act as a mercurial, but also, by the severe vomiting it occasions, to perform the office of a discutient, by accelerating the motion of the blood in the parts affected. It is said likewise to have been employed with success, in robust constitutions, against leprous disorders, and obstinate glandular obstructions: the dose is from two grains to six or eight. It may be given in doses of a grain or two as an alterative and diaphoretic. Dr. Hope, senior, has found, that in doses of one grain, with a little powder of liquorice root, it forms a very convenient errhine.

It is an excellent errhine, mixed with snuff, or the powder of Asarum; and has been usefully employed as such in affections of the eyes and ears. It is stated by Dr. Barton to have produced salivation in two cases under his care, by such topical application.

This medicine was lately recommended as the most effectual preservative against the hydrophobia.

SULPHURETUM HYDRARGYRI NIGRUM; E. D.

Olim, ÆTHIOPS MINERALIS.

HYDRARGYRUM SULPHURETUM NIGRUM. L.

Black Sulphuret of Quicksilver, formerly *Æthiops Mineral.*

Take of
Purified quicksilver,
Sublimed sulphur, of each, equal weights.

Grind them together in a glass or earthen mortar with a glass pestle, till the mercurial globules totally disappear. (E. D.)

It is also prepared with twice the quantity of quicksilver. *Ed.*

THIS process, simple as it appears, is not, even in the present advanced state of chemistry, perfectly understood. It was formerly imagined, that the quicksilver was merely mechanically divided, and intimately mixed with the sulphur. But that they are really chemically united, is indisputably proved by the insolubility of the compound in nitrous acid. Fourcroy is of opinion, that during the trituration, the mercury absorbs oxygen, and is converted into the black oxyd, and that in this state it is slightly combined with the sulphur. The editors of Gren also suppose it to be in the state of black oxyd, but that it is combined with hydrogureted sulphur, and they direct a little water to be added during the trituration, that by its decomposition it may facilitate the process.

The black sulphuret of quicksilver, thus prepared by trituration, has a pulverulent form, is insoluble in nitric acid, is totally soluble in a solution of potass, and is precipitated unchanged from this solution, by acids. It is not altered by exposure to the air; and when heated in an open vessel, it emits sulphurous acid gas, acquires a dark violet colour, and, lastly, sublimes in a brilliant red mass, composed of crystalline needles.

The combination of quicksilver with sulphur may be much more speedily effected by the assistance of heat, by pouring the mercury, previously heated, upon the sulphur in a state of fusion, and stirring them until they cool, and form a consistent mass, which may be afterwards powdered. The sulphuret prepared by fusion, differs, however, from that prepared by trituration; for it is not soluble in a solution of potass, but is converted by long ebullition in it into the red sulphuret, and it also reddens spontaneously in course of time from the action of the air.

Black sulphuret of mercury may be also prepared in the humid way, as it is called, by precipitation, or even by direct solution. According to Berthollet, mercury agitated with sulphureted hydroguret of ammonia, forms a black sulphuret exactly resembling that prepared by trituration; but if hydrogureted sulphuret of ammonia be used, the black precipitate formed gradually assumes a red colour, and the solution contains sulphureted hydroguret of ammonia. The same phenomena take place with all the mercurial salts.

As a medicine, black sulphuret of quicksilver possesses no very conspicuous effects. It is principally used as an alterative in glandular affections, and in cutaneous diseases. It has been commonly given in doses of from 5 to 10 grains; but even in doses of several drachms, and continued for a considerable length of time, it has scarcely produced any sensible effect.

SULPHURETUM HYDRARGYRI RUBRUM. D. L.

Red Sulphureted Quicksilver.

Take of
 Quicksilver purified, forty ounces;
 Sublimed sulphur, eight ounces.
Mix the quicksilver with the melted sulphur; and if the mixture take fire, extinguish it by covering the vessel; afterwards reduce the mass to powder and sublime it. (L. D.)

As soon as the mercury and sulphur begin to unite, a considerable explosion frequently happens, and the mixture is very apt to take fire, especially if the process be somewhat hastily conducted. This accident the operator will have previous notice of, from the matter swelling up, and growing suddenly consistent; as soon as this happens, the vessel must be immediately close covered.

During the sublimation, care must be had that the matter does not rise into the neck of the vessel, so as to block up and burst the glass. To prevent this, a wide-necked bolt head, or rather an oval earthen jar, coated, should be chosen for the subliming vessel. If the former be employed, it will be convenient to introduce at times an iron wire, somewhat heated, in order to be the better assured that the passage is not blocking up; the danger of which may be prevented by cautiously raising the vessel higher from the fire.

If the ingredients be pure, there is no residuum. In such cases, the sublimation may be known to be over, by introducing a wire as before, and feeling with it the bottom of the vessel, which will then be perfectly smooth: if any roughness or inequalities be perceived, either the mixture was impure, or the sublimation is not completed; if the latter be the case, the wire will soon be covered over with the rising cinnabar.

M. M. Tucckert and Paysse have described, from actual observation, the process followed in the manufactory of M. Brand at Amsterdam, where 48,000 pounds of cinnabar are annually prepared. 150 pounds of sulphur are mixed with 1080 pounds of mercury, and exposed to a moderate heat in a bright iron-kettle, one foot deep, and two and a half in diameter. The black sulphuret of mercury, thus produced, is reduced to powder, and put up in earthen pots capable of containing about a quart of water. The subliming apparatus consists of three large coated crucibles, bound with iron, and surmounted with domes of iron, through the top of which the black sulphuret is introduced. These are built into a furnace, in such a manner that two-thirds of each apparatus is exposed to the action of the flame, which circulates freely around them. The fuel made use of is turf, which is found preferable to all others, probably from its affording a steady and moderate heat. The fire is kindled in the evening; and when the crucibles have become red, the pots containing the black sulphuret are emptied into them successively, at first one into each, and afterwards two, three or more, at a time, according to the violence of the inflammation which succeeds. Sometimes the flame rises four, or even six feet above the domes; when its violence is a little abated, the aperture is covered closely up with a lid of iron. In this manner the whole quantity is introduced into the three crucibles in about thirty-four hours. The fire is steadily supported in a proper degree for thirty-six hours, and the sublimation assisted by stirring the matter every quarter of an hour with a triangle of iron, until the whole is sublimed, when the fire is allowed to expire. The colour of the flame changes during the process from a dazzling white to a yellow white, orange yellow, blue and yellow, green, violet, and blue and green. When it acquires a fine sky-blue, or indigo colour, and rises only and inch or two above the aperture, the aperture is closed hermetically, and luted with clay and sand. After the apparatus has cooled, 400 pounds of sublimed red sulphuret of mercury are found in each, so that there is a loss of 30 pounds on the 1230 of materials employed. The process by which cinnabar is converted into vermilion is kept a secret by the Dutch; but M. Paysse discovered, that by keeping some levigated cinnabar in the dark, covered with water, and stirred frequently for a month, it acquires the brilliant colour of Chinese vermilion.

When taken out of the subliming vessels, the red sulphuret of quicksilver is a brilliant crystalline mass, and first acquires its very rich colour when reduced to the form of a fine powder by trituration. It has neither smell nor taste, and is insoluble in water and in alcohol. In close vessels it sublimes entirely unchanged, but requires for this purpose a pretty great degree of heat. It is not soluble in any acid, and is only decomposed by the nitro-muriatic, which dissolves the quicksilver, and separates the sulphur. It is not decomposed by boiling it with solutions of the alkalies, but is decomposed by melting it with potass, soda, lime, iron, lead, copper. antimony, and several other metals. Proust has proved it to consist of 85 quicksilver, and 14 or $14\frac{1}{2}$ sulphur, and that the quicksilver is not oxydized to a maximum, as had been falsely supposed, but in its metallic state. His analysis is confirmed by the other methods by which cinnabar may be prepared. Thus, the black sulphuret of quicksilver by fusion is converted into the red sulphuret, by boiling it in a solution of potass, which can only act by dissolving the sulphureted hydrogen and superfluous sulphur. Sub-muriat, or sub-sulphat of mercury, sublimed with sulphur, furnish red sulphuret of mercury, and muriat or sulphat, of mercury.

Medical use.—Red sulphuret of quicksilver is sometimes used in fumigations against venereal ulcers in the nose, mouth and throat. Half a drachm of it burnt, the fume being imbibed with the breath, has occasioned a violent salivation. This effect is by no means owing to the medicine as a sulphuret; for when set on fire, it is no longer such, but mercury resolved into vapour, and blended with the sulphurous acid gas; in which circumstances this mineral has very powerful effects.

Mr. Pearson, from his experiments on mercurial fumigation, concludes, that where checking the progress of the disease suddenly is an object of great moment, and where the body is covered with ulcers or large and numerous eruptions, and, in general, to ulcers, fungi, and excrescences, the vapour of mercury is an application of great efficacy and utility; but that it is apt to induce a ptyalism rapidly, and great consequent debility, and that for the purpose of securing the constitution against a relapse, as great a quantity of mercury must be introduced into the system, by inunction, as if no fumigation had been employed.

PHOSPHAS HYDRARGYRI.

MERCURIUS PHOSPHORATUS. *Phosphat of Mercury.*

Take of
Sulphuric acid, eight ounces;
Water, four pounds.
Mix them carefully in a capacious glass vessel, and add
White calcined bones powdered, 14 ounces.

Place the vessel in a temperature of 60° for three days to digest, stirring the mixture frequently with a glass rod, then filter the whole through fine linen, washing the residuum with distilled water till completely edulcorated. Evaporate to dryness, and dissolve in the smallest possible quantity of luke-warm water, by which a considerable portion of gypsum will remain undissolved. After straining off all the liquor, again dilute with distilled water and a solution of the purest potass, till it be completely saturated. The small portion of gypsum still held in solution will thus be decomposed, and some calcareous earth precipitated, which must be separated by filtration. Evaporate to a proper consistence, and expose in a cool place to crystallize. A small portion of vitriolated tartar first appears from the decomposition of the gypsum; but if the liqour be again evaporated, the phosphorated potass will be produced in rhomboidal prismatic crystals. Dissolve these in distilled water, and decompose by a super-saturated solution of mercury in the nitric acid. The precipitate after complete edulcoration with warm distilled water should be slowly dried, and is the purest phosphat of mercury.

THE above is Bergmann's method of procuring the phosphat of mercury. It may be also obtained, by adding phosphoric acid in a liquid form to a solution of mercury in nitric acid.*

Phosphat of mercury is a very active preparation, and requires to be used with great caution, as it is otherwise apt to produce nausea, violent vomiting, ptyalism, &c. even in doses not exceeding half a grain. The following formula is employed to prevent these effects.

Take of
Phosphat of mercury, four grains;
Powdered cinnamon, fourteen grains;
White sugar, half a drachm.
Mix and make into eight powders, of which one is to be taken every

* An easier method appears to be the union of a solution of phosphat of soda, and nitrat of mercury. The superior affinity of the nitric acid to soda, causes it to leave the mercury, whilst the phosphoric acid unites with the mercury in the form of a fine white precipitate, which is the phosphat of mercury, and which must be thoroughly edulcorated with boiling distilled water. *Am. Editor.*

morning and evening, unless ptyalism is induced, when it must be suspended. Some bear from one to two grains without inconvenience.

This remedy heals inveterate venereal ulcers in a short time, especially such as are seated about the pudenda. In venereal inflammations of the eyes, chancres, rheumatisms and chronic eruptions, it has proved of eminent service. It is on the whole, a valuable medicine in the hands of a judicious practitioner.

It is particularly preferable over other mercurial preparations in an inveterate stage of syphilis, especially in persons of torpid insensible fibres; in cases of exostosis, as well as of obstructions in the lymphatic system; and in chronic complaints of the skin, &c.*

HYDRASTIS CANADENSIS. *Yellow Root.*

This is a common plant in various parts of the United States. The root is a very powerful bitter. When dried, it has a strong and virose smell. A spiritous infusion of the root is employed as a tonic bitter in the western parts of Pennsylvania. A cold infusion of the root in water is also used as a wash in inflammation of the eyes. The Cherokee Indians employ a plant in the cure of cancer, which is thought to be the Hydrastis. The root supplies us with a most brilliant yellow colour, which will probably be found a most valuable dye.†

HYOSCYAMUS NIGER. *Herba. Semen. Ed.* L. D.

Common Henbane. The herb and seeds.

Willd. g. 378. *sp.* 1. *Smith, g.* 99. *Pentandria Monogynia.*—Nat. ord. *Solanaceæ.*

Henbane is an annual plant, which grows in great abundance in most parts of Britain, by the road sides, and among rubbish, and flowers in July. Its smell is strong and peculiar, and, when bruised, something like tobacco, especially when the leaves are burnt; and, on burning, they sparkle, as if they contained a nitrat: when chewed, however, they have no saline taste, but are insipid, mild, and mucilaginous. Henbane, in a moderate dose, often produces sweat, and sometimes an eruption of pustules, and generally sound sleep, succeeded by serenity of mind, and recruited vigour of the body; but like the other narcotics, instead of these, it sometimes gives rise to vertigo, headach, and general uneasiness. With particular individuals, it occasions vomiting, colic pains, a copious flow of urine, and sometimes purging. In excessive doses, its effects are fatal; general debility, delirium, remarkable dilatation of the pupils of the eyes, convulsions, death. Upon the whole, like opium, it is a powerful anodyne; and, like cicuta,

* London Medical and Physical Journal.

† Barton's Collections, Part I. p. 9. Part II. p. 13.

it is free from any constipating effect, having rather a tendency to move the belly.

Medical use.—From the writings of Dioscorides and others, it appears, that different species of henbane have been long used in the practice of medicine. By Celsus it was applied externally as a collyrium in ophthalmia; for allaying the pain of the tooth-ach; and he gave it internally as an anodyne.

Its use, however, was for a long period entirely relinquished, until revived by Dr. Stork of Vienna, in those cases where an anodyne is requisite, and where there are objections to the use of opium. It is employed in wandering rheumatic pains, in indurations of the mammæ from retained milk, painful swellings, whether scirrhous or not, scrofulous and cancerous ulcers, inflamed piles, and spasms of the bowels from increased irritability; under the form of a cataplasm of the bruised leaves, with bread and milk; of an ointment, made of the powder of the leaves, with wax and oil; of a simple powder, sprinkled on the sore, or of a decoction in milk as an injection. An infusion prepared by digesting the bruised leaves in olive oil, is also usefully applied in inflammation of the bowels, kidneys, testicles, urethra, painful retention of urine, and in blind piles.

An extract from the leaves, or from the seeds, is the form in which it is given internally; and it has been used with advantage in a variety of nervous affections, as mania, melancholia, epilepsy, hysteria, trismus. and spasms from injured nerves, in rheumatism and arthritis, in glandular swellings, in obstinate ulcerations, and in every case where it is desirable either to allay inordinate action, or to mitigate pain, its dose may be gradually increased from half a grain. Colin pushed it to the length of 30 grains for a dose.

The extract of henbane has been lately much used by oculists for dilating the pupils of the eyes, in order to facilitate the extraction or breaking down of the cataract, to diminish sensibility, to destroy adhesions, to reduce protrusions of the iris, and to dilate contraction of the pupil. The mode of application is by dropping a few drops of solution of the extract into the eye, or applying them with a camel's hair brush. The greatest effect is produced in about four hours, and it is generally over in twelve. Vision is not impaired during its action.

HYPERICUM PERFORATUM. Hypericum. *Flos.* L.

Common St John's-wort. The flower.

Polyadelphia Polyandria.—Nat. ord. *Ascyroideæ.*

This plant is perennial, and grows wild in woods and uncultivated places in Britain. Its taste is rough and bitterish, and its smell disagreeable. It abounds with vesicles, containing a transparent matter, so that when viewed, by holding the plant between the eye and the light, they resemble perforations. From the fresh flower buds, a red juice may be expressed, which imparts its colour to alcohol, water, and fixed oils. The red colour of the infusion is brightened by acids, and is changed to black by sulphat of iron. Neumann got from 480 grains, 300 of watery, and 40 of alcoholic extract, and inversely 240 alcoholic, and 120 watery. Nothing considerable arose in distillation with either water or alcohol.

HYSSOPUS OFFICINALIS. *Herba. Folia. Ed.* D.

Hyssop. The herb.

Willd. g. 1096. *sp.* 1.—*Didynamia Gymnospermia.*—Nat. ord. *Verticillatæ.*

Hyssop is a perennial herb, which grows wild in Germany. Its leaves have an aromatic smell, and a warm pungent taste. Their virtues depend entirely on an essential oil which rises in distillation both with water and alcohol. Besides the general virtues of aromatics, they were formerly recommended in humoral asthmas, coughs, and other disorders of the breast and lungs, and were said to promote expectoration.

I. J.

ICHTHYOCOLLA. - *Vide Accipenser.*

INFUSA.—*INFUSIONS.*

We have already explained the sense in which we employ the term infusion. We confine it to the action of a menstruum, not assisted by ebullition, or any substance consisting of heterogenous principles, some of which are soluble, and others insoluble, in that menstruum. The term is generally used in a more extensive, but we are inclined to think, a less correct, sense: thus, lime-water and the mucilages, which are commonly classed with the infusions, are instances of simple solution, and the chalk mixture is the mechanical suspension of an insoluble substance. When the menstruum used is water, the solution is termed simply an *infusion;* but when the menstruum is alcoholic, it is called a *tincture;* when wine or vinegar, a *medicated wine* or *vinegar* Infusions in water are extremely apt to spoil, and are generally extemporaneous preparations.

INFUSUM ANTHEMIDIS. L.

Infusion of Chamomile.

Take of
Chamomile flowers, two drachms;
Boiling water, half a pint.
Macerate, for ten minutes, in a vessel loosely covered, and filter.

This is a very common extemporaneous prescription under the title of *chamomile tea*. It is a good stomachic.

INFUSUM ARMORACIÆ COMPOSITUM. L.

Compound Infusion of Horse-Radish.

Take of
Fresh horse-radish root, sliced,
Mustard seed, bruised, of each one ounce;
Boiling water, one pint.
Macerate for two hours, in a loosely covered vessel, and strain; then add of
Compound spirit of horse-radish, one fluidounce.

This is a pungent and stimulant infusion.

IMFUSUM AURANTII COMPOSITUM. L.

Compound Infusion of Orange-peel.

Take of
Orange-peel, dried, two drachms;
Lemon-peel, fresh, one drachm;
Cloves, bruised, half a drachm;
Boiling water, half a pint.
Macerate for ten minutes, in a loosely covered vessel, and strain.

A stomachic infusion.

INFUSUM CALUMBÆ. L.

Infusion of Columbo.

Take of
Columbo root, sliced, one drachm;
Boiling water, half a pint.
Macerate for two hours, in a loosely covered vessel, and strain.

A stomachic bitter.

INFUSUM CARYOPHYLLORUM. L.

Infusion of Cloves.

Take of
Cloves, bruised, one drachm;
Boiling water, half a pint.

Macerate for two hours in a vessel loosely covered, and strain.

AN aromatic stimulant.

INFUSUM CASCARILLÆ. L.

Infusion of Cascarilla.

Take of
Cascarilla root, bruised, half an ounce;
Boiling water, half a pint.
Macerate for two hours, in a loosely covered vessel, and strain.

AN aromatic stimulant.

INFUSUM CINCHONÆ OFFICINALIS. *Ed.*

Infusion of Cinchona Bark.

INFUSUM CORTICIS PERUVIANI. D. *Infusion of Peruvian Bark.*

Take of
Peruvian bark in powder, one ounce;
Water one pound.
Macerate for twenty-four hours, and filter. (E.)

INFUSUM CINCHONÆ SINE CALORE. D.

Cold Infusion of Cinchona.

Take of
Peruvian bark, in coarse powder, one ounce;
Cold water, twelve ounces, by measure.
Triturate the bark with a little of the water, and add the remainder during the trituration. Macerate for twenty-four hours, and decant the pure liquor.

THIS is a very elegant form of exhibiting the active principles of cinchona bark, and that in which it will sit lightest on weak and delicate stomachs. The trituration directed by the Dublin college will promote the solution. The residuum of the cold infusion may be afterwards employed in making other preparations, especially the extract, for its virtues are by no means exhausted. But it must never be dried, and sold, or exhibited in substance, for that would be a culpable fraud.

INFUSUM CUSPARIÆ. L.

Infusion of Angustura.

Take of
Angustura bark, bruised, two drachms;
Boiling water, half a pint.
Macerate for two hours, in a loosely covered vessel, and strain.

A stimulating febrifuge.

INFUSUM DIGITALIS PURPUREÆ. *Ed.*

Infusion of Foxglove.

Take of
Dried leaves of foxglove, one drachm;
Boiling water, eight ounces;
Spirit of cinnamon, one ounce.
Macerate for four hours, and filter. (E.)

This is the infusion so highly recommended by Withering. Half an ounce, or an ounce of it, may be taken twice a day in dropsical complaints. The spirit of cinnamon is added to improve its flavour, and to counteract its sedative effects.

INFUSUM GENTIANÆ COMPOSITUM. *Ed.* L. D.

Compound Infusion of Gentian.

Take of
Bruised gentian root, half an ounce;
Dried peel of Seville oranges, one drachm;
Coriander seeds, half a drachm;
Diluted alcohol, four ounces;
Water, one pound.
First pour on the alcohol, and three hours thereafter add the water; then macerate without heat for twelve hours, and strain.

This infusion is an extremely good bitter, and is of great service in all cases where bitters in general are necessary. It strengthens the stomach, and increases the appetite; besides acting as a tonic on the other parts of the body, and on the vascular system.

INFUSUM LINI. L.

Infusion of Linseed.

Take of
Linseed, bruised, one ounce;
Liquorice root, sliced, half an ounce;
Boiling water, two pints.
Macerate for four hours near the fire, in a loosely covered vessel, and strain.

This is a mucilaginous emollient liquor, much used in gonorrhœas, strangury, and in pectoral complaints.

INFUSUM MENTHÆ COMPOSITUM. *Dub.*

Compound Infusion of Mint.

Take of
The leaves of spearmint, dried, two drachms;
Boiling water, as much as will afford six ounces of the infusion, when filtered.

Digest for half an hour, in a covered vessel; strain the liquor when cold, and then add of

Double refined sugar, two drachms;
Oil of spearmint, three drops, dissolved in
Compound tincture of cardamums, half an ounce. Mix.

This infusion is slightly stimulating and diaphoretic, and forms a very agreeable herb-tea, which may be used in any quantity in diet, or as a vehicle for more active remedies.

INFUSUM MIMOSÆ CATECHU; vulgo, INFUSUM JAPONICUM. *Ed.*

Infusion of Catechu, commonly called *Japonic Infusion.*

Take of

Extract of catechu, two drachms and a half;
Cinnamon, half a drachm;
Boiling water, seven ounces;
Simple syrup, one ounce.

Macerate the extract and cinnamon in the hot water, in a covered vessel, for two hours, then strain it, and add the syrup. (E.)

Extract of catechu is almost pure tannin. This infusion is therefore a powerfully astringent solution. The cinnamon and syrup render it a very agreeable medicine, which will be found serviceable in fluxes proceding from a laxity of the intestines. Its dose is a spoonful or two every other hour. As this preparation will not keep above a day or two, it must always be made extemporaneously. The two hours' maceration, therefore, becomes very often extremely inconvenient; but it may be prepared in a few minutes by boiling, without in the least impairing the virtues of the medicine.

INFUSUM QUASSIÆ. L.

Infusion of Quassia.

Take of

Quassia shavings, a scruple;
Boiling water, half a pint.

Macerate for two hours in a loosely covered vessel, and strain.

One of the most intense and purest bitters.

INFUSUM RHEI PALMATI. *Ed.*

Infusion of Rhubarb.

Take of

Rhubarb bruised, half an ounce;
Boiling water, eight ounces;
Spirit of cinnamon, one ounce.

Macerate the rhubarb in a close vessel with the water, for twelve hours; then having added the spirit, strain the liquor. (E.)

This appears to be one of the best preparations of rhubarb, when designed as a purgative; water extracting its virtues more effectually than either vinous or spiritous menstrua.

INFUSUM ROSÆ. L. D.

Infusion of Roses.

Olim, Tinctura Rosarum; formerly *Tincture of Roses.*

Take of
The petals of red roses, dried, one ounce;
Boiling water, five pounds;
Sulphuric acid, one drachm;
White sugar, two ounces.

Macerate the petals with the boiling water in an earthen vessel, which is not glazed with lead, for four hours; then having poured on the acid, strain the liquor, and add the sugar. (E.)

In this infusion the rose leaves have very little effect, except in giving the mixture an elegant red colour. Its sub-acid and astringent virtues depend entirely on the sulphuric acid. Altogether, however, it is an elegant medicine, and forms a very grateful addition to juleps in hemorrhagies, and in all cases which require mild coolers and sub-astringents: it is sometimes taken with boluses or electuaries of the bark, and likewise makes a good gargle.

INFUSUM SENNÆ SIMPLEX. L.

Simple Infusion of Senna.

Infusum Sennæ. D. *Infusion of Senna.*

Take of
Senna, three drachms;
Ginger, powdered, half a drachm;
Boiling water, as much as will yield a filtered infusion of six ounces.

Macerate them for an hour, in a covered vessel, then filtered. (D.)

This is a very elegant infusion of senna, the ginger acting as an useful corrigent. But if the senna were employed to the quantity of a drachm and a half, or two drachms only, in place of the quantity here ordered, it would be more convenient, as it is of advantage that it should be used fresh as here prepared. Of the present infusion, an ounce or two is a sufficient dose.

INFUSUM SENNÆ TARTARISATUM. L.

Tartarised Infusion of Senna.

Take of
  Senna, one ounce and a half;
  Coriander seeds, bruised, half an ounce;
  Crystals of tartar, two drachms;
  Distilled water, one pint.
Dissolve the crystals of tartar by boiling in the water; then pour the liquor, as yet boiling, on the senna and seeds. Macerate for an hour in a covered vessel, and strain when cold. (L.)

THE addition of the super tartrat of potass renders the taste of the senna less unpleasant, and also promotes its action.

INFUSUM TAMARINDI CUM SENNA. *Ed.*

Infusion of Tamarinds and Senna.

Take of
  Preserved tamarinds, one ounce;
  Senna, one drachm;
  Coriander seeds, half a drachm;
  Brown sugar, half an ounce;
  Boiling water, eight ounces.
Macerate them for four hours, occasionally agitating them, in a close earthen vessel, not glazed with lead, and strain the liquor.
It may also be made with double, triple, &c. the quantity of senna. (E.)

THIS forms a mild and useful purge, excellently suited for delicate stomachs, and inflammatory diseases. The taste of the senna is well covered by the aromatic sugar and by the acidity of the tamarinds.

INFUSUM SIMAROUBÆ. L.

Infusion of Simarouba.

Take of
  Simarouba bark, bruised, half a drachm;
  Boiling water, half a pint.
Macerate for two hours in a loosely covered vessel, and strain.

A bitter aromatic.

INFUSUM TABACI. L.

Infusion of Tobacco.

Take of
  Tobacco leaves, a drachm;
  Boiling water, a pint.
Macerate for an hour in a loosely covered vessel, and strain.

This is a narcotic diuretic, which was used with much success in dropsies by Dr. Fowler.

INFUSUM VALERIANÆ. *Dub.*

Infusion of Valerian.

Take of

Valerian root, in coarse powder, two drachms;

Boiling water, seven ounces, by measure.

Digest for half an hour, and strain it when cold.

Valerian tea is a very excellent antispasmodic, and often proves serviceable in hysteric cases, where the stomach will not bear the powder in substance.

INULA HELENIUM. *Radix.* D.

Elecampane. The Root.

Willd. g. 1489 *sp.* 1. *Smith, g* 369. *sp.* 1. *Syngenesia Superflua.* Nat. ord. *Compositæ radiatæ.*

This is a very large downy perennial plant, sometimes found wild in moist rich soils. It flowers in July and August. The root, especially when dry, has an agreeable aromatic smell: its taste, on first chewing, is glutinous and as it were somewhat rancid; in a little time it discovers an aromatic bitterness, which by degrees becomes considerably acrid and pungent.

Neumann got from 480 grains of the dry root 390 watery, and 5 alcoholic extract, and inversely 150 alcoholic, and 300 watery. In distillation alcohol elevated nothing; but the distilled water was first observed by Geoffroy to be milky, and mixed with flocculi of a cineritious concrete volatile oil, partly swimming, and partly sinking in the water. He also ascertained that it was fusible, and compares it to camphor or benzoic acid. Neumann likewise examined it, and considers it as a peculiar substance, having some resemblance to camphor. He found that it melts with a gentle heat, and when cold, appears softer and more unctuous; that it never assumes a crystalline form, but when dry proves opaque and crumbly; that laid on burning coals it totally exhales; that it is soluble in alcohol, but insoluble in water; and that by keeping it gradually loses the smell of elecampane. It has also been discovered by Rose to contain a matter having some analogy with starch, the properties of which have been described under the title of Inulin.

According to Funke's analysis, elecampane root contains, 1. A crystallizable volatile oil; 2. A peculiar feculum; 3. An extractive matter; 4. Free acetic acid; 5 A crystallizable resin; 6. Albumen; 7. Fibrous matter. The ashes contain carbonats of lime and magnesia, silica, and a trace of iron.

Medical use.—It is a gently stimulating medicine, nearly similar in its action to angelica. The extract is merely a slight bitter, as the essential oil is totally dissipated in the preparation.

IPECACUANHA. - *Vide Cephaelis.*

IRIS.

Willd. g. 97. *Triandria Monogynia.*—Nat. ord. *Ensatæ.*

IRIS FLORENTINA. *Sp.* 7. *Radix. Ed.* Iris. L.

Florentine Orris. The root.

This is a perennial plant, a native of the south of Europe. The dried roots are imported from Italy. They are white, flattish, knotty, and have a very slightly bitter taste, and an agreeable smell, resembling that of violets.

Neumann got from 480 parts, 77 alcoholic, and afterwards 100 watery; and inversely 180 watery, and 8 alcoholic. The distilled water smells a little of the root, but exhibits no appearance of oil. They are chiefly used as a perfume.

Officinal Preparation.

Trochisci amyli, L. - - - - - *vide Trochisci.*

IRIS PSEUDACORUS. *Sp.* 24. Iris. *Radix.* D.

Water-flag. The root.

This plant is perennial. and grows in great abundance by the brinks of rivers, and in other watery places: the root has an acrid taste; and when fresh, is strongly cathartic.

Medical use.—The expressed juice, given to the quantity of sixty or eighty drops every hour or two, and occasionally increased, has been productive of very copious evacuations, after jalap, gamboge, and other strong purgatives had proved ineffectual; and it is in this form only that it is used; for by drying, it entirely loses its purgative effects.

We have here another proof of the necessity of denominating the officinal vegetables by their systematic names; for in England, *Radix Iridis* is a pleasant perfume, in Ireland a drastic purgative; and as consultations are not unfrequently sent from the one country to the other, ignorance of this circumstance might give rise to unpleasant consequences.

Some of our native species of Iris, are powerful cathartics; as the Iris Versicolor and Verna; they are used by the southern Indians.*

JALAPA. - - - *Vide Convolvulus.*

JUGLANS REGIA. Juglans. *Fructus Immaturus.* L.

The Walnut-tree. The unripe Fruit.

Monoecia Polyandria.—Nat. ord. *Amentaceæ.*

This beautiful tree, although a native of Persia, grows to a very large size, and produces ripe fruit in most parts of England. The fruit consists of a thick, fleshy, green, smooth rind, which incloses the proper nut. When unripe, they have a peculiar smell, and a bitterish astringent taste.

Medical use.—They have been supposed to possess tonic and anthelmintic virtues. The green rind has been celebrated as a powerful anti-venereal remedy; but it possesses no real anti-syphilitic virtues, although it forms a very useful addition to the compound decoction of sarsaparilla, where pains of the limbs and indurations of the membranes remain after the venereal disease has been cured by mercury, and in many of those cutaneous diseases which are attended with aridity of the skin. A decoction of the green rind has also been recommended as a useful application to old ulcers.

JUGLANS CINEREA. *White Walnut. Butternut-Walnut. Inner bark, and unripe fruit.*

During the American war, the extract, made from the inner bark of this tree, attracted the attention of Dr. Rush, and other medical men in our military hospital; and, being frequently administered to patients under the operation of inoculated small pox, it was proved to be an excellent substitute for jalap or other cathartics. It is now esteemed as a valuable purgative, in doses from ten to thirty grains, not occasioning heat or irritation; and is greatly commended in cases of dysentery. Conjoined with calomel it is rendered more active and efficacious, especially in bilious habits. As this extract is often very carelessly prepared by the country people, it ought to be prepared by the apothecaries, or practitioners themselves; and as a domestic medicine of considerable importance, it should be adopted by every physician. The bark of the root of this tree will excite a blister; and the bark and shells of the nuts dye a good brown colour. A decoction of the inner bark is advantageously employed as a cathartic in the disease of horses, called the *yellow water*. The extract should be made from the bark in the month of May or June.

* Barton's Collections, Part I. p. 31.

JUNIPERUS.

Willd. g. 1841. *Smith, g.* 421. *Dioecia Monadelphia.*—Nat. ord. *Coniferæ.*

JUNIPERUS COMMUNIS. *Baccæ. Cacumen. Ed.* L. D.

Willd. sp. 10. *Smith, sp.* 1.

Common Juniper. The berries and tops.

D.	*Dambesien, Geneverbessen.*	P.	*Bagas de zimbro.*
DA.	*Enebær.*	POL.	*Jalowiec iagody.*
F.	*Baies de Genevre.*	R.	*Moshshuchü.*
G.	*Wachholder beeren.*	S.	*Bayas de enebro.*
I.	*Cocole di ginepro.*	SW.	*Enbär.*

This is an ever-green shrub, growing on heaths and hilly grounds in all parts of Europe: the berries are brought from Holland and from Italy.* The Italian berries are in general reckoned the best. Juniper berries have a strong not disagreeable smell, and a warm pungent sweet taste, which if they are long chewed, or previously well bruised, is followed by a bitterish one. Their predominant constituents are essential oil, and a sweet mucilaginous matter.

Medical use.—To the oil they are indebted for their stimulating carminative, diaphoretic, and diuretic properties. They are most commonly used in the form of infusion, as a diuretic drink in dropsy. The essential oil may be separated by distillation. It possesses the same properties in a higher degree, and imparts them to ardent spirits. The peculiar flavour, and well known diuretic effects of Hollands, are owing to the oil of Juniper. The decoction and extract are very inert preparations, of the class of bitters.

Every part of the plant contains the same essential oil; therefore an infusion of the tops is likewise diuretic. The wood, also, was formerly officinal. In warm countries a resin exudes from the juniper-tree. It is called sandarac, and is often mixed with mastich. It is not a pure resin, for, according to Mr. Giese, about one-fifth of it is not soluble in water or in alcohol, but in ether; resembling in these respects copal.

Officinal Preparations.

Ol. vol. juniperi communis, E. L. D. *vide Olea volatilia.*
Spiritus juniperi com. comp. E. L. D. *Spiritus destillati.*

* The berries of the Juniper might be collected with little trouble, in sufficient quantities to prevent their importation into the United States.

JUNIPERUS LYCIA. *Gummi-resina. Sp.* 14. *Ed.* L. D.

Olibanum. A gum-resin.

D.	*Wierook.*	P.	*Incenso, Incenso macho, Olibano.*
DA.	*Virog, Virak.*	R.	*Ladon prostoi.*
F.	*Encens, Encens fin ou male, Oliban.*	S.	*Incienso, Incienso macho, Olibano.*
G.	*Weihrauch.*	SW.	*Veirauch, Virack.*
I.	*Incenso, Olibano.*		
POL.	*Kadzidlo.*		

Olibanum is principally collected in Arabia, and brought from Mecca to Cairo, from whence it is imported into Europe. It consists of transparent brittle grains of different sizes, not larger than a chesnut, of a red or yellow colour, having little taste, and a peculiar aromatic smell. Neumann got from 480 grains, 346 alcoholic, and 125 watery extract, and inversely 200 watery, and 273 alcoholic. The distilled spirit and oil both smelt of olibanum, but no oil separated. It forms a transparent solution with alcohol, and a milky fluid when triturated with water; it is not fusible, but inflammable, and burns with an agreeable smell. It is the frankincense of the ancients; and the diffusion of its vapour around the altar still forms part of the ceremonies of the Greek and Roman Catholic churches.

JUNIPERUS SABINA. *Sp.* 6. *Folia. Ed.* L. D.

Savine. The leaf.

This is an evergreen shrub, a native of Siberia and Tartary, but not unfrequent in our gardens. The leaves have a bitter, acrid, biting taste, and a strong disagreeable smell: distilled with water, they yield an essential oil, in considerable quantity.

Medical use.—Savine is a warm stimulating medicine, capable of producing diaphoresis, and increasing all the secretions, but apt to excite hemorrhagy, especially from the uterus. It is also recommended as an anthelmintic, and said to be very efficient in the cure of gout.

Internally, a conserve of the fresh leaves is exhibited in doses of from half a drachm to a drachm.

Externally, the leaves are applied in the form of powder or infusion, to warts, carious bones, and ulcers; and in cases of gangrene, psora, and tinea. The essential oil is a very active remedy. This plant is much employed by Farriers.

Officinal Preparation.

Oleum volatile juniperi sabinæ, E. D. - *vide Olea volatilia.*

JUNIPERUS VIRGINIANA. *Common Red Cedar Tree. The leaves.*

The red cedar tree is a native of the United States, and grows to the height of fifteen or twenty feet. Its berries are smaller than those of the true juniper. In Virginia and Carolina the berries are distilled into brandy. The leaves of this tree are now brought into notice by the investigation of Dr. Aaron Dexter, Professor of Chemistry, and Materia Medica, in the University at Cambridge. He has found this to be the only species of juniper in the United States, whose leaves agree in their properties with those of the savine, directed by Dr. Crowther, as the basis of the savine ointment.

K.

KALMIA LATIFOLIA. *Broad-leaved Laurel. Calico-tree.*

This plant kills sheep and other animals. The Indians use a decoction to destroy themselves. The powdered leaves are employed with success in tinea capitis, and in certain stages of fever. A decoction of it is used for the itch, but it should be cautiously applied. The brown powder attached to the footstalks of the leaves, and about the seeds, is errhine. The powdered leaves with lard form an ointment in herpes. In syphilis this plant has seemed useful. A saturated tincture of the leaves in proof spirit, is an active remedy.*

KINO. *Ed.* L. D.

Succus spissatus eucalypti resiniferæ. E.
Resina buteæ frondosæ. D.
Arboris, nondum descriptæ, Africanæ, gummi-resina. L.

Kino, the inspissated juice of the brown gum-tree of Botany Bay. The resin of the Butea frondosa. The gum-resin of a non-descript African tree.

Kino was first noticed by Dr. Fothergill, who received it from a druggist as a very fine kind of dragon's blood, and described it as the produce of an African tree called the Pau de Sangue. In Moor's travels up the Gambia, there is a very imperfect account of the tree from which it exudes, and a copy of directions from the African company to their factors, to collect and purchase this gum: but it seems to have been brought to them only in very small quantities, and mixed with gum Senegal. This kind is no longer to be met with in commerce, and is not even mentioned by Mr. Jackson among the exports

* See Thomas's Inaugural Dissertation, 1802. Barton's Collections, Part I. p. 18, 24, 48. Part II. p. 26.

from Mogodore, or by Mr. Winterbottom, in his account of Sierra Leone.

In commerce are found three kinds of kino, easily distinguished by their external appearance.

The first is in very small jet-black fragments, perfectly opaque, without smell, crackling under the teeth when chewed, not colouring the saliva, after some time imparting only a slight astringent taste, not fusible, and difficultly reduced to powder. Powder dark chocolate-brown. Although this has been the longest known in commerce in this place, Dr. Duncan has not been able to trace the place of its origin.

The second is in large fragments, on some of which the impression of the vessel into which it had been received while fluid, and in which it had hardened, was evident; colour very dark brown, fracture resinous, appearance homogeneous, with small air bells; in very thin splinters, transparent, and of a ruby red colour: crackling under the teeth when chewed, taste at first somewhat acid, but afterwards becoming considerably bitter and astringent, succeeded by a peculiar sweetness; infusible, and friable; powder of a reddish-brown. This is said to be the extract of the Coccoloba uvifera or sea-side grape; and indeed by comparing it with the specimens of that extract, Dr Duncan has no doubt of the accuracy of his information. The kino imported by the East India Company resembles this in many particulars, but is in smaller fragments.

The third is in dark brown masses of various sizes, either smooth or rounded on the surface, or in fragments often covered with a reddish-brown powder, fracture resinous and very unequal, appearance sometimes homogeneous, but more commonly heterogeneous, mixed with bits of twigs, leaves, &c.; splinters transparent, ruby red, no smell, scarcely crackling under the teeth, but sometimes gritty, from the accidental mixture of sand; taste simply astringent, succeeded by sweetness, and, when long chewed, a portion adheres to the teeth; infusible and friable; powder reddish-brown. This is certainly obtained from the Eucalyptus resinifera, or brown gum-tree of New South Wales, by allowing the juice, which either flows from it spontaneously, or is procured by wounding the tree, to harden in the sun. Some specimens of it in its fluid state have even reached this country.

The Dublin college have indicated the butea frondosa as the source of kino, but certainly erroneously. It, however, produces in large quantities a red juice, very analogous to kino, and which may unquestionably be used as a substitute for it. The production of these substances, from so many different trees in Africa, America, Asia, and New Holland, show that kino is to be considered as a genus of which these are species.

The analysis of kino, published in the first edition of this Dispensatory, has since been confirmed by Vauquelin, as well as the conclusion drawn from it, that it consists principally of tannin, and cannot with propriety be classed among the resins or gum-resins. But the undoubted origin of the third kind, and the examination of a red astringent matter which Dr. Duncan picked from a cavity in a specimen of the Cassuarina, or beef-wood, prove that he was hasty in

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supposing that kino was always obtained from astringent barks by decoction and evaporation.

Kino is much more soluble in boiling than in cold water. The decoction, therefore, on cooling, becomes turbid with a very copious red sediment. The residuum seems to be softened by the heat of boiling water, at least it agglutinates into masses resembling melted red sealing wax dropt into water. By repeated decoctions with very large quantities of water, Dr. Duncan has never been able to exhaust it of its soluble parts: the last decoctions had still a deep red colour, and blackened solutions of iron. This residuum is not more soluble in alcohol than in water, and is not fusible, but when thrown on live coals burns away without flame. Vauquelin observed, that when the whole quantity of water necessary to dissolve the soluble parts of kino is not employed at once, the residuum becomes more insoluble. Alcohol dissolves the whole of the Botany-bay kino except its impurities. With a certain proportion of water, this tincture lets fall a copious red precipitate, which may be separated by filtration, but with a larger proportion of water its transparency is only slightly disturbed. It is also remarkable, that alcohol dissolves kino entirely, but does not dissolve the residuum of the decoction. This fact would show, that the portion extracted by the water had the property of rendering the residuum soluble in alcohol. The solutions of kino precipitate gelatin, and, according to Vauquelin, silver, lead, and antimony, white; and iron, green. It resembles other astringents, in forming a black precipitate with red sulphat of iron, which however is converted into green by the slightest excess of the sulphat, and by a larger excess is dissolved into a bright green liquid.

Medical use.—It is a powerful remedy in obstinate chronic diarrhœas and dysenteries; in all passive hæmorrhagies, especially from the uterus; in fluor albus; and in diseases arising from laxity of the solids.

It is exhibited internally, in doses of from ten to thirty grains, in substance, or dissolved in diluted alcohol.

Externally, it is applied as a styptic, to check hæmorrhagies from wounds or ulcers, and to diminish the discharge of sanious or ichorous matter from ill-conditioned ulcers.

Officinal Preparations.

Tinctura kino, E. D. - - - *vide Tincturæ.*
Electuarium catechu, E. D. - - *Electuaria.*

L.

LACTUCA.

LACTUCA VIROSA. *Folia. Ed.*

Strong-scented or cut lettuce. The leaves.

Willd. g. 1404. *sp.* 12. *Smith, g.* 342. *sp.* 1. *Syngenesia æqualis.*—Nat. ord. *Compositæ semiflosculosæ.*

This plant is biennial, and grows wild on rubbish and rough banks, in many places in Great Britain.

It smells strongly of opium, and resembles it in some of its effects; and its narcotic power, like that of the poppy heads, resides in its milky juice.

Medical use.—An extract, prepared from the expressed juice of the leaves of the plant, gathered when in flower, is recommended in small doses in dropsy. In dropsies of long standing, proceeding from visceral obstructions, it has been given to the extent of half an ounce a-day. It is said to agree with the stomach, to quench thirst, to be gently laxative, powerfully diuretic, and somewhat diaphoretic. Plentiful dilution is allowed during its operation. Dr. Collin of Vienna asserts, that out of twenty-four dropsical patients, all but one were cured by this medicine.

Officinal Preparation.

Succus spissatus lactucæ virosæ, E. *vide Succi spissati.*

LACTUCA SATIVA.

Common Garden Lettuce.

This plant, so valuable as an article of diet, abounds with a milky juice, which possesses all the characteristic properties of the opium of the shops, and may be procured from it in sufficient quantity to repay any labour bestowed on it for this purpose. A series of comparative experiments instituted for the purpose, and detailed in the fourth volume of the American Philosophical Transactions, have assured me of the identity of the opium procured from the poppy and from this species of the lettuce. These experiments were made on frogs, as well as on the human subject. The laudanum made from the opium of the lettuce, increases the pulse in force and frequency, and produces generally the same effects as result from similar doses of common laudanum. It has been used with advantage in allaying the pain of chronic rheumatism and colic; in checking the frequent stools accompanying diarrhœa; in allaying cough, &c. &c.; and doubtless the plant might be advantageously cultivated for medical purposes, especially as the opium is procured after the period in which the plant is useful for the table. Dr. Duncan has published some observations on its various preparations.

The milky juice, if secured in closely stopped vials, and filled completely with it, does not change its colour, or but very little; I have two or three vials full, which are three years old, and though exposed to the light, have evinced little alteration. I presume therefore the change of colour which exposure produces, is dependent on the absorption of oxygen.

LAPIS CALAMINARIS.—*Vide Zincum.*

LAURUS.

Willd. g. 798.—*Enneandria Monogynia.*—Nat. ord. *Oleraceæ.*

LAURUS CINNAMOMUM. *Sp.* 1. *Cortex et ejus oleum essentiale. Ed.* L. D.

The Cinnamon tree. The bark and its essential oil.

D.	*Caneel.*	P.	*Canella.*
DA.	*Caneel.*	POL.	*Cynamom.*
F.	*Canelle de Ceylan.*	R.	*Koriza.*
G.	*Zimmet Kanehl.*	S.	*Canela.*
I.	*Canella.*	SW.	*Canel.*

This valuable tree is a native of Ceylon, where it was guarded with unremitting jealousy by the Dutch, that they might monopolize the commerce of its productions. They failed, however, in the attempt; and cinnamon trees are found, not only in other parts of the East Indies, but also in Jamaica, and other islands of the West Indies. Ceylon now belongs to the British, and Captain Percival has published a very interesting account of the cinnamon tree. It is found in greatest perfection in the immediate neighbourhood of Columbo, and grows from four to ten feet high, very bushy The leaves resemble those of the laurel, and have the hot taste and smell of cloves when chewed. The blossom is white and very abundant, but diffuses no odour. The fruit resembles an acorn, and a species of fixed oil is obtained from it. There are several different species of cinnamon trees, or trees resembling them, in Ceylon, but four only are barked by government; the honey cinnamon, the snake cinnamon, the camphor cinnamon, which is inferior to these, and yields camphor from its roots, and mixed with gum from incisions made into it, and the *cabatte* cinnamon, which is harsher and more astringent than the others. The bark is collected at two seasons, the grand harvest lasts from April to August, the little harvest is in December. Such branches as are three years old are lopped off, the epidermis is then scraped off, the bark slit up, loosened and removed entire so as to form a tube open at one side. The smaller of these are inserted within the larger, and they are spread out to dry. They are then packed up in bundles. The tasting of these bundles to ascertain their quality is a very disagreeable duty imposed on the surgeons, as it excoriates the tongue and mouth, and causes such intolerable pain as renders it impossible for them to continue the preparations two or three days successively. In their turns, however, they are obliged to resume it, and they attempt to mitigate the pain by occasionally eating a piece of bread and butter. It is then made up into large bundles about four feet long, and eighty pounds in weight. In stowing the bales on shipboard, the interstices are filled up with black pepper, which is supposed to improve both spices.

The best cinnamon is rather pliable, and ought not much to exceed stout writing paper in thickness. It is of a light yellowish colour; it possesses a sweet taste, not so hot as to occasion pain, and not succeeded by any after-taste. The inferior kind is distinguished by being thicker, of a darker and brownish colour, hot, pungent when chewed, and succeeded by a disagreeable bitter after-taste. The Dutch were accused of deteriorating their cinnamon by mixing it with a proportion of real cinnamon, but which had been deprived of its essential oil by distillation. This fraud could only be detected by the weaker smell and taste. It is also often mixed with cassia bark. This last is easily distinguishable by its breaking over smooth, and by its slimy mucilaginous taste, without any thing of the roughness of the true cinnamon.

By distillation with water, it furnishes a small quantity of very pungent and fragrant oil, the water itself remains long milky, and has a strong flavour of cinnamon. The watery extract in Neumann's experiment amounted to 720 from 7680 parts. With alcohol the oil does not rise in distillation, but remains in the extract, which amounts to 960.

The essential oil of cinnamon has a whitish yellow colour, a pungent burning taste, and the peculiar fine flavour of cinnamon in a very great degree. It should sink in water, and be entirely soluble in alcohol. It is principally prepared in Ceylon.

Medical use.—Cinnamon is a very elegant and useful aromatic, more grateful both to the palate and stomach than most other substances of this class. Like other aromatics, the effects of cinnamon are stimulating, heating, stomachic, carminative and tonic; but it is rather used as an adjunct to other remedies, than as a remedy itself.

The oil is one of the most powerful stimulants we possess, and is sometimes used as a cordial in cramps of the stomach and in syncope; or as a stimulant in paralysis of the tongue, or to deaden the nerve in toothach. But it is principally used as an aromatic, to cover the less agreeable taste of other drugs.

Officinal Preparations.

Aqua lauri cinnamomi, E. L. D.	-	*vide Aquæ destillatæ.*
Spiritus lauri cinnamomi, E. L. D.	-	*Spiritus destillati.*
Tinctura lauri cinnamomi, E. L. D.		*Tincturæ.*

Officinal Preparations.

Tinctura lauri cardamomi composita, L. D.	*Tincturæ.*
lavendulæ composita, L. D.	*Idem.*
catechu, E. L. D. - -	*Idem.*
Acidum sulphuricum aromaticum, E.	*Tincturæ æthereæ.*
Emplastrum ladani compositum, L. -	*Unguenta.*

LAURUS CASSIA. *Sp.* 2. *Cortex. Flores nondum expliciti. Ed.* D.

The cassia tree. The bark and flower-buds gathered before they open.

D. *Houtkassie, Moederkaneel.*
DA. *Moderkaneel.*
F. *Cassia lignea, Casse en bois, Canelle de la Chine.*
I. *Cassilignea.*
G. *Cassia lignea, Kassienrinde.*
P. *Cassia lanhosa.*
S. *Cassia lenosa, Casaligena.*
SW. *Moderkanel.*

This tree is very similar to the former. The bark, which is imported from different parts of the East-Indies and from China, has a very exact resemblance to the cinnamon. It is distinguishable from the cinnamon, by being of a thicker and coarser appearance, and by its breaking short and smooth, while the cinnamon breaks fibrous and shivery.

It resembles cinnamon still more exactly in its aromatic flavour and pungency than in its external appearance, and seems only to differ from it in being considerably weaker, and in abounding more with a mucilaginous matter.

Cassia buds are the flower-buds which are gathered and dried before they expand. They have the appearance of a nail, consisting of a round head, about the size of a pepper-corn, surrounded with the imperfect hexangular corolla, which gradually terminates in a point. They have a brown colour, and the smell and taste of cinnamon.

Medical use.—Both the bark and buds of cassia possess the same properties with cinnamon, though in an inferior degree.

The bark is very frequently, and sometimes unintentionally, substituted for the more expensive cinnamon; and the products obtained from cassia bark and buds by distillation, are in no respect inferior to those prepared from cinnamon.

Officinal Preparations.

Aqua lauri cassiæ, E. - - - -	*vide Aquæ destillatæ.*
Pulvis aromaticus, E. L. D. - - -	*Pulveres.*
carbonatis calcis compositus, E. L.	*Idem.*
Electuarium aromaticum, D. - - -	*Electuaria.*
Confectio aromatica, L. - - - -	*Idem.*
Electuarium catechu, L. D. - - - -	*Idem.*
Trochisci cretæ, L. - - - - - -	*Trochisci.*

LAURUS CAMPHORA. *Sp.* 3. CAMPHORA. *Ed.* L. D.

Camphor-tree. Camphor.

D.	*Kamfer.*	P.	*Alcanfor.*
DA.	*Kampher.*	POL.	*Kamfora.*
F.	*Camphre.*	R.	*Kamfora, Kanfora.*
G.	*Kampher.*	S.	*Alcanfor, Canfor.*
I.	*Canfora.*	SW.	*Kamfer.*

CAMPHOR is a concrete friable substance, of a white colour, with a considerable degree of transparency, and a crystalline appearance, specific gravity 0.9887. Its taste is bitter and acrid, and its smell penetrating and peculiar. It is evaporated unchanged by a heat of 145°, but may be melted by suddenly exposing it to 302°. The vapour when condensed crystallizes in hexagonal plates. Its vapour is exceedingly inflammable, and when kindled it burns white flame and a great deal of smoke, and leaves no residuum. The products of its combustion are carbonic acid gas, charcoal, and water. Camphor is soluble in alcohol and in the acids. From these solutions it is precipitated by water. It is also soluble in hot oils, both volatile and fixed, but on cooling separates from them in plumose crystals. It is insoluble in water, and is not acted on by the alkalies, metals or metallic oxyds. By repeated distillation with nitric acid, it is converted into a peculiar acid. It exists in many vegetables, but is chiefly procured from the laurus camphora.

The camphor laurel grows in great abundance, and to a very considerable size, in the forests of Japan. It is not uncommon in greenhouses in England. Every part of the tree smells strongly of camphor, which is obtained from the trunk, branches, and root, by distillation. They are cut down into small pieces, and put into a still with a quantity of water. After the water has been kept boiling forty-eight hours, the camphor is found adhering to the straw with which the head of the still is lined. In this state it is imported by the Dutch, and is called crude camphor. It is very impure, consisting of small brownish or dirty-grey grains, mixed with straw, wood, hair, and other impurities. From these it is purified in Holland, by a second sublimation in glass vessels; being previously mixed with quicklime, to combine with and prevent any empyreumatic oil with which it may be contaminated from subliming, while the camphor concretes in the upper part of the vessel into cakes, convex on the one side, and concave on the other, about two or three inches thick, thinner at the edges, and generally perforated in the middle.*

Pure camphor is lighter than water, very white, pellucid, somewhat unctuous to the touch, brittle, yet tough and elastic, so as to be scarcely pulverizable; shining in its fracture, and crystalline in its texture; of a bitterish, aromatic, pungent, taste, yet accompanied with a sense of coolness; of a strong and very penetrating smell; very volatile, inflammable, burning entirely away without leaving any coal or ashes; capable of combining with the fixed and volatile oils, resins, and balsams; soluble in alcohol, ether and the concentrated sulphu-

* For the method of purifying Camphor, see an account by Professor Woodhouse, in the Philadelphia Medical Museum, Vol. I. p. 197.

ric, nitric, and acetic acids; separable from these alcoholic and acid solutions by water; insoluble in water, alkalies, and the weaker acids; decomposable by heat when mixed with alumina, being converted into an essential oil and charcoal, and by treating it with nitric acid, which acidifies it, producing camphoric acid.* With sulphuric acid, it forms artificial tannin.

But the production of camphor is not confined to the laurus camphora, although it furnishes almost all the camphor of commerce; it is found in very great purity in interstices among the woody fibres of an unknown tree in Borneo; it is also contained in the roots of the laurus cinnamomum and cassia, Alpinia galanga, amomum zedoaria, &c.; in the seeds of the amomum cardamomum, piper cubeba, &c.; and in many indigenous plants as in the thymus, serpyllum and vulgaris, juniperus communis, rosmarinus officinalis, salvia officinalis, mentha piperita, &c. and may be separated from the essential oils of rosemary, lavender, marjoram and sage. It is therefore now universally considered as a peculiar principle of vegetables, and not as a resin, as stated by the Dublin college. It is also now well known to be produced by the action of muriatic acid gas on oil of turpentine, in considerable amount. This camphor, which I have frequently prepared, appears to me to possess every property of common camphor. From the similarity in some respects of the oil of turpentine and of sassafras, I expected to procure it from this last by a similar process; but it does not yield it. Camphor is now universally considered as a peculiar principle of vegetables, and not a resin.

Medical use.—Camphor is a very active substance when taken into the stomach. It increases the heat of the body considerably, and gives a tendency to diaphoresis, but without quickening the pulse. At first it raises the spirits, but produces a subsequent depression; and it facilitates voluntary motion. In excessive doses it causes syncope, anxiety, retchings, convulsions, and delirium. These violent effects of camphor are most effectually counteracted by opium.

In a morbid state of the body, camphor allays inordinate action. When the pulse is hard and contracted, it renders it fuller and softer. It removes spasms, and flitting pains arising from spasms; and in delirium, when opium fails of procuring sleep, camphor will often succeed. It is also said to correct the bad effects of opium, mezereon, cantharides, and the drastic purgatives and diuretics.

The most general indication for the use of camphor, is the languor or oppression of the *vis vitæ*. It may therefore be given with advantage,

1. In all febrile diseases of the typhoid type, especially when attended with delirium.
2. In inflammations with typhoid fever, as in some cases of peripneumonia and rheumatism.

* Camphoric acid crystallizes in white parallelopipeds of a slightly acid bitter taste, and smell of saffron, efflorescing in the air; sparingly soluble in cold water; more soluble in hot water; soluble in alcohol, the mineral acids, volatile and unctuous oils, melting and subliming by heat.

Camphorates have commonly a bitter taste, burn with a blue flame before the blowpipe, and are decomposed by heat, the acid subliming.

3. In eruptive diseases, to favour the eruption, or to bring it back to the skin, if from any cause it has suddenly receded, as in small-pox, measles, &c.
4. In many spasmodic diseases, especially mania, melancholy, epilepsy, hysteria, chorea, hiccough, &c.
5. In indolent local inflammations, not depending upon an internal cause, to excite action in the part.

As from its great lightness it is apt to swim upon the contents of the stomach, and to occasion pain at its upper orifice, it is necessary that it be always exhibited in a state of minute division. In order to reduce it to powder, it must be previously moistened with a little alcohol. It may then be given,

1. In powder, with sugar, magnesia, and nitrat of potass.
2. In pills, with the fetid gums, and mucilage.
3. In solution, in alcohol, oil, or acetic acid.
4. Suspended in the form of an emulsion, by means of mucilage, sugar, yolk of egg, almonds, vinegar, &c.
5. The best mode of administering camphor seems, by triturating it with milk; this fluid suspends it very largely. It has been said to *dissolve* it; but from my experiments on this point, I believe it is an error; for in a few days I always found the camphor precipitated, and the putrefactive fermentation of the milk appeared nearly as rapidly, as if no camphor had been combined with it.

Internally, it may be given in small doses, of from one to five grains, repeated at short intervals, as its effects are very transient, or in large doses, not under twenty grains.

Officinal Preparations.

Oleum camphoratum, E. - -	*vide Olea præparata.*
Emulsio camphorata, D. L. - -	*Emulsiones.*
Tinctura lauri camphoræ, E. L. D. -	*Tincturæ.*
Acidum acetosum camphoratum, E. -	*Aceta medicata.*
Tinctura opii camphorata, L. D. - -	*Tincturæ.*
saponis, E. - - -	*Idem.*
cum opio, L. D. - -	*Idem.*
Linimentum saponis, L. D. - -	*Idem.*
camphoræ compositum, L. D. -	*Idem.*
Ceratum lithargyri acetati compositum, L. D.	*Unguenta.*

LAURUS NOBILIS. *Sp.* 10. *Folia. Baccæ. Baccarum oleum fixum. Ed.* L.

Bay-tree. The leaves, berries, and expressed oil of the berries.

This tree is a native of the south of Europe, but bears the winters of Great Britain perfectly well. Both leaves and berries contain a considerable quantity of essential oil, which renders them aromatic stimulating substances.

The berries are generally brought from the Mediterranean, and are more pungent than the leaves. In Spain and Italy a considerable quantity of oil is obtained by expression from the fresh berries. It has a green colour, and strong aromatic taste and smell. As it therefore is not a fixed oil, but a mixture of fixed and essential oil, and as its peculiar properties depend entirely on the presence of the latter, it is incorrectly stated to be a fixed oil by the Edinburgh college. It should rather have been denominated, from the mode of its preparation, an expressed oil.

Medical use.— It is only used as a stimulant.

OFFICINAL PREPARATIONS.

Decoctum pro fomento, L.	-	*vide Decocta.*
Cataplasma cumini, L.	- -	*Cataplasmata.*
Emplastrum cumini, L.	-	*Unguenta.*

LAURUS SASSAFRAS. *Sp.* 34. *Lignum, radix, ejusque cortex.* *Ed.* L. D.

Sassafras. The wood, the root, and bark.

D.	*Sassafrass.*	P.	*Sassafraz, Salsafraz.*
DA.	*Sassafras.*	POL.	*Sasafras.*
F.	*Sassafras.*	R.	*Sasafras.*
G.	*Sassafrass.*	S.	*Sasafras.*
I.	*Sassafrasso.*	SW.	*Sassafras.*

THIS tree is a native of North America, and is cultivated in Jamaica. It is the root which is commonly employed. It is brought to us in long branched pieces. It is soft, light, and of a spongy texture; of a rusty white colour; of a strong pleasant smell, resembling that of fennel; and a sweetish, aromatic, subacrid taste. The bark is rough, of a brown ash colour on the outside, and ferruginous colour within; spongy and divisible into layers, and of a stronger taste and smell than the wood.

Neumann got from 480 grains 80 of alcoholic, and afterwards 60 of watery extract, and inversely 120 watery and 7.5 alcoholic. In distillation the alcohol elevates nothing, but water a ponderous essential oil, in the proportion of about 10 from 480.

Medical use.—Sassafras, from the quantity of volatile oil it contains, is a gently stimulating, heating, sudorific, and diuretic remedy.

It is best given in infusion. The decoction and extract are mere bitters, as the oil is dissipated by the preparation.

The essential oil may be obtained separate by distillation. It is of a whitish yellow colour, and sinks in water. It is highly stimulating and heating, and must be given only in very small doses.

The bark is useful in intermittents; and the oil is said to be efficacious applied externally to Wens.*—It forms a very delightful addition to the vol. tinct. of guaiacum, and gives a pleasant flavour to pills.

* Barton's Collections, Part I. p. 19. 49.

Officinal Preparations.

Oleum volatile lauri sassafras, E. L.	-	*vide Olea volatilia.*
Decoctum guaiaci compositum, E.	-	*Decocta.*
—— sarsaparillæ compositum, L. D.		*Idem.*

LAVANDULA SPICA. *Spicæ florentes. Ed.* L. D.

Lavender. The flowering spikes.

Willd. g. 1099. *sp.* 1.—*Didynamia Gymnospermia.*—Nat. ord. *Verticillatæ.*

Lavender is a well known small, shrubby, perennial plant, a native of the south of Europe, but frequently cultivated in our gardens for the sake of its perfume. There are two varieties. The flowers of both have a fragrant, agreeable smell, and a warm, pungent, bitterish taste; the broad-leaved sort is the strongest in both respects, and yields in distillation thrice as much essential oil as the other; its oil is also hotter and specifically heavier; hence in the southern parts of France, where both kinds grow wild, this only is used for the distillation of what is called Oil of Spike. The narrow-leaved is the sort commonly met with in our gardens.

Medical use.—Lavender is a warm stimulating aromatic. It is principally used as a perfume.

Officinal Preparations.

Oleum volatile lavandulæ spicæ, E. L.		*vide Olea volatilia.*
Spiritus lavandulæ, E. L. D.	- -	*Spiritus destillati.*
Pulvis asari compositus, E. L. D.	-	*Pulveres.*

LEONTODON TARAXACUM. *Herba. Radix. Ed.* L. D.

Common Dandelion. The root and leaves.

Willd. g. 1407. *sp.* 1. *Smith, g.* 344. *sp.* 1.—*Syngenesia æqualis.*—Nat. ord. *Compositæ semiflosculosæ.*

This perennial plant is very common in grass fields and uncultivated places. The whole plant contains a bitter milky juice, which, however, is most abundant in the roots before the flower-stem shoots. The bitterness is destroyed by drying, and therefore the recent roots only should be used.

Medical use.—Its vulgar name in all languages, shows a popular belief of its possessing diuretic properties; and it was lately a very fashionable remedy in Germany, and given in the form of an expressed juice or decoction, or extract prepared from either of them; but it seems to be merely a mucilaginous bitter.

LEONARUS CARDIACA. *Motherwort. The leaves.*

This is a very common indigenous plant, growing in waste places, and flowering in July and August. The stalk is square, the leaves are spear shaped and three lobed. The flowers are in thorny whorls, purplish within, and white on the outside. The leaves are opposite, two to each whorl. They have a strong, disagreeable odour, and bitter taste.

Motherwort was formerly supposed to be useful in some nervous and hysterical complaints, and as a strengthener of the stomach. Its medicinal virtues are not undeserving of notice. Though rejected from Pharmacopœias, it will not readily be abandoned by the female class, being peculiarly adapted to some constitutions when affected with nervous and hysterical agitations. An infusion of this plant is a common domestic medicine; taken at bed time, it composes and procures refreshing sleep in a manner similar to valerian, when it could not be obtained by the operation of opium.

LICHEN.

Murray, g. 1202. *sp.* 50. *Cryptogamia, Algæ, Lichenes.*

LICHEN ISLANDICUS. *Sp.* 50. *Dub.*

Iceland Moss. Eryngo-leaved Liverwort.

This is a perennial lichen, very common in Iceland, but also found in the forests and dry sterile woods of Switzerland and Germany, growing upon stones and on the earth. It has dry coriaceous leaves, divided into lobes and laciniæ, which are again notched and subdivided with elevated margins, beset with short, very minute, rigid, parallel hairs, and marked with white spots, reddish towards the points. Amongst the leaves are found peltated, somewhat excavated, shining, viscid bodies, internally of a brown colour: these are the pericarpiums. When fresh, the colour of this lichen is greenish yellow, or greyish brown; but, when dried, greenish white, or grey. In Sweden principally, and in Germany, a variety is found, with smaller, tenderer, crisper leaves, destitute of hairs on the margin, of a paler lead colour, orange beneath. It is gathered in rainy weather, because it is then more easily detached from the stones. In the countries where it abounds, it is used for the nourishment both of cattle and of man. Mr. Proust has analyzed it with much success. A pound of dry lichen immersed in cold water, soon resumed its fresh colour, and weighed two pounds two ounces, gave out a pale fawn colour, but none of its bitterness. When previously powdered, it gives out a bitter, pale, yellow juice, losing about three per cent. in cold, and six in boiling water. This bitterness resides in an extractive which is employed in Iceland to dye a brown colour. By boiling lichen a quarter of an hour, it becomes sufficiently tender for use as an esculent vegetable. Lichen cooked in this manner has a kind of membranous elasticity, peculiar to some of the algæ and fungi; and after being dried, has only to be moistened with boiling water to resume this elasticity. Its appearance is not very prepossessing, having an unequal yellow colour, and a slight marine smell. A pound of dry lichen by boiling weighs three pounds, and when dried again is reduced to two thirds of a pound.

The decoction has a clear yellow colour, and a slightly bitter taste, which, even when made with eight waters, on cooling becomes a tremulous jelly, without any viscidity. This jelly on standing contracts, expresses the water, cracks, and dries into transparent angular fragments of a deep red colour, insoluble in cold water, soluble in boiling water, from which it is precipitated by infusion of galls. By nitric acid it is converted into oxalic acid. The insoluble part dissolves readily in nitric acid, forming oxalat of lime and oxalic acid, and is converted into a gelatinous pulp by potass.

According to this analysis, one hundred parts of dried lichen give of

Bitter extractive,	3
Matter soluble in hot water,	33
Matter insoluble in hot water,	64 = 100.

The last substance has much analogy with gluten, and the second with starch, particularly in the remarkable property of being precipitated by infusion of galls. It differs from it, however, in not being glutinous, and in the solid matter of the jelly contracting and separating from the fluid, as curd does from whey.

Medical use.—From the analysis of this lichen, it appears to consist principally of a nutritious substance, combined with a bitter; and on the combination of these, its medical virtues probably depend. It is used, according to Arnemann,

1. In cough with expectoration, threatening to terminate in consumption; after neglected catarrhs, the consequence of peripneumony, when the expectoration becomes more copious and purulent.
2. In emaciation from measles, (Schoenheide); from wounds and ulcers with great discharge, (Plenk); after salivation; and from actual ulcers in the lungs, when there is no fever, (Scopoli), especially after neglected colds, or from translated morbid matter. In a high degree of the disease it does little good, but the night sweats are diminished by it, (Millin). In pituitous phthisis it is of great service.
3. In hæmoptysis, (Frize).
4. In chincough, (Tode).
5. In diabetes, as a tonic and palliative remedy.

It is commonly exhibited in decoction with water, broth, or milk, after the bitter has been extracted from it by steeping it in warm water; or in substance, boiled in chocolate or cocoa, or made into a jelly with boiling water. Half an ounce, or an ounce, must be used daily, and continued for some time. Proust disbelieves its specific virtues, but recommends it strongly as an article of diet in times of scarcity, and as a very convenient anti-scorbutic vegetable in long sea voyages.

LICHEN ROCELLA. *Sp.* 115. D. *Orchill.*

Litmus, Lacmus Tinctorius. D. *Litmus. Turnsole.*

This lichen is found in Guernsey and Portland island, but it is from the Canary islands that it is chiefly obtained. It is not sold in the state of the plant merely dried, but manufactured by the Dutch into a paste, called *Litmus, Orseille en pate.* It is sold in square masses, about an inch in length, and half an inch in breadth and thickness, hard and brittle, having the appearance of a violet-coloured earth, with white spots. It has a violet smell, probably from the addition of oris root powder; and when tasted, speedily tinges the saliva, and gives a sense of heat in the mouth. This paste is prepared by making the lichen undergo a kind of fermentation in vats with urine and lime-water, forming the whole into a pulp, and then dividing it into squares to dry.

Litmus is chiefly used as a dye-stuff, and by chemists as a very valuable test of the presence of uncombined acids. I must frankly confess my ignorance of the grounds upon which the Dublin college have introduced it into their *Materia Medica.* The translator of the Pharmacopœia merely says, "It has been used medicinally with an intention of allaying the tickling attendant on phthisis, and in hysterical coughs."

LILIUM CANDIDUM. Lilium Album. *Radix.* D.

The white lily. The root.

Willd. g. 127. *sp.* 3.—*Hexandria Monogynia.*—Nat. ord. *Liliaceæ.*

The white lily is a perennial bulbous-rooted plant, a native of the south of Europe, and cultivated in our gardens for the beauty of its flowers. The mucilaginous root is sometimes used as a poultice; but it possesses no advantage over the poultices formed of any vegetable farina.

LINIMENTA. *Vide Unguenta.*

LINUM.

Willd. g. 590. *Smith, g.* 163.—*Pentandria Pentagynia.*—Nat. ord. *Gruinales.*

LINUM USITATISSIMUM. *Sp.* 1. *Willd. Smith.* E. L. D. *Semen. Oleum fixum.*

Common flax. The seed, and oil expressed from the seed. Linseed, and linseed oil.

D.	*Lynzaad.*	P.	*Linhaca.*
DA.	*Hörrfröe.*	POL.	*Siemie, Iniane.*
F.	*Lin, Graine de Lin.*	R.	*Semja lenjanoe.*
G.	*Leinsaat.*	S.	*Linaza.*
I.	*Linseme.*	SW.	*Linfrö.*

THIS valuable annual plant, is said to have come originally from those parts of Egypt which are exposed to the inundations of the Nile. It now grows wild among the fields, in the south of England, and many other parts of Europe, and is cultivated in large quantities, both there and in the United States.

Linseed contains about one fifth of mucilage, and one sixth of fixed oil. The mucilage resides entirely in the skin, and is separated by infusion or decoction. The oil is separated by expression. It is one of the cheapest fixed oils; but is generally rancid and nauseous, and unfit for internal use. The cake which remains after the expression of the oil, contains the farinaceous and mucilaginous part of the seed, and is used in fattening cattle, under the name of Oil-cake.

Linseed is considered as emollient, and demulcent. The entire seeds are only used in cataplasms. The infusion is used as a pectoral drink, and in ardor urinæ, nephritic pains, and during the exhibition of corrosive sublimate.

OFFICINAL PREPARATIONS.

Oleum lini usitatissimi, E. L. D.	vida *Olea fixa.*
cum calce, E. - -	*Olea præparata.*

LINUM CATHARTICUM. *Willd. sp.* 26. *Smith, sp.* 4. *Herba.* D.

Purging flax. Mill-mountain. The herb.

THIS is an annual plant, found wild on dry meadows and pastures in Britain. Its virtue is expressed in its title: an infusion in water or whey of a handful of the fresh herb, or a drachm of it in substance when dried, is said to purge without inconvenience.

LIQUIDAMBAR ASPLENIFOLIUM. *Lin.*

COMPTONIA ASPLENIFOLIA. *Aiton. Sweet Fern.*

THIS is useful in diarrhœa. The Indians are said to chew the root to stop hemorrhages of recent wounds.*

LIQUIDAMBAR STYRACIFLUA.

Sweet-gum. Maple-leaved Liquidambar.

THIS is used in diarrhœa with advantage. The dried leaves are mixed with tobacco by the Indians for smoking.*

LIRIODENDRON TULIPIFERA. *Tulip bearing Poplar.*

Tulip tree. The bark of the root.

THIS is closely allied to the magnolias.

It is a native and well known tree in the United States, called also American poplar, white wood, and in some parts of New-England improperly called *cypress* tree. It attains to a very large size, rising as high as any forest tree, and makes a noble and beautiful appearance when in flower, about the middle of May. This tree is remarkable for the shape of its leaves, having the middle lobe of the three truncate, or cut transversely at the end. The flowers are large and bell shaped; calyx of three leaves, six petals to the corolla, marked with green, yellow, and red spots; and many lance shaped seeds, lying one over another, and forming a sort of cone. The bark of the root has long been employed by medical men in the United States, as a tonic, and when joined with various proportions of *prinos virticillatus*, and *cornus florida*, has afforded a remedy of equal efficacy with Peruvian bark. It is a strong bitter, and considerably aromatic and antiseptic, and has been found particularly beneficial in the last stage of dysentery. The powdered root combined with steel dust is an excellent remedy in relaxation of the stomach. According to Dr. Barton, the bark is used in some parts in gout and rheumatism. A decoction of it is said to be a common remedy in Virginia for botts in horses.†

* Barton's Collections, Part. I. p. 10. 44. † Ibid. p. 16.

† "The Liriodendron tulipifera, tulip or poplar tree, grows throughout the United States of North America. The best time to procure the bark for medicinal purposes, is in the month of February; as the sap at this time being more confined to the root increases its virtue. It possesses the qualities of an aromatic, a bitter, and an astringent; the bitter quality is greater, the astringent less than in the Peruvian bark. It likewise possesses an aromatic acrimony; hence I infer, it is highly antiseptic and powerfully tonic. I have prescribed the poplar bark in a variety of cases of the intermittent fever; and can declare from experience, it is equally efficacious with the Peruvian bark, if properly administered. In the phthisis pulmonalis attended with hectic fever, night sweats, and diarrhœa, when combined with laudanum, it has frequently abated these alarming and troublesome symptoms. I effectually cured a Mr. Kiser, fifty years

LITHARGYRUS. - - *Vide Plumbum.*

LOBELIA INFLATA. *Lobelia Emetica. Emetic weed. Indian Tobacco. The leaves.*

THE lobelia inflata is indigenous, and annual, rising to one or two feet, with branched stems. The leaves are oblong, alternate; slightly serrated and sessile. The blossoms are solitary, in a kind of spike, of a pale blue colour. It is found common in dry fields, among barley and rye stubble, and flowers in July and August; its capsules are inflated, and filled with numerous small seeds.

The leaves chewed are at first insipid, says Dr. Cutler, but soon become pungent, occasioning a copious discharge of saliva. If they are held in the mouth for some time they produce giddiness and pain in the head, with a trembling agitation of the whole body; at length they bring extreme nausea and vomiting. The taste resembles that of tartar emetic. A plant possessed of such active properties, notwithstanding the violent effects from chewing the leaves, may possibly become a valuable medicine.

It was employed by the aborigines as an emetic, and also by those

of age, who was afflicted with a catarrh and dyspeptic symptoms for five years, which baffled the attempts of many physicians, and the most celebrated remedies, by persevering in the use of the poplar bark for two weeks.

"I can assert from experience there is not in all the Materia Medica, a more certain, speedy and effectual remedy in the hysteria, than the poplar bark combined with a small quantity of laudanum. I have used no remedy in the cholera infantum but the poplar, after cleansing the primæ viæ, for these two years. It appears to be an excellent vermifuge. I have never known it fail in a single case of worms which has come under my observation. I prescribed it to a child when convulsions had taken place. After taking a few doses, several hundreds of dead ascarides were discharged with the stools. The dose of the powder to an adult, is from a scruple to two drachms, it may likewise be used in tincture, infusion, or decoction; but its virtues are always greatest when given in substance".

The foregoing is part of a letter addressed to Governor Clayton of Delaware in 1792, By Dr. J. T. Young, of Philadelphia. (American Museum, Vol. 12.) In his reply, the Governor observes, "During the late war the Peruvian bark was very scarce and dear. I was at that time engaged in considerable practice, and was under the necessity of seeking a substitute for the Peruvian bark. I conceived that the poplar had more aromatic and bitter than the Peruvian, and less astringency. To correct and amend those qualities I added to it nearly an equal quantity of the bark of the root of *dogwood* (cornus florida or boxwood) and half the quantity of the inside bark of the white oak tree. This remedy I prescribed for several years, in every case in which I conceived the Peruvian bark necessary or proper, with at least equal if not superior success. I used it in every species of intermittent, gangrenes, mortifications, and in short in every case of debility. It remains to determine whether the additions of those barks to the poplar increases its virtues or not; this can only be done by accurate experiments in practice."

A further account of the analysis and virtues of this medicine is given by Professor Rush in the transactions of the College of Physicians of Philadelphia, and in a paper published in one of the volumes of Tilloch's Phil. Magazine.

empirics who affect to deal in Indian remedies only. As a new article it has lately excited much speculation in the New-England States, and its properties have very frequently been subjected to the test of practical experiment. It is found to operate as a speedy and active emetic, and it often induces a most profuse perspiration immediately after being received into the stomach. It has proved serviceable in cases of colic, where emetics were indicated. In a variety of instances it has been administered as a remedy in asthmatic affections, and on competent authority we are assured, that it has in general manifested considerable efficacy, and sometimes proved more beneficial in this distressing disease than any other medicine. From some of its effects, says an eminent physician, lobelia seems to be related to the narcotic plants; to the mouth and first passages it proves acrid and highly stimulant; its stimulus appears to be of the diffusive kind, as Dr. Cutler, on taking it, experienced an irritation of the skin over the whole body. It is probably one of the most powerful vegetable substances with which we are acquainted, and no rational practitioner will have recourse to it, but with the greatest precaution. The melancholy consequences resulting from the use of *lobelia inflata*, as lately administered by the adventurous hands of a noted empiric, have justly excited considerable interest, and furnished alarming examples of its deleterious properties and fatal effects. The dose in which he is said usually to prescribe it, and frequently with impunity, is a common tea-spoonful of the powdered seeds or leaves, and often repeated. If the medicine does not puke or evacuate powerfully, it frequently destroys the patient, and sometimes in five or six hours.

Even horses and cattle have been supposed to be killed by eating it accidentally. The specific qualities of this highly active plant, promising to be of utility as a remedy, should be particularly investigated by ingenious and intelligent men, that its rank in the Materia Medica may be clearly ascertained.

The following highly interesting observations have been recently received from the Rev. Dr. M. Cutler.

When I was preparing my botanical paper, says the Dr., I had given it (the lobelia) only a cursory examination, and having some doubt about its specific characters, I suspected it to be a new species. Accidentally ascertaining its emetic property, I inserted it with the specific name, *emetic weed*. By chewing a small part of it, commonly no more than one or two of the capsules, it proves a gentle emetic. If the quantity be a little increased, it operates as an emetic, and then as a cathartic, its effects being much the same as those of the common emetics and cathartics. It has been my misfortune, the author observes, to be an asthmatic for about ten years. I have made trial of a great variety of the usual remedies with very little benefit. In several paroxysms I had found immediate relief more frequently than from any thing else, from the skunk-cabbage. (*Dracontium fœtidum*. Lin. *Arum Americanum*. *Catesby*. See that article in this volume.) The last summer I had the severest attack I ever experienced. It commenced early in August, and continued about eight weeks. Dr. Drury of Marblehead, also an asthmatic, had made use of a tincture of the Indian tobacco, by the advice of a friend, in a severe paroxysm early in the spring. It gave him immediate relief, and he has been entirely free from the complaint from that time. I had a tincture made of the fresh plant, and took care to have the spirit fully saturated, which I think is important. In a paroxysm which perhaps was as severe as I ever experienced, the difficulty of breathing extreme, and after it had continued for a considerable time, I took a table-spoonful. In three or four minutes my breathing was as free as it ever was, but I felt no nausea at the stomach. In ten minutes I took another spoonful which occasioned sickness. After ten minutes I took the third, which produced sensible effects upon the coats of the stomach, and a very little moderate puking, and a kind of prickly sensation through the whole system, even to the extremities of the fingers and toes. The urinary passage was perceptibly affected by producing a smarting sensation in passing urine, which was probably provoked by stimulus upon the bladder. But all these sensations very soon subsided, and a vigour seemed to be restored to the constitution, which I had not experienced for years. I have not since had a paroxysm, and only a few times some small symptoms of asthma. Besides the violent attacks, I had scarcely passed a night without more or less of it, and often so as not to be able to lie in bed. Since that time I have enjoyed as good health as, perhaps, before the first attack.

I have given you this minute detail of my own case, from an apprehension that this plant, judiciously employed, may approach nearer to a specific in this most distressing complaint, than any other that has been yet discovered. But I am aware much further experiment is necessary to ascertain its real value. Several medical gentlemen have since made use of the tincture in asthmatic cases with much success, but the effects have not been uniformly the same. In all instances of which I have had information, it has produced immediate relief, but the effects have been different in different kinds of asthma. Some patients have been severely puked with only a tea spoonful, but in all cases some nausea seems to be necessary. The asthma with which I have been afflicted, I conceive to be that kind which Dr. Bree, in his *Practical Inquiries on disordered respiration*, &c. calls the first species—"a convulsive asthma from pulmonic irritation of effused serum." My constitution has been free, I believe, from any other disorder, than what has been occasioned by an affection of the lungs, anxiety of the præcordia, and straitness of the breast, and other symptoms produced by that affection. In similar asthmas, the tincture has been as successful as in my case. It is extremely desirable that careful experiments should be made by men of real medical knowledge.

A particular case has been related to me of an effectual cure of the hydrophobia, in the last stage of the disease, by the use of this plant. I had the information from a man of undoubted veracity, that received it from the father of the young man who was cured; but facts relating to the case have not been sufficiently ascertained to assert it to be a remedy in this disease. In a short time I expect to obtain a more circumstantial and satisfactory account of this case.

With the view of establishing a uniformity of strength in the preparation, the Essex district medical society have agreed, that the proportion for the tincture of lobelia shall be two ounces of the dried plant to one pint of diluted alcohol.

The result of subsequent practical observation has amply confirmed the utility of lobelia inflata in various diseases. In numerous instances of asthma it has procured the most essential relief, though in general its effects were only temporary and palliative. As a pectoral it has been found useful in consumptive and other coughs depending on mucus accumulated in the bronchial vessels, by exciting nausea and expectoration. From its very speedy operation as an emetic, and its stimulating effects on the mouth and fauces, beneficial results might be expected from its use in croup and hooping-cough; and on some trials our expectations have been realized in this respect. It may perhaps be anticipated to supersede seneka as a remedy in the former, and antimonials in the latter affection. More extensive practical knowledge of the properties of this plant, and the various forms and circumstances of its administration, is still, however, a most desirable object.

The leaves should be collected in August while the plant is in blossom, and carefully dried and preserved for use. From ten to twenty grains of the powdered leaves will in general be found a suitable dose as an emetic for an adult, or it may be repeated in smaller quantities. As a pectoral it may be given in powder or pills alone, or combined with other remedies, repeated in small doses till an evident good result is observable. Of the saturated tincture, twenty, forty, or even sixty drops may be safely given children of one or two years old, increasing as occasion may require.

LOBELIA SYPHILITICA. *Radix. Ed.*

Blue Cardinal Flower. The root.

Syngenesia Monogynia.—Nat. ord. *Campanaceæ.*

This plant grows in moist places in Virginia, and bears the winters of Great Britain. It is perennial, has an erect stalk three or four feet high, blue flowers, a milky juice, and a rank smell. The root consists of white fibres about two inches long, resembles tobacco in taste, which remains on the tongue, and is apt to excite vomiting.

Medical use.—Dr. Barton says, that it is considerably diuretic, and Mr. Pearson found, that it generally disagreed with the stomach, and seldom failed of affecting the bowels as a strong cathartic. It certainly possesses no power of curing syphilis; even the Indians, when they have the disease, are glad of an opportunity of applying to the whites. It is said to have cured gonorrhœa.

The Cherokees use a decoction of the root of the Lobelia Cardinalis as an anthelmintic.*

* Barton's Collections, Part I. p. 38.

LYTHRUM SALICARIA. *Herba.* D.

Willd. g. 951. *sp.* 1. *Smith, g.* 223. *sp.* 1. *Dodecandria Monogynia.*—Nat. ord. *Calycanthemæ.*

Purple-spiked Willowstrife, Loosestrife. The herb.

This perennial plant is indigenous, and grows in marshes, and on the banks of rivers. The dried leaves have a herbaceous taste, somewhat astringent, and when moistened soon give out a ropy mucilage. Hence it is difficult to swallow the powder mixed with water. An ounce of the plant yielded to Sagar three drachms of watery, and 24 grains of spirituous extract, and the former was more disagreeably austere and exsiccative.

The decoction of this plant has been long celebrated in Ireland in diarrhœas. In the same disease, it is a popular remedy in Sweden; and De Haen and Stork and others have given it with success in laxity of the intestines from an accumulation of sordes. After premising a purgative, a drachm or more of the powder may be given morning and evening, or three times a-day. A decoction also of the plant or root may be given in diarrhœa or dysentery. Its properties are evidently mucilaginous and astringent.

M.

MAGNESIA.—*MAGNESIA.*

Magnesium, the base of magnesia, only obtained as a dark grey metallic film; less fusible than plate glass, burning with a red light when strongly heated, and decomposing water slowly.

Magnesia is obtained in light, white, friable masses, or very fine powder; to the touch it is very fine; its taste is not very sensible, but peculiar and pleasant; its specific gravity is 2.33. It is insoluble in water, but forms with it a paste without ductility. It is apyrous; slightly alters vegetable blues to green; forms soluble compounds with most acids, and unites with sulphur. The fossils in which it predominates are generally soft, and have an unctuous feel. The principal are talc, steatites, arbutus, &c.

Hydrat of magnesia is the state in which it is obtained by precipitation, from its solution in an acid, by potass or soda.

MAGNESIA. *Magnesia. Ed.* L.

MAGNESIA USTA. D. *Calcined Magnesia.*

Let carbonat of magnesia, put into a crucible, be kept in a red heat for two hours, then put it up in close-stopt glass vessels. (E.)

BY this process the carbonat of magnesia is freed of its acid and water; and, according to Dr. Black's experiments, loses about $\frac{7}{12}$ of its weight. A kind of opaque foggy vapour is observed to escape during the calcination, which is nothing else than a quantity of fine particles of magnesia, buoyed off along with a stream of the disengaged gas. About the end of the operation, the magnesia exhibits a kind of luminous or phosphorescent property, which may be considered as a pretty exact criterion of its being deprived of its acid.

It is to be kept in close vessels, because it attracts, though slowly, the carbonic acid of the atmosphere.

Medical use.—It is used for the same general purposes as the carbonat. In certain affections of the stomach, accompanied with much flatulence, magnesia is preferable. both because it contains more magnesia in a given bulk, and, being deprived of its acid, it neutralizes the acid of the stomach, without any extrication of gas, which is often a troublesome consequence when carbonat of magnesia is employed in these complaints.

OFFICINAL PREPARATION.

Trochisci magnesiæ, L. - *vide Trochisci.*

CARBONAS MAGNESIÆ; olim, MAGNESIA ALBA. *Ed.* L.

Carbonat of Magnesia, formerly *White Magnesia.*

MAGNESIA. D. *Magnesia.*

Take of
- Sulphat of magnesia,
- Carbonat of potass, equal weights.

Dissolve them separately in double their quantity of warm water, and let the liquors be strained or otherwise freed from their feces: then mix them, and instantly add eight times their quantity of warm water. Let the liquor boil for a little on the fire, stirring it at the same time; then let it rest till the heat be somewhat diminished; after which strain it through linen: the carbonat of magnesia will remain upon the cloth, and it is to be washed with pure water till it become altogether void of saline taste. (E.)

IN this process there is a mutual decomposition of the two salts employed. The potass unites itself to the sulphuric acid, while the carbonic acid combines with the magnesia. The large quantity of water used is necessary for the solution of the sulphat of potass formed; and the boiling is indispensably requisite for the expulsion of a portion of the carbonic acid, which retains a part of the magnesia in solution. 100 parts of crystallized carbonat of potass are sufficient for the decomposition of 125 parts of sulphat of magnesia; and from these quantities about 45 parts of carbonat of magnesia are obtained.

The ablutions should be made with very pure water; for nicer purposes distilled water may be used, and soft water is in every case necessary. Hard water for this process is peculiarly inadmissible, as the principle in waters, giving the property called *hardness*, is generally a salt of lime, which decomposes the carbonat of magnesia, by compound affinity, giving rise to carbonat of lime, while the magnesia unites itself to the acid of the calcareous salt, by which the quantity of the carbonat is not only lessened, but is rendered impure by the admixture of carbonat of lime. Another source of impurity is the silica which the sub-carbonat of potass generally contains. It is most easily got rid of by exposing the alkaline solution to the air for several days before it is used. In proportion as it becomes saturated with carbonic acid, the silica is precipitated, and may be separated by filtration.

The carbonat of magnesia thus prepared is a very light, white, opaque substance, without smell or taste, effervescing with acids. It is not, however, saturated with carbonic acid. By decomposing sulphat of magnesia by an alkaline carbonat, without the application of heat, carbonat of magnesia is gradually deposited in transparent, brilliant, hexagonal crystals, terminated by an oblique hexagonal plane, and soluble in about 480 times its weight of water. The crystallized carbonat of magnesia consists of 50 acid, 25 magnesia, and 25 water; the sub-carbonat consists of 48 acid, 40 magnesia, and 12 watery; and the carbonat of commerce of 34 acid, 45 magnesia, and 21 water. It is decomposed by all the acids, potass, soda, baryta, lime, and strontia, the sulphat, phosphat, nitrat, and muriat of alumina, and the super-phosphat of lime.

Medical use.—Carbonat of magnesia is principally given to correct acidity of the stomach, and in these cases to act as a purgative; for solutions of magnesia in all acids are bitter and purgative; while those of the other earths are more or less austere and astringent. A large dose of magnesia, if the stomach contain no acid to dissolve it, neither purges nor produces any sensible effect: a moderate one, if an acid be lodged there, or if acid liquors be taken after it, procures several stools; whereas the common absorbents, in the same circumstances, instead of loosening, bind the belly. When the carbonat of magnesia meets with an acid in the stomach, there is extricated a considerable quantity of carbonic acid gas, which sometimes causes uneasy distention of the stomach, and the symptoms of flatulence. In such cases, therefore, magnesia is preferable to its carbonat; but on other occasions good effects arise from the action of the gas evolved, as in nausea and vomiting. It has been of late recommended highly, in small doses, in calculous cases.

Some attempts have been made by the manufacturers of common salt, at Cape Cod, to prepare carbonat of magnesia from the bittern, which is well known to hold a quantity of the muriat of magnesia in solution, and could the artists acquire the necessary practical skill, this article might be procured at those works in a state of purity, and to an extent adequate to every demand.

It affords great satisfaction to announce that the manufacture of this article on an extensive scale has been commenced in this state by Mr. William Dunn, apothecary and chemist of Boston. His apparatus is connected with an extensive salt-work. He calculates to make thirty thousand pounds a year, sufficient to supply the United States and any other demand which may be made. From each gallon of bittern about five or six ounces of magnesia is obtained. When first formed it is very pure, but by exposure to the air it attracts carbonic acid; and has then all the appearance of the carbonat of magnesia of the shops. Some specimens of it have been examined, and pronounced equally as pure as that imported. Connected with the apparatus, kettles are prepared for burning the carbonat to form the pure magnesian earth.

Officinal Preparation.

Magnesia, E. L. D.

SULPHAS MAGNESIÆ. *Ed.*

Magnesia Vitriolata. L. D. *Sulphat of Magnesia. Epsom salt.*

This salt is contained in several mineral springs, and also in sea water, from which it is obtained by evaporation. It crystallizes in tetrahedral prisms. It has a very bitter taste. It is soluble in its own weight of water at 60°, and three fourths of its weight of boiling water. Sulphat of magnesia when perfectly pure effloresces, but that of commerce generally contains foreign salts, such as the muriat of magnesia, which renders it so deliquescent that it must be kept in a close vessel or bladder. By the action of heat it undergoes the watery fusion, and loses its water of crystallization, but does not part with its acid. It is decomposed by baryta, strontia, the alkalies, and all the salts formed by these salifiable bases, excepting the alkaline muriats; and by the nitrat, muriat, and carbonat of lime.

Medical use.—It is a mild and gentle purgative, operating with sufficient efficacy, and in general with ease and safety, rarely occasioning any gripes, sickness, or the other inconveniences which purgatives of the resinous kind are too often accompanied with. Six or eight drachms may be dissolved for a dose in a proper quantity of common water; or four, five, or more, in a pint, or quart of the purging mineral waters. These liquors may likewise be so managed as to promote evacuation by the other emunctories; if the patient be kept warm, they increase perspiration; and by moderate exercise in the cool air, the urinary discharge. Some allege this salt has a peculiar effect in allaying pain, as in colic, even independently of evacuation.

It is principally used for the preparation of the carbonat of magnesia.

Officinal Preparation.

Carbonas magnesiæ, E.

MALVA SYLVESTRIS. *Herba. Flores. Ed.* L.

Common mallow. The leaves and flowers.

Willd. g. 1290. *sp.* 43. *Smith, g.* 317. *sp.* 1. *Monadel. Polyand.*—Nat. ord. *Columniferæ.*

This is an annual plant, common in Britain, under hedges, near footpaths and among rubbish.

The whole plant abounds with mucilage. The leaves were formerly of some esteem, in food, for loosening the belly; at present, decoctions of them are sometimes employed in dysenteries, heat, and sharpness of urine, and in general for obtunding acrimonious humours; their principal use is in emollient clysters, cataplasms, and fomentations.

Officinal Preparation.

Decoctum pro enemate, L. - *vide Decocta.*

MANGANESIUM. D.

Manganese. The black oxyd of Manganese.

This metallic oxyd is now, for the first time, introduced into the materia medica. It is to be regretted that the Dublin college has given as the officinal name of the oxyd, that which scientifically belongs to the metal.

Manganesium. Small whitish grey globules; specific gravity 6.850; very hard and very brittle; very difficult of fusion; very oxydizable by exposure to air; decomposes water rapidly; is oxydized by the sulphuric and nitric acids; burns when strongly heated in oxygen or chlorine; combines with many metals. According to Berzelius, it forms five oxyds, containing, 1, 2, 4, 6, and 8 proportions of oxygen, to one of metal. These oxyds colour glass brown, violet, or red, and destroy the colour of glass coloured by iron.

Manganese is found,

I. Metallic.
  1. Native manganese (Perouse.)

II. Oxydized. Grey ore, containing its black oxyd.
  1. Foliated grey ore.
  2. Radiated.
  3. Compact.
  4. Earthy.

III. Sulphureted. The black ore.

IV. Carbonated. The red ore.

The varieties of the grey ore are the most common. It is found in its greatest purity at Exeter, and at Howth near Dublin. It is chiefly used for destroying the colour which iron imparts to glass, and has hence been called glass-maker's soap, and for preparing the oxymuriatic acid, now so much used in bleaching. The recent application of the same acid to the destruction of contagion, and to other medical purposes, has procured the black oxyd of manganese a place in the list of the materia medica.

MARANTA ARUNDINACEA.

Indian Arrow-root.

THIS plant is a native of Jamaica and other West India islands, and of the continent of South America. By a letter from Mr. E. L. M'Call, to Dr. Barton, (Philadelphia Medical and Physical Journal, Vol. II.) it appears that the soil of the southern sea-coast is well adapted to it; and he adds, that Campbell Wylly, Esq. of Sapelo Island in Georgia, asserted "that a spot of land, on his plantation, not remarkable for its fertility, yielded arrow-root sago in the proportion of 1480 lbs. to the acre." The extensive use of this article in the United States, in the diseases of the bowels, &c. &c. renders this information of great importance.

This plant was originally the production of the East Indies, and is now cultivated in Jamaica, and other West India Islands, and in South America. Arrow root agrees with sago, salep, and tapioca in its general nutritious property, but is reckoned to excel them, so far as to afford a much larger proportion of mucilage than any vegetable hitherto discovered. Hence it is of superior utility as an article of diet for the sick and invalids, and particularly in cases of acrimony, either in the general habit, as in hectic fever or consumption; or in particular secretions, as in affections of the urinary passages, namely, inflammation, stone, or gravel; and also in affections of the bowels, as in looseness and dysentery. It furnishes also an excellent remedy for the bowel complaints, which so commonly prevail in the United States during the warm season, especially among children. The jelly is made by adding to a table-spoonful of the powdered root as much cold water as will make it into a soft paste, then pour on boiling water, stirring it at the same time briskly, until it become a clear jelly, which may be seasoned with sugar and nutmeg, or a little wine or lemon juice may be added. For children it may be prepared with milk, and if it ferment on the stomach, the addition of a little animal jelly will obviate that effect. Prepared in the form of pudding the arrow root powder is far preferable to any of the farinaceous substances, and affords a delicate and very proper food for convalescent patients. According to Dr. Wright, of Jamaica, a decoction of the fresh root makes an excellent ptisan in acute diseases. In a pamphlet published in 1796, by Mr. T. Rider, we find the culture of this valuable article highly recommended to the West Indian planters, and the new African colonists, as an object of commerce, and the most eligible substitute for starch made of wheat. By the author's computation eight millions of pounds weight of starch are made annually in Great Britain alone from that valuable grain. It appears also by the same authority that arrow root starch is of the finest quality, and that one pound of it is equal to two pounds and a half of that prepared from wheat. Fortunately the arrow root has of late years been introduced into the states of South Carolina and Georgia, and by practical experiment it is ascertained that the soil of the southern sea coast is well adapted to it. John Cooper, Esq. an opulent planter on St. Simon's, and Campbell Wylly, Esq. of Sapelo island, have, it is understood, so far succeeded in their attempts as to afford the most flattering encouragement, that this important article may be added to the numerous sources of wealth enjoyed by our southern planters. The latter gentleman asserts, that a spot of land on his plantation yielded arrow root sago in the proportion of 1840 pounds to the acre. No production it is presumed can promise a more ample renumeration, to stimulate the planter to attempt its cultivation; and when it is considered, that, in proportion to the produce, the demand will be extended, its claim as a rival staple with rice and cotton may, perhaps, be anticipated.

MARRUBIUM VULGARE. *Folia. Ed.* L. D.

White Horehound. The leaves.

Willd. g. 1111. *sp.* 8. *Smith, g.* 270. *sp.* 1. *Didynamia Gymnospermia.* Nat. ord. *Verticillatæ.*

This is a perennial plant, which grows wild on road sides, and among rubbish. The leaves have a very strong, not disagreeable smell, and a roughish, very bitter taste. Neumann got from 480 grains, 270 watery, and 30 alcoholic extract, and inversely 150 alcoholic, and 140 watery. They promote the fluid secretions in general, and liberally taken, loosen the belly.

MEDEOLA VIRGINIANA.

Cucumber-root. Indian Cucumber.

The root is diuretic, and is said to have cured dropsies.*

MEL. L. D.—*HONEY.*

D.	*Honig, Honing.*	P.	*Mel.*
DA.	*Honning.*	POL.	*Miod.*
F.	*Miel.*	R.	*Med.*
G.	*Honig.*	S.	*Miel.*
I.	*Mele.*	SW.	*Honing.*

This is a well known substance, and although it is most probably of vegetable origin, we not do procure it in any quantity except as an animal excretion, from the bee, (apis mellifica). This industrious

* Barton's Collections, Part I. p. 36.

insect, in the summer time flies from flower to flower to collect the sweet juice secreted in them. When sufficiently loaded, it returns to its hive, where it deposits it, as a winter's supply, in the cells of the comb it had prepared of wax to receive it. What change it undergoes in the body of the insect is unknown; but it is certain that honey varies very much, according to the nature of the plants from which it is collected. In some situations, where poisonous plants abound, it is even deleterious.

The best honey is that which is freest from colour, and contains the largest grains when it concretes. For medical use, it should also be as free of flavour as possible. That obtained from young bees, and which flows spontaneously from the combs, is the purest and finest, and is known by the name of Virgin honey. When separated from the wax by expression, it is less pure; and there is another sort still inferior, obtained by heating the combs before they are put into the press.

Honey consists principally of sugar, but it also probably contains mucilage and an acid, and is often impregnated with the essential oil of the flowers from which the bees have gathered it, as in the perfumed honey of the Crimea. In some parts of Asia and America, poisonous honey is met with, from the bees feeding on poisonous flowers. Neumann exsiccated honey in the water bath: the vapour which arose, he says, took fire on the approach of a candle, and diffused its smell widely, and the liquor which was condensed was manifestly impregnated, both with the smell and taste of honey, and amounted to three ounces upon eight of honey. Dissolved in water, it undergoes the vinous fermentation, forming mead. Treated with alcohol, Proust says it may be separated into two kinds, one liquid, and the other crystalline. Cavellazzi obtained crystals of sugar from it, by saturating its acid with carbonat of lime; and it is converted into oxalic acid by the action of nitric acid.

Medical use.—From the earliest ages it has been employed as a medicine. Besides the general properties of saccharine bodies, it possesses others peculiar to itself, probably depending on the presence of an acid. For internal use, sugar is always to be preferred, as honey in some constitutions produces gripes and colic pains. From its stimulus, however, it forms an excellent gargle, and facilitates the expectoration of viscid phlegm, and is sometimes employed as an emollient application to abscesses, and as a detergent to ulcers.

Officinal Preparations.

Mel despumatum, E. L. D.	vide *Mella medicata.*
acetatum, L. D. -	
rosæ, L. D. - -	
scillæ, L. D. -	
Oxymel colchici, L. - -	
scillæ, L. - -	
æruginis, L. -	

MELLA MEDICATA.—*MEDICATED HONEYS.*

MEL DESPUMATUM. L. D. *Clarified Honey.*

Melt the honey in a water bath, and remove the scum as it rises.

In this simple process, the honey is rendered so liquid by the heat of the boiling water, that the wax and other lighter impurities which it commonly contains, rise to the surface in the form of a scum, which is easily removed. At the same time, sand or any heavier mixture of that kind sinks to the bottom.

Honey was supposed to be peculiarly balsamic, and was therefore at one time much used in pharmacy. But as its saccharine matter is absolutely of the same nature with that of sugar, and as the extraneous matters which it always contains, make it disagree with the stomachs of many individuals, the number of medicated honeys has been much diminished, and their place in some instances supplied by syrups. Medicated honeys are known to be of a proper consistence, by allowing a small quantity to cool on a plate; if when divided by the edge of a spoon, the portions do not immediately unite, or if the specific gravity when hot, be 1.26, or 1.31, when cold.

MEL ACETATUM. L.

OXYMEL SIMPLEX. L. OXYMEL. D. *Simple Oxymel.*

Take of
 Honey, two pounds;
 Distilled vinegar, one pound by weight.
Boil in a glass vessel with a gentle fire to the consistency of a syrup, skimming it. (D.)

This was once in great repute as a cooling and attenuating medicine; it is scarcely used in modern practice, except in colds attended with coughs, and in sore throats, for which, when diluted with some aromatic or astringent infusion, as sage tea, rose flower tea, &c. it makes useful gargles.

MEL BORACIS. L. *Honey of Borax.*

Take of
 Sub-borat of soda, powdered, one drachm;
 Clarified honey, an ounce.
Mix them.

This is an useful formula, much employed as a detergent in aphthæ and ulcers of the mouth.

OXYMEL COLCHICI. D. *Oxymel of Meadow Saffron.*

Take of

The fresh root of meadow saffron, cut into thin slices, one ounce;
Distilled vinegar, one pint;
Clarified honey, two pounds.

Macerate the root of meadow saffron, with the vinegar, in a glass vessel, with a gentle heat, for forty-eight hours. Strain the liquor, pressed out strongly from the root, and add the honey. Lastly, boil the mixture, frequently stirring it with a wooden spoon, to the thickness of a syrup. (D.)

This is an active preparation, but its use may be entirely superseded by the syrup of the same root.

MEL ROSÆ. L. D. *Honey of Roses.*

Take of

Dried red-rose petals, four ounces;
Boiling water, three pints;
Clarified honey, five pounds.

Macerate the rose leaves in the water for six hours; then mix the honey with the strained liquor, and boil the mixture to the thickness of a syrup. (L.)

This preparation is not unfrequently used as a mild cooling detergent, particularly in gargarisms for ulcerations and inflammation of the mouth and tonsils. The rose buds here used should be hastily dried, that they may the better preserve their astringency.

The Dublin college, in making this and other similar preparations, use unclarified honey, with the idea, probably, that it may be equally well clarified in the course of the preparation itself. This is no doubt true, but as we do not know what effect the clarification may have on the active substances added to the honey, we think that the use of clarified honey, as directed by the London college, is preferable.

OXYMEL SCILLÆ. L. D. *Oxymel of Squills.*

Take of

Clarified honey, three pounds;
Vinegar of squills, two pints.

Boil them in a glass vessel, with a slow fire, to the thickness of a syrup. (L.)

Oxymel of squills is an useful aperient, detergent, and expectorant, and of great service in humoral asthmas, coughs, and other disorders where thick phlegm abounds. It is given in doses of two or three drachms, along with some aromatic water, as that of cinnamon, to prevent the great nausea which it would otherwise be apt to excite. In large doses, it proves emetic.

SYRUPUS SCILLÆ COMPOSITUS; vulgo *Hive Syrup.*

Take of
Seneca root, bruised,
Squills, dried and bruised, of each half a pound;
Water, eight pounds.
Boil together over a slow fire, till the water is half consumed—strain off the liquor, and then add of
Strained honey, four pounds.
Boil the honey and the strained liquor to six pounds, or to the consistence of a syrup, and add to every pound of this syrup, sixteen grains of tartar emetic; that is, one grain to the ounce.

The dose varies from ten drops to one or more tea-spoons full, every quarter, half, or one hour, according to the age of the patient, or the violence of the disease.

It operates by purging, vomiting, and sweat.

Any quantity may be made at a time, using the ingredients in the above proportions.

From the misfortune of having all my children, five in number, from their birth, subject to attacks of trachitis or the hives, I found it very necessary to turn my particular attention to that disease. All the common remedies, as syrup of squills, decoction of seneka, &c. &c. have been found of little advantage; at length I fell upon the plan of combining the virtues of the remedies most celebrated, into the form of a syrup, which I denominated hive syrup. As I have been frequently asked for it, by those who have in their families experienced its efficacy, I have here given the receipt, which will enable every one at a trifling expense to prepare it for themselves as a domestic medicine. It is far superior to every other form of hive syrup I have ever tried, and is equally superior to them in common colds, hooping cough, and those other complaints for which syrup of squills, &c. are so constantly employed. I may add, that as it sometimes ferments in the hot months, all that is necessary, is merely to boil it down a little, which prevents the continuance of the fermentative process, without diminishing the efficacy of the remedy. *Editor.*

OXYMEL ÆRUGINIS. D. *Oxymel of Verdigris.*

LINIMENTUM ÆRUGINIS. L. *Liniment of Verdigris.*

Take of
Prepared verdigris, one ounce;
Vinegar, seven ounces;
Clarified honey, fourteen ounces.
Dissolve the verdigris in the vinegar, and strain it through linen; then add the honey, and boil the whole to a proper thickness. (L.)

This is used only externally for cleansing foul ulcers, and keeping down fungous flesh. It is also often serviceable in venereal ulcerations of the mouth and tonsils: but there is some danger from its application to places from the situation of which it is apt to be swallowed; for even a small quantity of verdigris passing into the stomach may be productive of distressing, if not deleterious effects.

MELALEUCA LEUCADENDRON. *Oleum volatile. Ed. D.*

MELALEUCA CAJUPUTI. L. *The broad-leaved Cajeput tree. The essential oil.*

Willd. g. 1428. *Species Nova.—Polyadelphia Polyandria.*—Nat. ord. *Hesperideæ.*

THE tree which furnishes the cajeput oil is frequent on the mountains of Amboyna, and the other Molucca islands. Drs. Maton and Smith have lately examined specimens of this tree, which correspond with Rumphius, tab. 17, vol. ii.; and, as an unclassified species, have named it Melaleuca cajuputi. But, as Thunberg says, it is got from the leucadendron, perhaps both species yield it. Indeed, Rumphius himself would lead us to the same opinion. The oil is obtained by distillation from the dried leaves, and is prepared in great quantities, especially in the island of Banda, and sent to Holland in copper flasks. As it comes to us, it is of a green colour, very limpid, lighter than water, of a strong smell, resembling camphor, and a strong, pungent taste, like that of cardamoms. It burns entirely away, without leaving any residuum. It is often adulterated with other essential oils, coloured with the resin of milfoil. In the genuine oil, the green colour depends on the presence of copper; for, when rectified, it is colourless.

Medical use.—Like other aromatic oils it is highly stimulating, and is principally recommended in hysteria, epilepsy, flatulent colic, and paralysis of the tongue. The dose is from one to four drops on a lump of sugar.

It is applied externally where a warm and peculiar stimulus is requisite; and is employed for restoring vigour after luxations and sprains, and for easing violent pain in gouty and rheumatic cases, in toothach, and similar affections.

The tree yielding this oil, is asserted in the last addition of the London pharmacopœia, to be the *Melaleuca Cajuputi.*

MELIA AZEDARACH. *Poison Berry Tree. Pride of India or China. The fruit and root.*

THIS is not a native of America, but is now completely naturalized to the states of Carolina and Georgia; where it is highly valued for the beauty of its foliage, and agreeable shade, which it affords during the sultry season. In the city of Savannah the streets and public walks are ornamented by rows of this charming tree, and the compiler has recently been gratified with the enchanting view which they exhibit. The azedarach has also obtained considerable repute for the medicinal virtues which it is found to possess. Professor Barton says it is one of the most valuable anthelmintics that has hitherto been discovered, and many respectable physicians in Savannah repose the fullest confidence in its efficacy. To Dr. L. Kollock, vice-president of the Georgia Medical Society, we are indebted for the following information. "It is a vermifuge of efficacy. Its use is in some measure general among the planters; and with many supersedes the use of all others. I have given it with success where all others in common use have failed of relieving. But when given in the months of March and April, while the sap is mounting into the tree, it has sometimes been followed by stupor, dilatation of pupil, stertorous breathing, subsultus, &c. But these symptoms, like those sometimes produced by spigelia, pass off without any perceptible injury to the system. This article, like the spigelia, is also a useful febrifuge medicine, in those affections usually denominated verminous fevers, but where no worms are voided. The common form is that of decoction. A large handful, say about four ounces of the bark of the fresh root, is boiled in a quart of water, till it acquire the colour of strong coffee, i. e. to about a pint, of which from half an ounce to an ounce may be given every two or three hours till it operates. Given in this manner, its operation is powerful, sometimes both vomiting and purging. The strength of the decoction is however varied according to the intention." The dried berries of this tree have been advantageously employed as an anthelmintic, in Carolina; children being allowed to eat them at pleasure. The pulp of the fruit formed into an ointment with lard, it is said, has been successfully employed in tinea capitis.

MELISSA OFFICINALIS. *Herba. Ed.*

Balm. The herb.

Willd. g. 1118. *sp.* 1. *Didynam. Gymnosp.* —Nat. ord. *Verticillatæ.*

Balm is a perennial plant, which grows wild on the Alps and Pyrenees, and is frequently cultivated in our gardens. It has a pleasant smell, somewhat of the lemon kind; and a weak, roughish, aromatic taste. The young shoots have the strongest flavour; the flowers, and the herb itself when old, or produced in very moist rich soils or rainy seasons, are much weaker both in smell and taste.

It is principally used in the form of a watery fusion, which is drunk in the manner of tea.

MELOË VESICATORIUS. *Ed.* L. D.

Lytta Vesicatoria, *Fabricii.*

Spanish fly. Blistering fly.

Insecta, Coleoptera, Vesicantia. Syst. nat. Gmelin. g. 2013.

D. *Spannsche vliegen.*
DA. *Spanske fluer.*
F. *Cantharides, Mouches d'Espagne.*
G. *Spanische Fliegen.*
I. *Cantarelle.*
P. *Cantaridas.*
POL. *Kantarjdy, Hiszpanskie muchy.*
R. *Hischpanskie muchi.*
S. *Cantaridas.*
SW. *Spanska flugor.*

These insects have a longish, green, and gold-shining body with flexible green-striped elytra, which cover the whole back of the body, and under which are their brown membranous wings. On their head they have two black articulated feelers. They are found on the fraxinus, sambucus, salix, ligustrum, &c. in Spain, Italy, France, and Germany. The largest come from Italy, but the Spanish cantharides are preferred. They are gathered by shaking the trees on which they are found, and catching them on a cloth spread beneath it. They are then killed by the fumes of vinegar, and dried carefully in a stove. The melolontha vitis is sometimes found mixed in considerable numbers with the cantharides. They are easily distinguished by their almost square body, and as probably they do not stimulate the skin, they should be picked out before the cantharides are powdered.

The analysis of cantharides is still imperfect. Neumann got from 1920 grains, 920 watery, and afterwards 28 alcoholic extract; and inversely, 400 alcoholic, and 192 watery. Lewis ascertained that their active constituent is entirely soluble, both in water and in alcohol; for extracts made with each of these solvents blistered, as far as could be judged, equally, and as effectually as cantharides in substance. Both the residua were inactive. Thouvenel considered the vesicating power to reside in a green matter of an oily nature. Beaupoil in two substances, one yellow and the other black, both soluble in water, but separable by alcohol. Lastly, Robiquet, in a very detailed analysis, says, that neither of these three principles blisters of itself; but that this property is owing to their combination with a particular white crystalline substance, soluble in warm alcohol, separating as it cools, soluble in oils, and insoluble in water. He also found, besides known principles, free acetic acid, phosphat of magnesia, a reddish yellow oil insoluble in alcohol, and, lastly, uric acid.

Medical use.—Cantharides have a peculiar nauseous smell, and an extremely acrid, burning taste. Taken internally, they often occasion a discharge of blood by urine, with exquisite pain: if the dose be considerable, they seem to inflame and exulcerate the whole intestinal canal; the stools become mucous and purulent; the breath fetid and cadaverous; intense pains are felt in the lower belly: the patient faints, grows giddy, delirious, and dies. Applied to the skin, they first inflame, and afterwards excoriate the part, raising a more perfect blister than any of the vegetable acrids, and occasioning a more plentiful discharge of serum. But even th external application of cantharides is often followed by a strangury, accompanied with thirst and feverish heat.

The inconveniences arising from the use of cantharides, whether taken internally, or applied externally, are best obviated by drinking plentifully of bland emollient liquids, such as milk, emulsions, &c. The specific property of counteracting cantharides ascribed to camphor, has no foundation.

The internal use of cantharides is at all times doubtful, and requires the most prudent management. They have, however, been sometimes employed with success in dropsy, and in diseases of the urinary organs, arising from debility. They are given in substance in very small doses, or in tincture.*

Applied externally, they are one of our best and most powerful remedies. By proper management, they may be regulated so as to act as a gentle stimulus, as a rubefacient, or as a blister.

Blisters are applied,

1. To increase the activity of the system in general, by means of their irritation.
2. To increase the activity of a particular organ.
3. To diminish morbid action in particular organs, by means of the irritation they excite in the parts to which they are applied.

They may be employed with advantage in almost all diseases accompanied with typhus fever, especially if any important viscus, as the brain, lungs, or liver, be at the same time particularly affected. In these cases the blisters are not applied to the diseased organs themselves, but as near them as may be convenient. When we wish to excite action in any organ, the blisters are, if possible, applied directly to the diseased organ.

Cantharides are employed externally, either in substance, mixed up with wax and resin, so as to form a plaster or ointment, or in the form of tincture.

Officinal Preparations.

Tinctura meloës vesicatorii, E. L. D. -	*vide Tincturæ.*
Unguentum cantharidis, E. L. D. - -	*Unguenta.*
pulv. meloës vesicatorii, E. -	*Idem.*
Ceratum cantharidis, L. D. - -	*Idem.*
Emplastrum meloës vesicatorii, E. L. D. -	*Idem.*
compositum, E.	*Idem.*

LYTTA VITTATA. *Potatoe Fly.*

THERE are four species of meloe that blister, found in the United States. The lytta vittata was first brought into notice by Dr. Isaac Chapman, of Buck's county, Pennsylvania. It feeds principally upon the potatoe vine, and, at the proper season of the year, may be collected in immense quantities. This insect has a very near resemblance, in its outward form, to the meloe vesicatorius, or Spanish fly; but is rather smaller, and of a very different colour; the head is a very light red, with black antennæ; the elytra or wing cases are black, margined

* The tincture has been of late much recommended in tetanus, &c. and doubtless it has proved useful in some instances. That it will not do to depend on this alone, is evident from a case which fell under my care, (See Philadelphia Medical Museum, vol. I.) in which in two weeks the patient took about 2000 drops of the tincture. One thousand of these were exhibited in the space of ten hours, in doses of one hundred drops an hour, without any effect. Dr. Chapman states, from experiment, that a blister is very speedily and certainly raised by the application of the cantharides until their rubefacient operation is produced; they are then to be removed, and a warm poultice is applied, by which the cuticle is very quickly distended. *Amer. Editor.*

with pale yellow, and a stripe of the same colour extends along the middle of them; the tarsi have five articulations; the mouth is armed with jaws, and furnished with tarsi.

In the abdomen of this fly, is a hard, white substance, about the size of a grain of wheat, which, when powdered, appears like meal, and, when rubbed with water, forms a milky emulsion.

The experiments and investigation of Dr. Chapman have proved, that, when applied to the human system, the effects of the potatoe fly, are perfectly analogous to those of the Spanish cantharis; being equal, if not superior to them in medicinal powers.* The lytta vittata is now introduced into the Materia Medica of the Massachusetts Pharmacopœia, and its properties have been made the subject of a valuable communication to the Medical Society of Massachusetts, by Dr. John Gorham of Boston. From this interesting paper, it appears, that for some years past, the potatoe fly has been employed as a vesicatory by Dr. Israel Allen, of Sterling. That the insect in its dried state, is from four to six lines in length, its head and elytra are uniformly black, and the latter want the margin and stripe of yellow, observable in that described by Dr. Chapman. Its belly is ash coloured, and in the cavity of the abdomen is found the hard white substance already described. The thickness of the potatoe fly, which is nearly uniform throughout, is from one quarter, to one third its length. It generally appears on the vines, about the end of July, and the first week in August. They inhabit the soil at the foot of the plant; they ascend in the morning and afternoon, but generally avoid the heat of the sun at noon. As they fly with great difficulty, they are easily caught, and are prepared for medicinal purposes, by shaking them from the plant into hot water, and afterwards drying them by the sun's rays. Dr. Gorham proceeds to observe, that he has instituted an extensive series of experiments with the lytta vittata; and that they have never failed, even in a single instance, of producing all the immediate effects which he anticipated, from their external application, or internal exhibition: as a vesicatory, he has found them equal, if not superior to the cantharis usually employed for that purpose in this country. The saturated tincture has been administered internally, in many cases of diminished sensibility of the urinary organs, in gleets, and as a diuretic in dropsy; and it has been found, in all, to increase the discharge of urine, and to produce a considerable irritation in the urethra, and in the neck of the bladder. It appears, therefore, from the combined testimony of Drs. Chapman, Gorham, and Allen, that physicians, in various parts of the country, may collect from their own fields, an annual visitor, possessing all the properties of the genuine cantharis. This indigeneous production cannot fail of being generally adopted, as an excellent substitute for an expensive exotic, not always to be obtained.

We shall notice another kind of indigenous blistering fly, the *meloe niger* of Professor Woodhouse, or the Pennsylvanicus of Linnæus. This is not more than half the size of Chapman's fly, and is uniformly black. It feeds upon the *prunella vulgaris*, or self heal, and *ambrosia*

* Med. Repos. vol. II.

trifida, or stick weed. During the month of August, the farmers of New England find them in immense quantities, extracting nourishment from the potatoe vine, which in some seasons they almost destroy. These flies, it is well ascertained, are not inferior in point of efficacy to any other species, whether of foreign or domestic production, and they seldom excite strangury when applied externally.

MENTHA.

Willd. g. 1102. *Smith, g.* 262.—*Didynamia Gymnospermia.*—Nat. ord. *Verticillatæ.*

MENTHA VIRIDIS. *Sp.* 7. *Willd. Sp.* 3. *Smith.* MENTHA SATIVA. *Herba.* L. D.

Spearmint. The plant.

SPEARMINT is perennial, and a native of Britain. The leaves have a warm, roughish, somewhat bitterish taste; and a strong, not unpleasant, aromatic smell. Their virtues are stomachic and carminative.

OFFICINAL PREPARATIONS.

Aqua menthæ sativæ, - -	*vide Aquæ destillatæ.*
Ol. vol. menthæ sativæ, L. D. -	*Olea volatilia.*
Spiritus menthæ sativæ, L. - -	*Spiritus destillati.*

MENTHA PIPERITA. *Herba. Ed.* D. L.

Sp. 13. *Willd. Sp.* 4. *Smith.*—*Peppermint. The plant.*

THIS species of mint is also perennial, and a native of Britain, where it is cultivated in very great quantities for the sake of its essential oil. The leaves have a strong, rather agreeable smell, and an intensely pungent, aromatic taste, resembling that of pepper, and accompanied with a peculiar sensation of coldness.

Its predominant constituents are essential oil and camphor, both of which rise in distillation, and are combined with what is called Oil of Peppermint.

Medical use.—Peppermint is principally used as a carminative and antispasmodic. The distilled water is a domestic remedy for flatulent colic, and the essential oil is often given with advantage in doses of a few drops in cramps of the stomach.

OFFICINAL PREPARATIONS.

Aqua menthæ piperitæ, E. L. D. -	*vide Aquæ destillatæ.*
Ol. vol. menthæ piperitæ, E. L. D. -	*Olea volatilia.*
Spiritus menthæ piperitæ, E. L. - -	*Spiritus destillati.*

MENTHA PULEGIUM. *Herba. Ed.* L. D.

Sp. 20. *Willd. Sp.* 12. *Smith.*

Penny-royal. The herb.

This is also perennial, and a native of Britain. In its sensible qualities, it is warm, pungent, and aromatic, somewhat similar to spearmint, but less agreeable. It is seldom used.

Officinal Preparations.

Aqua menthæ pulegii, E. L. D.	-	*vide Aquæ destillatæ.*
Ol. vol. menthæ pulegii, L. D.	-	*Olea volatilia.*
Spiritus menthæ pulegii, L	- -	*Spiritus destillati.*

MENYANTHES TRIFOLIATA. *Folia. Ed.* L. D.

Buckbean, Marsh-trefoil. The leaves.

Willd. g. 299. *sp.* 4. *Smith, g.* 84. *sp.* 1. *Pentandria Monogynia.*—Nat. ord. *Rotaceæ.*

This perennial plant is very common in marshy situations, and is one of the most beautiful of the native flowers of Great Britain.

The leaves grow by threes on footstalks. They are excessively bitter, and their bitterness is extracted by infusion They are said to be sometimes used in brewing ale, and that one ounce will go as far as half a pound of hops.

Medical use.—A drachm of them in powder purges and vomits. In infusion or extract they have been recommended in intermittents, in several cachectic and cutaneous diseases. The dose of the extract is from ten to twenty grains.

METALLA.—*METALS.*

Metals are crystallizable; their form depends on the regular tetrahedron or cube; their surface is specular; they are perfectly opaque, even when melted; their colour is various; their lustre peculiar and shining, or splendent; their hardness various, but at least considerable; many of them are brittle, others possess malleability and ductility in a surprising degree, and some are scissile, flexile, or elastic; their fracture in general is hackly; their texture compact, fibrous or foliated; many of them are remarkably sonorous; their specific gravity greater than five;* they possess no smell or taste, unless when heated or rubbed; they are the best conductors of caloric and electricity; are powerful agents in producing the galvanic phenomena, and a few of them are the only substances which exhibit the phenomena of magnetism. By the action of caloric they melt, but with different degrees of faci-

* Excepting in the cases of the newly discovered metals by Mr. Davy.

lity, and some of them may be vaporized. Except iron and platinum, they melt suddenly, without undergoing any intermediate state of softness; and when melted, their surface is convex and globular. They are insoluble in water, but some of them decompose it, and are oxydized by it.

Primary Compounds of the Metals.

a. With oxygen:
  1. Metallic oxyds.
  2. Acids of arsenic, tungsten, molybdenum, chrome, and columbium.

b. With hydrogen. Hydrogurets.
c. With carbon. Carburets.
d. With phosphorus. Phosphurets.
e. With sulphur. Sulphurets.
f. With each other. Alloys and amalgams.

They are oxydized with different degrees of facility, some by mere exposure to air, and others seem almost to resist the action of heat and air. The oxydability is always increased by increase of temperature. Their oxyds are in the form of powder, laminæ, or friable fragments; sometimes crystalline; of various colours, determinate with regard to each metal; possess greater absolute weight; are refractory, or fusible into glass; insipid, or acrid, and styptic; in general insoluble in water; and combine either with acids and alkalies, or only with acids. Some of those are disoxygenized by light alone, others by caloric, and others require hydrogen, carbon, &c.

Most of them are capable of combining with different proportions of oxygen. Dr. Thomson proposes to call the oxyds with a minimum of oxygen Protoxyds, and with additional doses Deutoxyds, Tritoxyds, &c. in succession, and the oxyds with a maximum of oxygen Peroxyds.

Hydrogen gas is capable of holding arsenic, zinc, and iron, in solution.

Carbon unites only with iron.

The metallic phosphurets are fusible, brilliant, brittle, granulated, lamellated, scarcely combustible, and permanent.

The sulphurets are brittle; crystallizable in large brilliant and metallic laminæ, more easily fusible than the refractory metals, but less easily than the very fusible metals; decomposable by heat, humidity, and the acids.

The mixtures of the metals with each other are termed alloys: those in which mercury is contained are amalgams. They acquire by mixture new properties, and are in general more fusible than their components. The reguline metals are not soluble in the acids; but when acted upon by them, are first oxydized, and then dissolved. The metallic oxyds, by fusion, colour glasses and enamels.

The metals at present amount to 23, and are arranged by Dr. Thompson under three heads, viz.

I. *Malleable.*

1 Gold,	4 Mercury,	7 Tin,	9 Nickel,
2 Platinum,	5 Copper,	8 Lead,	10 Zinc.
3 Silver,	6 Iron,		

II. *Brittle and easily fused.*

1 Bismuth,	3 Tellurium,
2 Antimony,	4 Arsenic.

III. *Brittle and difficultly fused.*

1 Cobalt,	4 Molybdenum,	7 Chromium,
2 Manganese,	5 Uranium,	8 Columbium,
3 Tungsten,	6 Titanium,	9 Tantalium.

Those employed in medicine, are noticed in their respective places.

MILLIPEDES. - *Vide Oniscus.*

MIMOSA.

Willd. g. 1902. *Polygamia Monoecia.*—Nat. ord. *Lomentaceæ.*

MIMOSA CATECHU. LIGNI MIMOSÆ CATECHU EXTRACTUM. E.

ACACIA CATECHU. L. *Willd. sp.* 73.

Catechu. The extract of the wood.

THIS tree is a native of Hindostan. The extract of catechu, which was formerly termed, with peculiar impropriety, Japan Earth, is principally prepared in Bengal, from the internal coloured part of the wood, by decoction, evaporation, and exsiccation in the sun. But catechu is also prepared in India from several other species of Mimosa, and even from the woods, barks, and fruits of other genera. In Bombay, it is chiefly prepared from the nuts of the Areca catechu. The nuts are taken as they come from the tree, and boiled for some hours in an iron vessel. They are then taken out, and the remaining water is inspissated by continued boiling The process furnishes the Kossu, or the most astringent terra japonica, which is black, and mixed with paddy husks and other impurities. After the nuts are dried, they are put into a fresh quantity of water, boiled again; and this water being inspissated like the former, yields the best or dearest kind of catechu, called Coury. It is yellowish-brown, has an earthy fracture, and free from the admixture of foreign bodies.

The Bombay catechu is of a uniform texture, and of a red-brown tint, its specific gravity being generally about 1.39. The extract from Bengal is more friable and less consistent. Its colour is like that of chocolate externally; but when broken, its fracture presents streaks of chocolate and of red brown.—Its specific gravity is about 1.28. Their tastes are precisely similar, being astringent, but leaving in the mouth a sensation of sweetness. They do not deliquesce, or apparently change by exposure to the air, and are not fusible.

By Mr. Davy's analysis, 200 grains gave,

	Bombay.	Bengal.
Tannin, - - - - - -	109	97
Peculiar extractive matter, - - -	68	73
Mucilage, - - - - - -	13	16
Residual matter, chiefly sand and calcareous earths, - - - -	10	14

This more exact analysis confirms the observations made by Dr. Duncan in the first edition of the Edinburgh Dispensatory.

Medical use.—Catechu is one of the most convenient and powerful astringents we possess, and may be exhibited in every case where astringents are indicated. It is particularly serviceable in diarrhœa, in hoarseness from relaxation of the fauces, ulcers and aphthæ in the mouth, and in excoriations, with lymphatic exudations.

Officinal Preparations.

Infusum mimosæ catechu, E. - - - *vide Infusa.*
Electuarium mimosæ catechu, E. D. - - *Electuaria.*
Tinctura mimosæ catechu, E. L. - - *Tincturæ.*

MIMOSA NILOTICA. *Ed.* D.

Willd. sp. 87. Acacia Vera. L.

Gum Mimosa. The gum. Gum-Arabic.

Gummi Mimosæ Niloticæ. *Ed.* Acaciæ Gummi. L.

Gummi Arabicum. D.

This species of mimosa grows in the sandy deserts of Africa, Arabia Petræa, and Egypt. The greatest quantity of pure gum, commonly called Gum-Arabic, is furnished by this tree, from which it exudes either spontaneously, or from incisions made into the bark, and afterwards hardens in the air. But a similar gum may be obtained from all the species of mimosa, and from many other trees, such as the Swietenia febrifuga, Melia azadirachta, and the different species of Terminalia. It is remarkable that the barks of all the trees which furnish this bland mucilaginous substance are highly astringent; that of the mimosa nilotica itself is used in India for tanning; and in our country, the cherry and plumb trees, which sometimes yield a little gum, have very astringent barks.

There are two kinds of gum found in the shops, and sold promiscuously, distinguished by the names of Gum-Arabic, and East-India gum. Gum-Arabic consists of roundish transparent tears, colourless, or of a yellowish colour, shining fracture, without smell or taste, and perfectly soluble in water. The pieces which are most transparent, and have least colour, are reckoned the best. They are sometimes selected from the Gum-Arabic in sorts, and sold for about double the price, under the title of picked gum. The East-India gum is darker coloured than Gum-Arabic, and is not so readily soluble in water. Dr Duncan possesses a mass of gum, gathered from a mimosa in New South Wales, by Mr. Jamieson. It is darker coloured even than East-India gum, and is also less soluble than it; for when suspended in water, it gives off white films, which float through the mucilage. But its most remarkable property is, that it does not precipitate silicized potass; in which respect it agrees, as far as the Doctor's experiments go, with gum collected in this neighbourhood from the common cherry and plum trees. It is also remarkable, that the coarsest gum forms the thickest mucilage; at least Botany-Bay gum forms a thicker mucilage than East-India gum, and this than Gum-Arabic.

Gum-Arabic was originally brought from Arabia, by the way of Egypt, to Marseilles; and it was not until the beginning of the seventeenth century that the Dutch made the gum of Senegal known in Europe. After the French got possession of that river, they directed their attention to it, as an important object of commerce, and ascertained, by experiments made in the latter half of the seventeenth century, that gum Senegal was superior to the best gum of Arabia; and for about fifty years it has had the preference.

M. Adanson examined all the gum trees of West Africa with great care, and has given the best description of them. They amount to forty in number; but the three great forests which supply the Senegal market consist chiefly of two kinds; one which produces a white gum, called *Vereck*, and another, called *Nebueb*, which yields a red gum.

About the middle of November, that is, after the rainy season, which begins early in July, a gummy juice exudes spontaneously from the trunk and principal branches. In about fifteen days, it thickens in the furrow, down which it runs, either in a vermicular shape, or more commonly assuming the form of round or oval tears, about the size of a pigeon's egg, of different colours, as they belong the white or red gum-tree. About the middle of December, the Moors encamp on the borders of the forest, and the harvest lasts six weeks. The gum is packed in very large sacks of tanned leather, and brought on camels and bullocks to certain ports, where it is sold to the French and English merchants. In 1787, the annual quantity purchased by the former was about 800,000 pounds, and by the latter 400,000, according to the information of M. Golberry.

Mr. Jackson, in his account of the Empire of Morocco, informs us, that from Mogodor they export two sorts of gum, one the common Gum-Arabic, the produce of Morocco, and called Barbary gum; the other finer, called Gum Soudan, or Senegal, brought from Timbuctoo by the Caravans. He also says, but it must be observed that he is no botanist, that the gum called Morocco or Barbary gum is produced from a thorny tree called *Attaleh*, having leaves similar to the juniper, whereas all the acacias have pinnated leaves. It yields most gum during the hot and parching heat of July and August; and the hotter the weather, and the more sickly the tree appears, the more gum it yields. A wet winter and a mild summer are unfavourable to gum.

Gum is highly nutritious. During the whole time of the harvest, of the journey, and of the fair, the Moors of the desert live almost entirely upon it; and experience has proved that six ounces are sufficient for the support of a man during twenty-four hours.

Medical use.—It possesses the powers of a mucilaginous demulcent in a high degree; and is frequently exhibited in diarrhœa. dysentery, chincough, hoarseness, strangury, &c.; and is an extremely useful article for giving form to some remedies, and for correcting the acrimony of others.*

M. Golberry says, that he saw a young Englishman in Gambia recover from a very severe hæmoptysis, by taking three ounces of gum daily, dissolved in milk.

Officinal Preparations.

Mucilago mimosæ niloticæ, E. L. D.	*vide Mucilagines.*
Emulsio arabica, D.	*Mixturæ.*
Mixtura moschata, L.	*Idem.*
cretacea, L. D.	*Idem.*
Decoctum cornu cervi, L.	*Decocta.*
Trochisci carbonatis calcis, L.	*Trochisci.*
glycyrrhizæ, E.	*Idem.*
cum opio, E.	*Idem.*
gummosi, E. D.	*Idem.*
Pulvis cretæ compositus, L.	*Pulveres.*
tragacanthæ compositus, L.	*Idem.*

MIXTURÆ & EMULSIONES.

MIXTURES AND EMULSIONS.

Under these heads are comprehended those mixtures in which oils and other substances insoluble in water are mixed with, and suspended in, watery fluids, by means of viscid substances, such as mucilage and syrups.

* It deserves a constant place on ship-board, in well-secured vessels, as an article capable of supporting life in small amount, in case of shipwreck.—Other substances of similar nutritious properties, in small amount, might also be advantageously preserved for a similar case of misfortune, as salop, &c. Garrisons, supplied with due quantities of such articles, might thereby be enabled to sustain a longer siege. Even paper itself, boiled down to a pulp, might serve to support life, in case of great necessity.

EMULSIO AMYGDALÆ COMMUNIS. *Ed.*

Almond Emulsion.

LAC AMYGDALÆ. D. MISTURA AMYGDALARUM. L. *Almond Mixture.*

Take of
Sweet almonds, blanched, an ounce and a half;
Double refined sugar, half an ounce;
Distilled water, two pints and a half.

Beat the almonds with the sugar; then, rubbing them together, add by degrees the water, and strain the liquor. (D.)

EMULSIO MIMOSÆ NILOTICÆ; vulgo EMULSIO ARABICA. *Ed.*

EMULSIO ARABICA. D. *Arabic Emulsion.*

This is made in the same manner as the almond emulsion; only adding, while beating the almonds,
Mucilage of gum arabic, two ounces. (E.)

THESE possess nearly the same qualities, and are merely mechanical suspensions of oil of almonds in watery fluids, by means either of the mucilage with which it is naturally combined in the almonds by itself, or assisted by the addition of gum arabic and sugar. Therefore, on standing for some days, the oily matter separates and rises to the top, not in a pure form, but like thick cream. By heat the same decomposition is immediately effected.

Great care should be taken that the almonds have not become rancid by keeping, which not only renders the emulsion extremely unpleasant, a circumstance of great consequence in a medicine that requires to be taken in large quantities, but likewise gives it injurious qualities.

The almonds are blanched by infusing them in boiling water, and peeling them. The success of the preparation depends upon beating the almonds to a smooth pulp, and triturating them with each portion of the watery fluid, so as to form an uniform mixture before another portion be added.

These liquors are principally used for diluting and correcting acrimonious humours; particularly in heat of urine and stranguries, arising either from a natural acrimony of the juices, or from the operation of cantharides, and other irritating medicines: in these cases, they are to be drunk frequently, to the quantity of half a pint or more at a time.

EMULSIO CAMPHORATA. *Ed.*

Camphorated Emulsion.

MISTURA CAMPHORATA. D. MISTURA CAMPHORÆ. L.

Camphorated Mixture.

Take of
Camphor, one scruple;

Sweet almonds, blanched, two drachms;
Refined sugar, one drachm;
Water, six ounces.

This is to be made in the same manner as the common almond emulsion. (E.)

This mixture is not very permanent, as the camphor separates and swims upon the surface in the course of a few days. As an extemporaneous prescription, however, it is a very convenient mode of exhibiting that active drug, and may be given to the extent of a table spoonful every three or four hours in typhoid fevers.

LAC AMMONIACI. L. D.

Emulsion of Gum Ammoniac.

Take of
Ammoniac, two drachms;
Water, half a pint.

Rub the gum-resin with the water, gradually poured on, until it becomes an emulsion. (L.)

In the same manner may be made an emulsion of assa fœtida, and of the rest of the gum-resins.

The lac ammoniaci is employed for attenuating tough phlegm, and promoting expectoration, in humoral asthmas, coughs, and obstructions of the viscera. It may be given in the quantity of two spoonfuls twice a-day.

The assa fœtida emulsion is employed in spasmodical, hysterical, and other nervous affections. And it is also not unfrequently used under the form of injection. It answers the same purposes as assa fœtida in substance, but is very disagreeable.

MISTURA FERRI COMPOSITA.

Compound mixture of Iron. L.

Take of
Myrrh, powdered, a drachm;
Sub-carbonat of potass, twenty-five grains;
Rose water, seven ounces and a half;
Sulphat of iron, powdered, a scruple;
Spirit of nutmeg, half an ounce;
Refined sugar, a drachm.

Rub together the myrrh, the sub-carbonat of potass, and sugar, and during the trituration, add gradually; first, the rose water and spirit of nutmeg, and last the sulphat of iron. Pour the mixture immediately into a proper glass bottle and stop it close.

This is the celebrated antihectic mixture of Dr. Griffith, and is now introduced from the London pharmacopœia, for the purpose of giving precise directions for its preparation. As first invented, says Mr. Murray, it was undoubtedly an unchemical mixture, the prescriber not being aware of the changes produced in the active ingredients by their mutual action, but which, in practice, was found possessed of peculiar advantages. The sulphat of iron, it is obvious, is decomposed by the sub-carbonat of potass, the sulphuric acid combining with the potass, while the carbonic acid unites with the oxyd of iron. The carbonat of iron which is formed is diffused in the mixture along with the myrrh, and both are probably kept more completely suspended by an excess of alkali. This chalybeate proves much less irritating than the sulphat of iron, producing no unpleasant effect on the stomach, and at the same time it is more active than the common carbonat or rust of iron is at the maximum of oxydation, while, in the present preparation, it is at the minimum, is in a different state of aggregation, and probably combined with a larger quantity of carbonic acid. To preserve it in this low state of oxydation, it is ordered to be kept in a bottle closely stopped; but as iron has a strong tendency to pass to a more highly oxydated state, and suffers this change very rapidly from the action of the air, it is preferable that the preparation should be always extemporaneously made. Griffith's mixture was employed as a remedy in hectic fever, in chlorosis, and other diseases, in which iron is given as a tonic. The mixture of the London pharmacopœia, which is nearly of the same strength, may be given in the same cases, in a dose of an ounce, once or twice a-day. It is employed with the greatest success in those cases of hectic fever which are unattended by any great degree of heat or thirst, and which do not show manifest signs of inflammation. It will in general be found to sit easy on the stomach; but should it disagree, or should hectic fever and flushings prevail to a high degree, the proportion of the ingredients may be changed, or the sulphat of iron altogether omitted.

MISTURA MOSCHI. L.

Musk Mixture.

Take of
- Musk,
- Gum arabic, powdered,
- Double refined sugar, of each one drachm;
- Rose water, six ounces by measure.

Rub the musk first with the sugar, then with the gum, and add the rose water by degrees. (L.)

Unless the musk be very thoroughly triturated with the sugar and gum before the addition of the water it soon separates. An ounce, or an ounce and a half, may be taken for a dose.

POTIO CARBONATIS CALCIS; olim, POTIO CRETACEA. *Ed.*

Chalk Potion.

MISTURA CRETÆ. L. D. *Mixture of Chalk.*

Take of
  Prepared carbonat of lime, one ounce;
  Refined sugar, half an ounce;
  Mucilage of gum arabic, two ounces.
Triturate together, and then gradually add of
  Water, two pounds and a half;
  Spirit of cinnamon, two ounces.
Mix them. (E.)

THIS is a very elegant form of exhibiting chalk, and is an useful remedy in diseases arising from, or accompanied with, acidity in the primæ viæ. It is frequently employed in diarrhœa proceeding from that cause. The mucilage not only serves to keep the chalk uniformly diffused, but also improves its virtues. The dose of this medicine requires no nicety. It may be taken to the extent of a pound or two in the course of a day.

MISTURA GUAIACI. L.

Guaiac Mixture.

Take of
  Guaiac, one drachm and a half;
  Refined sugar, two drachms;
  Mucilage of gum arabic, two fluidrachms;
  Cinnamon water, eight fluidounces.
Triturate the guaiac with the sugar, then with the mucilage, and during the trituration with these, gradually add the cinnamon water.

THIS is one of the best forms of exhibiting guaiac, although it is not dissolved, but only mechanically suspended in the mixture, by means of the sugar and mucilage.

MISTURA CORNU USTI. L.

DECOCTUM CORNU CERVINI. D.

Mixture of burnt Horn. Decoction of Hartshorn.

Take of
  Burnt and prepared hartshorn, two ounces;
  Gum arabic, in powder, one ounce (three drachms, D.);
  Water, three pints.
Boil, constantly stirring, down to two pints; and strain.

PREPARED hartshorn is phosphat of lime in a minute state of mechanical division. By boiling in a mucilaginous liquid, it is diffused and imperfectly suspended, but not a particle of it is dissolved. This is therefore an extremely injudicious preparation; for phosphat of lime would be much more easily and effectually suspended by triturating it with a larger proportion of gum arabic, and adding the water gradually. But we believe that this preparation has no other action than that of a weak mucilage.

ENEMA CATHARTICUM. D. *Purging Clyster.*

Take of
 Manna, one ounce.
Dissolve in ten ounces, by measure, of
 Compound decoction of chamomile; then add of
 Olive oil, one ounce;
 Sulphat of magnesia, half an ounce.
Mix them.

ENEMA FŒTIDUM. D. *Fetid Enema*

Is made by adding to the former two drachms of the tincture of assa fœtida.

These are very useful extemporaneous preparations.

MOMORDICA ELATERIUM. *Ed.* L. D. *Fructus recens submaturus.*

Wild Cucumber. The fresh fruit, when almost ripe.

Willd. g. 7139. *sp.* 13.—*Monoecia Syngenesia.*—Nat. ord. *Cucurbitaceæ.*

This plant is a native of the south of Europe, and is perennial. When cultivated in Great Britain, it does not survive the winter. The fruit is oblong, about an inch and a half long, and an inch in diameter. It is of a green colour, and beset with stiff hairs. When nearly ripe, it bursts on a slight touch, separates from its stalk, and sheds its seeds with great violence. From this circumstance, it was named by the Greeks *Elaterium*, which name was also applied to the fæcula of the juice of the fruit, the only preparation used in medicine. Planche found it to contain animo-vegetable matter.

Medical use.—In a few grains it operates as a drastic purgative, and is sometimes used in dropsies. It is high priced and seldom used, though lately recommended by Dr. Ferriar.

Officinal Preparation.

Succus spissatus momordicæ elaterii, E. L. D. *vide Succi spissati.*

MORUS NIGRA. Morus. *Fructus.* L.

Mulberry tree. The fruit.

Willd. g. 1664. *sp.* 5. *Monoecia Tetrandria.*—Nat ord. *Scabridæ.*

This tree, which is supposed to have come originally from Persia, bears the cold of the winters, and ripens its fruits in England. The fruit has the same properties with other sub-acid fruits. Its juice contains tartaric acid.

Officinal Preparation.

Syrupus succi fructûs mori, L. - - - *vide Syrupi.*

MOSCHUS MOSCHIFERUS. *Materia in folliculo prope umbilicum collecta. Ed.*

The musk deer. The substance contained in a follicle situated near the navel.

Moschus. L. D. *Musk.*

Mammalia.

D.	*Muskus.*	P.	*Almiscar.*
DA.	*Desmer.*	POL.	*Pizmo.*
F.	*Musc.*	R.	*Muscus.*
G.	*Bisam.*	S.	*Almizcle.*
I.	*Muschio.*	SW.	*Desman.*

The musk animal is an inhabitant of the most elevated region of Asia, particularly of the Altayan Alps, and the mountains which divide Thibet from China. It is a gentle and timid animal, and its chase is difficult and dangerous. Its general form resembles the deer tribe, and it is about three feet in length. In the male, behind the navel and before the prepuce, there is situated an oval bag, flat on one side and convex on the other, about three inches long and two broad, projecting about an inch, and having a small open orifice, beset with short hairs, which is empty in the young animal, but in the adult is filled with a secreted matter, known by the name of musk. When the bag becomes too full, the animal expresses part of its contents by rubbing itself against stones or trees. The musk expressed in this manner is said to be the purest, but none of it probably reaches this country. The best musk is brought from Tonquin, an inferior sort from Agria and Bengal, and a still worse from Russia.

Fine musk comes to us in round thin bladders; which are generally about the size of a pigeon's egg, covered with short brown hairs, lined with a thin brown membrane, well filled, and without any appearance of having been opened. The musk itself is dry, with a kind of unctuosity, of a dark reddish brown, or rusty blackish colour, in small round grains, with very few hard black clots, and perfectly free from sandy or other visible foreign matter. If chewed and rubbed with a knife on paper, it looks smooth, bright, yellowish, and is free from grittiness. Laid on a red-hot iron, it catches flame, and burns almost entirely away, leaving only an exceeding small quantity of light greyish ashes. The largest and fullest bag scarcely contains more than two drachms of musk.

Its taste is somewhat bitterish, and its smell extremely powerful and peculiar Neumann got from 30 grains of musk 12 of watery and 4 of alcoholic extract; and inversely, 10 of alcoholic and 6 of watery. Its smell and taste were elevated in distillation with water, but not with alcohol. Neither the fixed nor volatile oils dissolved it.

The very great price of musk has given rise to many modes of adulterating it To increase its weight, sand, and even particles of lead are introduced through very small openings into the bags. The real musk is frequently abstracted from the bag, and its place supplied with dry and coarsely powdered blood, or some mixture with asphaltum. These adulterations are to be detected by discovering that the bag has been opened. The presence of blood is also known by the fetid smell it emits when heated sufficiently, and by the formation of ammonia when rubbed with potass. Asphaltum is known by its shining fracture and melting on hot iron, while musk is converted into charcoal. But there are even artificial bags filled with a composition containing some real musk. These are in general thicker, and covered with longer hair, and want the internal brown membrane which lines the real musk-bag.

Medical use.—Musk is a medicine of very great efficacy, and for which in some cases, there is hardly any substitute. When properly administered, it sometimes succeeds in the most desperate circumstances. It raises the pulse, without heating much; it allays spasms, and operates remarkably on the brain, increasing the powers of thought, sensation, and voluntary motion.

It may be employed in every instance of typhus fever, especially when attended with delirium, or spasmodic affection of any particular organ, or of the whole system, or subsultus tendinum, &c. It is also used with the greatest benefit in exanthematous and phlegmonic diseases, accompanied with typhoid fever; and in many spasmodic affections, as chincough, epilepsy, trismus, &c.

It is most conveniently given in substance in powder, in doses of three grains or upwards, repeated every one or two hours. Its best preparation is the tincture.

OFFICINAL PREPARATIONS.

Tinctura moschi, D. - - -	*vide Tincturæ.*
Mistura moschata, L. - - -	*Mixturæ.*

MUCILAGINES.—*MUCILAGES.*

MUCILAGO AMYLI. *Ed.* L. D. *Mucilage of Starch.*

Take of
 Starch, half an ounce;
 Water, one pound.

Triturate the starch, gradually adding the water; then boil them a little. (E. D.)

The mucilage thus formed is very useful in those cases where a glutinous substance is required; it is often successfully employed as a clyster, in diarrhœas depending on acrimony in the intestines.

MUCILAGO ASTRAGALI TRAGACANTHÆ. *Ed.*

Mucilago Gummi Tragacanthæ. D.

Mucilage of Gum Tragacanth.

Take of
  Tragacanth, half an ounce,
  Distilled water, ten ounces, by measure.
Macerate them, with a gentle heat, till the tragacanth be dissolved. (L.)

Gum Tragacanth is difficultly soluble in water. When macerated in it, it swells, but does not dissolve. To effect the solution it must be beaten into a paste with some of the water; and the rest of the water must be added gradually, and incorporated with the paste by beating them together. Gum tragacanth is a very tenacious substance, and requires a very large proportion of water to form a fluid mucilage. That of the Edinburgh college, which is made with eight parts of water, is a paste rather than a mucilage. The Dublin is made with thirty-two.

MUCILAGO MIMOSÆ NILOTICÆ. *Ed.*

Mucilago Gummi Arabici. D. *Mucilage of Gum Arabic.*

Take of
  Gum Arabic, in powder, one part;
  Boiling water, two parts.
Digest, with frequent agitation, until the gum be dissolved; then press the mucilage through linen. (E.)

It is very necessary to pass the mucilage through linen, in order to free it from pieces of wood and other impurities, which always adhere to the gum: the linen may be placed in a funnel.

Mucilage of gum arabic is very useful in many operations in pharmacy, it is also much used for properties peculiar to those substances of its own class, and of all the gums it seem to be the purest.

Officinal Preparations.

Infusum corticis Peruviani, D. - - - - - *vide Infusa.*
Emulsio arabica, E. - - - - - - - *Mixturæ.*
Potio carbonatis calcis, E. - - - - - - *Idem.*

DECOCTUM CYDONIÆ. L.

Decoction of Quince-seed.

Take of
Quince-seeds, two drachms,
Water, one pound.
Boil with a slow fire for ten minutes; then pass it through linen. (L.)

This mucilage, though sufficiently agreeable, is perfectly superfluous, especially as it is apt to spoil, from being mixed with the other principles of the seeds soluble in water. It is besides never so transparent as mucilage carefully prepared from gum arabic, is not cheaper, and is unfit for many purposes, being coagulated by acids.

MURIAS.—*MURIAT.*

Muriat is the generic term for those secondary compounds which contain muriatic acid.

The muriats may be divided into three families:

1. Alkaline muriats, soluble in water, fusible, and vaporizable without decomposition, forming no precipitate with alkaline carbonats.

2. Earthy muriats, soluble in water in general, decomposable by heat, forming a white precipitate with alkaline carbonats.

3. Metalline muriats. The muriatic acid is capable of combining with many metals, in two states of oxydizement. The muriats which contain the metal in the state of protoxyd, are in general very acrid, and soluble both in water and alcohol. The muriats which contain the metal in the state of peroxyd are often insoluble, have a white colour, and contain an excess of base, or are sub-muriats. The muriats are also the most volatile metalline salts, and often rise undecomposed in sublimation or distillation.

Officinal Preparations.

Murias ammoniæ, - - - -	*vide Ammonia.*
antimonii, - - - - -	*Antimonium.*
barytæ, - - - - - - -	*Baryta.*
calcis, - - - - - - -	*Calx.*
hydargyri, - - - - -	*Hydrargyrum.*
soda, - - - - - - -	*Soda.*

ACIDUM MURIATICUM. *Ed.* L. D.

Muriatic Acid.

Take of
Muriat of soda, two pounds;
Sulphuric acid, sixteen ounces;
Water, one pound.
Heat the muriat of soda for some time red-hot in a pot, and after it has cooled, put it into a retort. Then pour upon the muriat of

soda the acid mixed with the water and allowed to cool. Lastly, distil in a sand bath, with a moderate fire, as long as any acid is produced.

The specific gravity of this acid is to that of distilled water as 1170 to 1000. (E.)

In this process the muriat of soda is decomposed, and the muriatic acid disengaged by the superior affinity of the sulphuric acid. But as muriatic acid is a permanently elastic fluid, the addition of the water is absolutely necessary for its existence in a fluid form. The London college put a portion of water into the receiver, for the purpose of absorbing the muriatic acid gas, which is first disengaged, and which would otherwise be lost for want of water to condense it: the other colleges, however, order the whole of the water to be previously mixed with the sulphuric acid; and it is indispensably necessary that the mixture of acid and water be allowed to cool before it be added to the salt; for the heat produced is so great, that it would not only endanger the breaking of the retort, but occasion considerable loss and inconvenience, by the sudden disengagement of muriatic acid gas. Dr. Powell thinks it is an improvement to add the salt to the diluted acid, but it is less convenient.

Mr. Phillips has given us a tabular view of the results of the processes of the London pharmacopœias, 1809 and 1787, and of a modification of the latter.

	Mur. soda.	Sulph. acid.	Water.	Cost.	Product.	Sp. gr.	Marble decomp.
1787	35	21	17.5	56	29.75	1.188	15.09
Modif.	35	21	22.	56	35.	1.174	16.43
1809	32	24	39.4	56	43.68	1.142	17.16

It may be observed, that according to these experiments, the new process does not produce an acid nearly of the strength ordered by the college, its specific gravity being 1.142 instead of 1.160, and the fluidounce decomposing only 204 instead or 220 grains of marble, while muriatic acid from Apothecaries Hall is of specific gravity 1.158. The difference of strength from the statement in the edition 1809 was greater, as the sp. gr. was said to be 1.170, and the solvent power 240; it may now be accounted for by some variation in the manipulation, especially as Dr. Powell quotes the present statement as the result of experiment. At any rate, the new process is more economical, as at a given expense it produces a greater solvent power.

The muriat of soda, which should be of the kind called Bay Salt, is directed by Dublin and Edinburgh to be heated to redness, before it be introduced into the retort, that the whole of the water of crystallization may be expelled, which being variable in quantity, would otherwise affect the strength of the acid produced; and besides, without this precaution, the acid obtained is too high coloured. The London college use the salt dried but not decrepitated.

The charge should not occupy more than half the body of the retort; and if a common retort and receiver be employed for this distillation, they must not be luted perfectly close, for if any portion of the gas should not be absorbed by the water employed, it must be allowed to escape; but the process will be performed with greater economy, and perfect safety, in a Woulfe's, or some similar apparatus. The muriatic acid gas, on its condensation, gives out, according to Dr. Powell, a considerable heat, so that it is necessary to keep the receiver cooled during the process.

The residuum in the retort consists principally of sulphat of soda, which may be purified by solution and crystallization; and to save the retort, Dr. Powell directs it to be filled with boiling water, after the process is over, and it has cooled down to 212°.

If properly prepared, the muriatic acid is perfectly colourless, and possesses the other properties already enumerated; but in the shops it is very seldom found pure. It almost always contains iron, and very frequently sulphuric acid or copper. The copper is detected by the blue colour produced by super-saturating the acid with ammonia, the iron by the black or blue precipitate formed with tincture of galls or prussiat of potass. The sulphuric acid may be easily got rid of by re-distilling the acid from a small quantity of dried muriat of soda. But Mr. Hume discovered, that muriat of baryta is precipitated when poured into pure muriatic acid, from the acid attracting the water of the salt.

Medical use.—In its effects on the animal economy, and the mode of its employment, it coincides with the acids already mentioned, which almost proves, that they do not act by oxygenizing the system. On the contrary, according to Sir. H. Davy's view of its constitution, it contains no oxygen, and can only act *chemically* by imparting chlorine or hydrogen to the system, or withdrawing from it oxygen or some other principle which has an affinity for chlorine or hydrogen.

Officinal Preparations.

Sulphas sodæ, E. L. D. - - - -	*vide Soda.*
Hydro-sulphuretum ammoniæ, E. - - -	*Ammonia.*
Murias barytæ, E. - - - - - -	*Baryta.*
Solutio muriatis calcis, E. - - - - -	*Calx.*

ACIDUM MURIATICUM DILUTUM. D.

Diluted Muriatic Acid.

Take of
Muriatic acid,
Distilled water, each one pound. Mix.
The specific gravity is 1080.

This diluted acid of a fixed strength, is convenient for apportioning its dose; and as it is now introduced by the Dublin college, it is to be hoped that the same proportions will be adhered to by the others.

Table of the quantity of real Acid in 100 parts of Liquid Muriatic Acid, at the temperature of 60°. Dalton.

Atoms. Acid	Water.	Acid per cent. by weight.	Acid per cent. by measure	Specific Gravity.	Boiling Point. 60°.
1 +	1	73.3			
1 +	2	57.9			
1 +	3	47.8	71.7?	1.500?	
1 +	4	40.7			
1 +	5	35.5			
1 +	6	31.4			
1 +	7	28.2			
1 +	8	25.6	30.5	1.199	120
1 +	9	23.4	27.5	1.181	145
1 +	10	21.6	25.2	1.166	170
1 +	11	20.0	23.1	1.154	190
1 +	12	18.7	21.4	1.144	212
1 +	13	17.5	19.9	1.136	217
1 +	14	16.4	18.5	1.127	222
1 +	15	15.5	17.4	1.121	228
1 +	20	12.1	13.2	1.094	232
1 +	25	9.91	10.65	1.075	228
1 +	30	8.40	8.93	1.064	225
1 +	40	6.49	6.78	1.047	222
1 +	50	5.21	5.39	1.035	219
1 +	100	2.65	2.70	1.018	216
1 +	200	1.36	1.37	1.009	214

Table of the quantity of Muriatic Acid Gas in solutions of different Specific Gravities. Sir H. Davy.

At temperature 45° Fahrenheit. Barometer 30.

100 parts of solution of muriatic acid gas in water, of spec. gravity		Of muriatic acid gas, parts
1.21	Contain	42.43
1.20*		40.80
1.19		38.38
1.18		36.36
1.17		34.34
1.16		32.32
1.15		30.30
1.14		28.28
1.13		26.26
1.12		24.24
1.11*		22.3

At temperature 45° Fahrenheit. Barometer 30.

100 parts of solution of muriatic acid gas in water, of spec. gravity		Of muriatic acid gas, parts
1.10	Contain	20.20
1.09		18.18
1.08		16.16
1.07		14.14
1.06		12.12
1.05		10.10
1.04		8.08
1.03		6.06
1.02		4.04
1.01		2.02

AQUA ALCALINA OXYMURIATICA. D.

Oxymuriatic Alkaline Water.

Take of
Dried muriat of soda, two pounds;
Manganese, in powder, one pound;
Water,
Sulphuric acid, each two pounds.

Mix the muriat of soda and manganese; put them into a matrass, and pour on the water. Then, by means of a proper apparatus, add the sulphuric acid gradually, and at different times, and pass the gas thus extricated through a solution of four ounces of carbonat of kali, in twenty-nine ounces, by measure, of water. Towards the end of the operation, heat the matrass moderately.

The specific gravity is 1087.

THIS is commonly considered as a solution of the oxygenated muriat of potass; the oxymuriatic acid is disengaged in the matrass by the action of the sulphuric acid on the muriat of soda, and black oxyd of manganese, which latter furnishes the additional dose of oxygen to the muriatic acid disengaged from the former; and the oxymuriatic acid gas thus formed, readily combines with the potass of the solution of the alkaline salt, through which it is made to pass while the carbonic acid is expelled.

But, according to Sir Humphry Davy, this is a combination of chlorine with potass: the hydrogen of the muriatic acid in the muriat of soda combining with the oxygen of the black oxyd of manganese, the chlorine is set at liberty, and combines with the potass dissolved in the water through which it is made to pass.

Oxymuriat of potass in solution was some years ago strongly recommended as an antisyphilitic remedy, and its use extended to other cutaneous diseases, and finally to fever and spasmodic diseases, as a general stimulant. It was given in the dose of from three to ten grains, four times a-day, gradually increasing to 25 or 30. At the time, many singular cures performed by means of it were recorded, but it has fallen into disuse, and we do not now hear of its employment; although its introduction so lately into the Dublin Pharmacopœia would lead us to presume that it is still used in Ireland. It sometimes acted as a diuretic, always as a stimulant; and it is singular, that in some cases, in which it produced little or no effect, it passed off undecomposed in the urine. In these cases Mr. Cruickshank proposed to remedy the defect, by giving, after each dose, 10 or 15 drops of muriatic acid.

AQUA OXYMURIATICA. D.

Oxymuriatic Water,

Is prepared by transmitting, in a proper apparatus, the superfluous gas of the preceding process through a pint of water.

The specific gravity is 1003.

THE oxygenated muriatic acid was also, when the chemical pathology was fashionable, recommended as an antisyphilitic remedy, and it certainly seemed, in some instances, to effect cures; but it has since been laid aside. Mr. Braithwaite also recommended it strongly in scarlatina. He gave, according to the age of the patient, from half a drachm to a drachm, in the course of the day, mixed with eight ounces of distilled water; but it is advisable to divide it into doses, in different phials, as it loses every time the phial is opened, and it should be kept in a dark place. Dr. Willan confirms its use in cynanche maligna. The vapours of this powerfully decomposing acid have been recommended by Morveau as the best means of destroying contagion. As, however, they are deleterious to animal life, they cannot be employed in every situation. Where applicable, they are easily disengaged by mixing together ten parts of muriat of soda, and two parts of black oxyd of manganese in powder, and pouring upon the mixture, first four parts of water, and then six parts of sulphuric acid. Fumes of oxygenized muriatic acid are immediately disengaged.

Morveau has sinced contrived what he calls Dis-infecting or Preservative phials. If intended to be portable, 46 grains of black oxyd of manganese, in coarse powder, are to be put into a strong glass phial, of about $2\frac{1}{3}$ cubic inches capacity, with an accurately ground stopper, to which must be added about $\frac{45}{100}$ of a cubic inch of nitric acid of 1.4 specific gravity, and an equal bulk of muriatic acid of 1.134; the stopper is then to be replaced, and the whole secured by inclosing the phial in a strong wooden case, with a cap which screws down so as to keep the stopper in its place. They are used by simply opening the phial without approaching it to the nose, and shutting it as soon as the smell of the muriatic gas is perceived. A phial of this kind, if properly prepared, will preserve its power during many years. For small wards, strong bottles, with ground stoppers an inch in diameter, of about 25 or 27 cubic inches of capacity, may be used, with 372 grains of the oxyd, and 3.5 inches of each of the acids, and the stopper kept its place by leaden weights; or for larger wards, very strong glass jars, about 43 cubic inches in capacity, containing an ounce of the oxyd, and six inches of each of the acids. These jars are to be covered with a plate of glass, adjusted to them by grinding with emery, and kept in its place by a screw. In no case is the mixture to occupy more than one-third of the vessel.

ACIDUM OXY-MURIATICUM.

OXYGENIZED MURIATIC ACID.—*Chlorine.* (*Davy.*)

Muriatic acid gas is transparent and colourless. It destroys life, and extinguishes flame. Its specific gravity is 0.002315. Water is capable of dissolving about an equal weight of it. Its specific gravity is then 1.500; it is generally of a pale yellow colour: is very volatile, and emits white fumes of a peculiar unpleasant odour. The gas decomposes alcohol and oil, and destroys putrid exhalations. It is farther oxygenized by the nitric acid.

Oxygenized muriatic acid (or by contraction, oxy-muriatic acid) *gas*, is composed of muriatic acid 84 and oxygen 16. It is of a yellow colour, and very pungent smell, and acrid taste. It supports flame, but is deleterious when respired. It destroys the vegetable colours. It oxygenizes all oxygenizable substances, and repasses to the state of muriatic acid. It is decomposed by light. It does not unite readily with water. Water when saturated with it weighs 1.003.

The *oxy-muriats* have lately had their existence rendered doubtful by Mr. Chenevix.

Hyper-oxygenized muriatic acid consists of muriatic acid 35, and oxgen 65. It has not been obtained in a separate state.

Hyper-oxy-muriats give out very pure oxygen gas by the action of caloric, and become muriats. Their acid is expelled from them with noise, by the stronger acids; and they inflame combustible bodies, even spontaneously, and with detonation.

The composition of muriatic and oxy-muriatic acid as heretofore received, is denied by Mr. Davy; he regards the last mentioned substance as a simple body to which he has given the name of chlorine.* The former, he asserts, is a compound of chlorine and hydrogen. The subject is still in dispute.

* *Chlorine*, Sir H. Davy, (oxymuriatic acid gas of other chemists), is of a yellowish-green colour, has an extremely disagreeable smell. 100 cubical inches weigh 76 or 77 grains, its specific gravity to hydrogen being 33.5 to 1; is irrespirable, and does not support the combustion of charcoal: but phosphorus, and many metals burn spontaneously in it, and it maintains the flame of a taper. It is not changed by heat or cold, or electricity, and when perfectly dry does not act on vegetable colours; but they are quickly destroyed by it when vapour or moisture is present. Water at 60 absorbs about double its volume, weighs 1.003, freezes at 40°, and acquires a strong acrid taste, and disagreeable smell.

Chloride of oxygen (*Euchlorine*) was first obtained in a separate state by Sir H. Davy. It is a gas of a bright yellow green colour, having somewhat the smell of burnt sugar. It is not respirable. 100 inches weigh 74 or 75 grains. Even the heat of the hand causes it to explode, 50 parts expanding to 60, consisting of 40 chlorine and 20 oxygen. Metals do not burn in it, but phosphorus and sulphur decompose it. It gradually destroys vegetable colours. Water takes up eight or ten times its volume, and acquires a lemon colour, and a strongly acrid taste, approaching to sour.

Muriatic acid gas is transparent and colourless. It destroys life, and extinguishes flame. 100 cubic inches weigh between 39 and 40 grains; or its sp. gr. is 0.002315, water being unity; or 17, hydrogen gas being 1. According to Sir. H. Davy, it consists of equal volumes of chlorine and hydrogen gas. It decomposes alcohol and oil, and destroys putrid exhalations. Water is capable of absorbing about an equal weight of the gas. Its specific gravity is then 1.500; it is generally of a pale yellow colour, is very volatile, and emits white fumes of a peculiar unpleasant odour. It is further oxygenized by the nitric acid, or, according to Sir H. Davy, de-hydrogenated. *Officinal:* Muriatic acid.—*Edinb. New Dispens. eighth Edit.*

MYRISTICA MOSCHATA. E. D. L.

Nux Moschata et Oleum volatile. Macis et Oleum Macis.

The Nutmeg tree. Nutmeg. Its essential oil. Oil of Mace. Mace.

Willd. g. 1351. *sp.* 1. *Monoecia Monandria.*—Nat. ord. *Oleraceæ.*

D.	*Muskaatnooten, Nootemuskaat.*	P.	*Noz moscada.*
DA.	*Muskadnödder.*	POL.	*Muszatowa galka.*
F.	*Noix de Muscade.*	R.	*Muskatnüc oreschki.*
G.	*Muscatnüsse.*	S.	*Nuez muscada.*
I.	*Noci muscade.*	SW.	*Muskot.*

D.	*Foelie, Foely, Muscaatbloom.*	P.	*Macis, Flor de noz moscada.*
DA.	*Muskatblomer.*	POL.	*Muskatowy kwiat.*
F.	*Macis, Fleur de Muscade.*	R.	*Muskatnoi zwet.*
G.	*Muskatblüthe.*	S.	*Macio.*
I.	*Mace.*	SW.	*Muskottblomma.*

The tree which furnishes this elegant spice is a native of the Molucca islands. It is not, however, cultivated in any of them except Banda, from which all Europe has been hitherto supplied with mace and nutmegs. The entire fruit is about the size of a peach, and is marked with a longitudinal furrow. The external covering is smooth, fleshy, and bitter. As the fruit ripens, this bursts and discloses the mace, which is an oily membranous pulp, of a dark-red colour aud aromatic flavour, divided into narrow branched slips. Within the mace is inclosed the nut, which consists of a brown, thin, hard shell, and a fat parenchymatous kernel, of an oval shape. The fruit is gathered three times a-year. The external covering is separated on the spot, and the mace and nut carried home, where they are carefully dried in the sun. After they are dried, the nutmegs are dipt in lime water, and the mace is sprinkled with salt water, probably to preserve them from the attacks of insects.

Mace by drying acquires a reddish-yellow colour. When good, it is flexible, thin, oily, of a deep colour, strong agreeable smell, and an aromatic, bitterish, acrid taste. When brittle, divided into fewer slips of a whitish or pale yellow colour, and of little smell or taste, it is so be rejected.

Neumann got from 7680 parts of mace, 2160 alcoholic, and 1200 watery extract; and inversely, 1920 watery, and 1440 alcoholic extract, with 300 of volatile oil heavier than water, which arose during the inspissation of the watery extract. The expressed oil of mace is less consistent than that of nutmegs.

Nutmegs are oval, flattened at both ends, of a grey-brown colour, and reticularly furrowed on the outside, of a yellow colour within, variegated with brown undulating lines, solid, hard, unctuous to the feel, and easily cut with a knife; and have a balsamic smell, and agreeable aromatic taste. The small round nutmegs are better than the large oval ones; and they should have a strong smell and taste, and should neither be worm-eaten, musty, nor variegated with black lines. Their activity is, however, confined to the dark coloured veins which are not apt to be worm-eaten.

Neumann got from 1920 parts of nutmeg, 480 of an oily alcoholic extract, and 280 watery, with 320 fixed oil: these two last were both insipid: and inversely 600 watery extract, with 50 of fixed oil, which rose to the surface during the inspissation, and 10 of volatile oil which distilled over; and afterwards, 120 unctuous alcoholic extract, and 300 more of fixed oil. By expression 1920 gave 540 of oil, and afterwards 480 of watery extract, a pretty strongly tasted distilled water, and 80 unctuous alcoholic extract, with 60 of insipid fixed oil.

Officinal Preparations.

Spiritus nucis moschatæ, E. L. D. -	vide *Spiritus destillati.*
lavandulæ compositus, E. L. D. -	*Tincturæ.*
Pulvis carbonatis calcis compositus, E. -	*Pulveres.*
Confectio aromatica, D. L. - - - - -	*Electuaria.*
Electuarium catechu, E. D. - - -	*Idem.*
Trochisci carbonatis calcis, E. - - -	*Trochisci.*

Volatile Oil of Nutmeg.

By distillation nutmegs yield a considerable quantity of essential oil, of a whitish yellow colour, lighter than water, and possessing the aromatic taste and smell in an eminent degree. In doses of a few drops it is a powerful carminative and stomachic.

Officinal Preparation.

Spiritus alkali vol. aromaticus, D. - *vide Tincturæ volatiles.*

Expressed Oil of Mace.

Nutmegs also yield by expression a considerable quantity of limpid yellow oil, which on cooling concretes into a sebaceous consistence. They are previously beaten to a soft paste in a warm mortar, then inclosed in a linen bag, exposed to the vapour of hot water, and squeezed in a press, of which the plates have been heated.

It is a mixture of the volatile oil, on which their flavour depends, and of a fixed oil, of a white colour, without taste or smell; and as the properties which characterize it depend on the presence of the volatile oil, the denomination of Fixed Oil, applied to it by the Edinburgh college, is less correct than that of Expressed Oil, given to it by the other colleges, from the manner of its preparation.

In shops we meet with three sorts of unctuous substances called Oil of Mace, though really expressed from the nutmeg. The best is brought from the East Indies in stone jars; this is of a thick consistence, of the colour of mace, and an agreeable fragrant smell: the second sort, which is paler coloured, and much inferior in quality, comes from Holland in solid masses, generally flat and of a square figure: the third, which is the worst of all, and usually called Common Oil of Mace, is an artificial composition of suet, palm oil, and the like, flavoured with a little genuine oil of nutmeg. 7680 of the second sort yielded to Neumann 330 volatile oil heavier than water, 2880 of fluid expressible oil, and 4560 of solid but fusible sebaceous matter, perfectly insipid, inodorous, and of a chalky whiteness.

Medical use.—Both mace and nutmegs are rather to be considered as aromatic spices than as articles of medicine. From the essential oil they contain they are heating and stimulating, and they are added to other medicines for the sake of their agreeable flavour.

Officinal Preparation.

Emplastrum ladani compositum, L. - *vide Unguenta.*

MYROXYLON PERUIFERUM. *Balsamum. Ed.* L. D.

Sweet-smelling balsam tree. Peruvian balsam.

Willd. g. 829. *sp.* 1.—*Decandria Monogynia.*—Nat. ord. *Lomentaceæ.*

This tree grows in the warmest provinces of South America, and is remarkable for its elegant appearance. Every part of it abounds with resinous juice, even the leaves are full of transparent resinous points like those of the orange tree.

This balsam as brought to us, is commonly of the consistence of thin honey, of a reddish brown colour, inclining to black, an agreeable aromatic smell, and a very hot biting taste.

It is very often adulterated, and sometimes what is sold for Peruvian balsam, is a spurious mixture of resin and essential oil, flavoured with benzoin. These frauds are not easily detected, and fortunately they are of little importance.

It is said to be obtained by boiling the cuttings of the twigs in water, and skimming off with a spoon the balsam which swims on the top.

By incision this tree yields a much more fragrant white or colourless balsam, which, when inspissated by the heat of the sun, forms, the red or dry balsam of Peru; but they are very rarely in use in Britain, and almost never to be met with in our shops.

Peruvian balsam consists of a volatile oil, resin, and benzoic acid. It is accordingly entirely soluble in alcohol, and in essential oils. Water dissolves part of the benzoic acid, and fixed oil combines with the resin. It may be suspended in water by trituration with mucilage and yolk of eggs.

Medical use.—Balsam of Peru is a very warm aromatic medicine, considerably hotter and more acrid than Copaiva. Its principal effects are, to warm the habit, and to strengthen the nervous system. Hence its use in some kinds of asthmas, gonorrhœas, dysenteries, suppressions of the uterine discharges, and other disorders proceeding from a debility of the solids. It is also employed externally, for cleansing and healing wounds and ulcers, and sometimes against palsies and rheumatic pains.

Officinal Preparations.

Tinctura balsami Peruviani, L. - - *vide Tincturæ.*
Trochisci glycyrrhizæ compositi, D. - - *Trochisci.*

MYRRHA. *Gummi-resina. Ed.* L. D. *Myrrh. The gum-resin of a non-descript tree.*

D.	*Mirrhe.*	P.	*Mirra.*
DA.	*Myrre.*	POL.	*Mirra.*
F.	*Myrrhe.*	S.	*Mirra.*
G.	*Myrrhen.*	SW.	*Myrha.*
I.	*Mirra.*		

The tree which produces this gum-resin is not yet ascertained. Mr. Bruce has given some reasons for supposing that it is a mimosa; but we may observe, that all the mimosas with which we are sufficiently acquainted furnish a pure gum, and not a gum-resin. The best myrrh is brought from Troglodytitia, a province of Abyssinia, on the borders of the Red sea; but what we receive comes from the East Indies, and is produced on the eastern coast of Arabia Felix.

The best myrrh is in the form of tears. It should be of a yellow, or reddish-yellow colour, becoming redder when breathed on, light, brittle, of an unctuous feel, pellucid, shining; presenting white semi-circular striæ in its fracture; of a very bitter aromatic taste, and a strong, peculiar, not unpleasant odour. It is not good if whitish, dark-coloured, black, resinous, ill-smelled, or mixed with impurities, which is too commonly the case.

Neumann ascertained that water and alcohol are both of them capable of taking up the whole of the taste and smell of the myrrh, the extract made by either after the other being insipid. The alcohol distilled from the tincture elevated none of the flavour of the myrrh; but during the inspissation of the decoction a volatile oil arose, containing the whole of the flavour of the myrrh, and heavier than water, while the extract was merely bitter. From 7680 parts of myrrh, he got 6000 watery extract, 180 volatile oil, and 720 alcoholic: and inversly, 2400 alcoholic, and 4200 watery. Braconnot found that myrrh chiefly consisted of a gum, differing from all others. 1. It acquires cohesion by heat, which renders it partly insoluble in water, when the solution is evaporated; 2. It furnishes ammonia by distillation, and azote with nitric acid. 3. It precipitates lead, mercury and tin from their solution. Myrrh also contains 2.3 parts in the 100 of a bitter, very fusible, resinous matter. I have observed that the tincture is transparent, and when poured into water, forms a yellow opaque fluid, but lets fall no precipitate, while the watery solution is always yellow and opaque; and that myrrh is not fusible, and is difficultly inflammable. Mr. Hatchett found it soluble in alkalies.

Vauquelin obtained from the root of the *Andropogon Schoenanthus*, by means of alcohol, a thick brown oil, having an acrid, burning taste, like an essential oil, and exactly the smell of myrrh. It differs from myrrh chiefly in having less solidity; but Vauquelin thinks, that if it was united to a gummy matter, it would exactly resemble it. He does not suppose, however, that this is the plant which produces the myrrh of commerce, but considers it as a proof that myrrh is formed in various vegetables.

Medical use.—Myrrh is a heating stimulating medicine. It frequently occasions a mild diaphoresis, and promotes the fluid secretions in general. Hence it proves serviceable in cachectic diseases, arising from inactivity of the system, and is supposed to act especially upon the uterine system, and to resist putrefaction.

It is exhibited,

1. In substance; in the form of powder, or made up into pills, in doses of ten to sixty grains.
2. Dissolved in water, as in Griffith's famous but unchemical myrrh mixture.
3. Dissolved in alcohol.

Officinal Preparations.

Tinctura myrrhæ, E. L. D. - - -	vide *Tincturæ.*
aloës cum myrrha. E. L. - -	*Idem.*
aloës ætherea, E. - - -	*Tincturæ æthereæ.*
Pulvis myrrhæ compositus, L. - - -	*Pulveres.*
aloës cum ferro, L. - - -	*Idem.*
Pilulæ galbani compositæ, L. - - -	*Pilulæ.*
rhæi compositæ, E. - - - -	*Idem.*
aloës cum myrrha, E. L. - - -	*Idem.*
assæ fœtidæ compositæ, E. - -	*Idem.*

MYRTUS PIMENTO. *Fructus. Ed.* L. D.

Pimento tree. The fruit, commonly called Jamaica pepper.

Willd. g. 973. *sp.* 28.—*Icosandria Monogynia.*—Nat. ord. *Hesperideæ.*

D.	*Piement. Jamaica peper.*	P.	*Amomo, Pimenta da Jamaica.*
DA.	*Piment, Allehaande.*	R.	*Anglinskoi perez.*
F.	*Piment.*	S.	*Pimienta de Jamaica.*
G.	*Pimento, Jamaica pfeffer.*	SW.	*Kryddpeppar.*
I.	*Pepe garofanato.*		
POL.	*Pieprz z Jamaiki.*		

This is a native of Jamaica, and grows in all the woodlands on the north side. Soon after the trees have blossomed, the berries become fit for gathering; the fruit not being suffered to ripen, as in that state it is moist and glutinous, and therefore difficult to cure, and when dried becomes black and tasteless. The berries are dried by spreading them on a terrace, exposed to the sun, for about seven days, during which time they gradually lose their green colour, and become of a reddish brown.

The smell of this spice resembles a mixture of cinnamon, cloves, and nutmegs: its taste approaches to that of cloves, or a mixture of the three foregoing; whence it has received the name of *allspice*.

Neumann ascertained that its flavour resides entirely in a volatile oil heavier than water, and its pungency in a resin or a substance soluble in alcohol and insoluble in water. From 480 parts he got 120 watery extract, 30 volatile oil, and 20 alcoholic extract; and inversely, 66 alcoholic and 100 watery.

Medical use.—Pimento is a warm aromatic stimulant, and is much used as a condiment in dressing food. As a medicine, it is advantageously substituted for the more costly spices, especially in hospital practice.

OFFICINAL PREPARATIONS.

Aqua myrti pimentæ, E. L. - -	*vide Aquæ destillatæ.*
Oleum volatile myrti pimentæ, E. - -	*Olea volatilia.*
Spiritus myrti pimentæ, E. L. D. - -	*Spiritus destillati.*
Syrupus spinæ cervinæ, L. - - -	*Syrupi.*
Pilulæ opii, E. - - - - - -	*Pilulæ.*

N.

NICOTIANA TABACUM. *Ed.* L. D. *Folium.*

Tobacco. The dried leaves.

Willd. g. 379. *sp.* 1.—*Pentandria Monogynia.*—Nat. ord. *Solanaceæ.*

D.	*Tabak.*	P.	*Tabacco.*
DA.	*Tobak.*	POL.	*Tabaka.*
F.	*Tabac.*	R.	*Tabak.*
G.	*Tabak.*	S.	*Tabaco.*
I.	*Tobacco.*	SW.	*Tobak.*

This is an annual plant, a native of America, from whence it was first carried to Europe, about the year 1560; where it is now sometimes cultivated for medicinal use in gardens; but in general it is exported from America in large quantities. The leaves are about two feet long, of a pale green colour whilst fresh, and when carefully dried, of a lively yellowish cast. They have a strong, disagreeable, narcotic smell, and a very acrid burning taste.

The active constituent of tobacco is an essential oil; for, by long boiling, the decoction and extract of tobacco become almost inert; and by distillation an oil is obtained from it, so active, that small animals are almost instantly killed when wounded by a needle dipped in it.

Vauquelin has lately analysed tobacco, both in its fresh and prepared state. The expressed juice is manifestly acid, and contains a great quantity of albuminous matter, super-malat of lime, acetic acid, nitrat and muriat of potass, muriat of ammonia, a red matter, soluble in alcohol and in water, which swells and becomes charred by heat, and an acrid principle on which its peculiar properties depend. The infusion of prepared tobacco is alkaline, and contains beside the same principles, carbonat of ammonia, and muriat of lime, proceeding from the mutual decomposition of the muriat of ammonia and lime which is added to give it pungency. The principle to which the acrimony of tobacco is owing, is soluble in alcohol and in water, is volatile, but still may be concentrated by slowly evaporating its solution in water, and still more easily its tincture. Its volatility is also diminished by the malic acid with which it is combined. It is obtained in a state nearest to purity in the distilled water of the infusion of the dry, or of the expressed juice of the fresh plant. This water is colourless, but has the acrid smell and taste of tobacco smoke: with acetat of lead and nitrat of mercury, it forms white precipitates, soluble in acids, and with infusion of galls one soluble in alcohol and the alkalies. The principle on which the properties of tobacco depends seems not easily destructible, as it is the same in the dry and in the fresh plant, and is not destroyed by oxymuriatic acid.

Medical use.—On the living body, whether taken into the stomach in substance or solution, or into the lungs in the form of smoke, or applied to abraded surfaces, tobacco is capable of producing deleterious effects. It often proves virulently cathartic or emetic, and occasions intolerable cardialgia, anxiety and vertigo.

The system becomes easily habituated to the action of tobacco; and many people use very large quantities of it in various ways as a luxury, without experiencing any other bad effect than what arises from their being unable to relinquish it after the habit is confirmed.

As a medicine it is exhibited in various forms:

1. In substance. When chewed, it causes an increased flow of saliva, and sometimes relieves the toothach; and reduced to powder it proves an excellent errhine and sternutatory, when snuffed up the nostrils.
2. In infusion in water or wine. Taken in such small doses as to have little effect on the stomach, it proves powerfully diuretic, and was employed by Dr. Fowler with very great success in cases of dropsy and dysuria. It is also applied externally for the cure of psora, tinea, and other cutaneous diseases.
3. In the form of smoke, it is injected into the anus by means of bellows of a peculiar construction. By acting as a stimulus to the rectum, it sometimes succeeds in reviving the vital powers in some kinds of asphyxia, and in evacuating the intestines in cases of obstinate constipation.*

It has likewise been employed with advantage as a bougie in removing strictures of the urethra.†

* See Dr. Brailsford's Inaugural Dissertation on Tobacco.

† See an account, by Dr. Shaw, in the Philadelphia Medical Museum, Vol. II.

Officinal Preparation.

Vinum nicotianæ tabaci, E. - *vide Vina Medicata.*

NIGELLA. *Golden-thread. Mouth Root.* (*Cutler.*) *The root.*

Golden-thread is a very small plant found in wet swampy situations. The stems are erect and naked. The leaves grow by threes at the termination of the stems and are circular and scalloped. The white solitary blossoms appear in May. The roots appear singular, being thread shaped, running, and of a bright yellow colour. They possess a considerable degree of astringency and bitterness, and have long been employed by the people in the country as a remedy in aphthas and cankerous sores in the mouths of children with considerable benefit. From the bitter property possessed by these roots they are supposed by some to be useful as a stomachic bitter.

NITRAS.—*NITRAT.*

Nitrat is the generic term for secondary compounds, which consist of nitric acid, combined with any base. There are three families of nitrats.

1. Alkaline nitrats;—soluble in water; solubility increased by increase of temperature; crystallizable; forming no precipitate with alkaline carbonats.
2. Earthy nitrats;—soluble in water; forming a white precipitate with alkaline carbonats.
3. Metallic nitrats;—generally soluble, both in water and in alcohol; decomposable by heat, furnishing nitric oxyd gas and leaving the metal oxydized to a maximum.

NITRAS POTASSÆ. *Ed.*

Nitrum. L. D. *Nitrat of Potass. Purified Nitre.*

D.	*Salpeter.*	P.	*Salitre.*
F.	*Salpetre, Nitre.*	POL.	*Saletra, Salnitra.*
G.	*Salpeter.*	R.	*Senitra.*
I.	*Nitro, Salnitro.*	S.	*Nitro, Salitre.*

Nitrat of potass is annually produced on the surface of the earth in many countries. For this production, the presence of a calcareous base, heat, and an open, but not too free, communication with dry atmospheric air, are requisite. The putrefaction of organic, especially animal substances, is not necessary to, but accelerates the formation of, this salt, by affording the Nitrogen in a state in which it combines readily with the oxygen of the atmosphere, and forms the nitric acid. Accordingly, in Germany and France, nitrat of potass is prepared, by exposing mixtures of putrefying animal and vegetable substances, and calcareous earths, to the action of the atmosphere. The salt is afterwards extracted by lixiviation and crystallization. The nitre used in Great Britain is chiefly imported from the East Indies. It is found abundantly in several parts of the United States. As it occurs in commerce, it often contains a little muriat of potass and muriat of soda, from which it is easily purified by dissolving it in boiling water, and filtering it; on cooling, the nitrat of potass crystallizes, and the other salts remain dissolved.

Nitrat of potass has a sharp, bitterish, cooling taste. It shoots in pretty large crystals, which are generally six-sided prisms, terminated by six-sided pyramids; very brittle, and permanent in the atmosphere; soluble in seven times their weight of water at 60°, and in an equal weight at 212°; melting when exposed to a strong heat, giving out at first oxygen, and afterwards nitrogen gas, until the whole acid be decomposed, and the potass alone remain behind. It deflagrates more or less violently with all oxygenizable substances, oxydizing or acidifying them. When dried in a temperature of 70°, it consists, according to Kirwan, of 44 nitric acid, 51.8 potass, and 4.2 water. It is decomposed by the sulphuric acid and baryta, by the muriat and acetite of baryta, and the sulphats of soda, ammonia, magnesia, and alumina.

Medical use.—Taken to the extent of from a drachm to half an ounce in the course of a day, in repeated doses, it diminishes the heat of the body, and the frequency of the pulse, and operates by stool, and acts upon the secretion of urine, but is apt to produce pains in the stomach. In large doses, such as an ounce, taken at one time, it produces the most dreadful symptoms, constant vomiting, purging, mixed with blood, convulsions, and death. Accidents of this kind have happened from its being sold by mistake for sulphat of soda.

It is best given in small doses, as 5 to 20 grains frequently repeated, and is only admissible in inflammatory diseases. Externally it is used in gargles, for inflammatory sore throats.

Officinal Preparations.

Nitrum purificatum, L.	
Acid. nitrosum, E. L. D.	
Sulphas potassæ cum sulphure, E. -	*vide Potassa.*
Antimonium calcinatum, L. - -	*Antimonium.*
Oxydum ant. cum sulph. per nit. pot. E. L. D.	*Idem.*
Trochisci nitri, E. L. - - - -	*Trochisci.*

NITRUM PURIFICATUM. L. *Purified Nitre.*

Take of

Nitre, two pounds;

Distilled water, four pints.

Boil the nitre in the water, till it be dissolved; strain the solution, and set it aside to crystallize. (L.)

Common nitre contains usually a considerable portion of muriat of soda, which in this process is separated, for it remains dissolved after the greatest part of the nitrat of potass has crystallized. The crystals which shoot after the first evaporation, are large, regular, and pure: but when the remaining liquor is further evaporated, and this repeated a second or third time, the crystals prove at length small, imperfect, and tipt with little cubical crystals of muriat of soda. When pure, the solution is not affected by nitrat of silver, or nitrat of baryta.

ACIDUM NITROSUM. *Ed.* L. D. *Nitrous Acid.*

Take of

Nitrat of potass, bruised, two pounds;

Sulphuric acid, sixteen ounces.

Having put the nitrat of potass into a glass retort, pour upon it the sulphuric acid, and distil in a sand bath, with a heat gradually increased, until the iron pot begins to be red hot.

The specific gravity of this acid is to that of distilled water as 1550 to 1000. (E.)

ACIDUM NITRICUM. *Ed. Nitric Acid.*

Take of

Nitrous acid, any quantity.

Pour it into a retort; and having adapted a receiver, apply a very gentle heat, until the reddest portion shall have passed over, and the acid which remains in the retort shall have become nitric acid. (E.)

Nitrous acid is of a brown or red colour, exceedingly volatile, and emitting an intolerable and suffocating odour. By the addition of water, its colour is successively changed to blue, green, and yellow. In the state of vapour, it is absorbed by water, oil, and sulphuric acid. It consists of about 70 parts of oxygen, and 30 of nitrogen, or rather of nitric acid and nitric oxyd. It forms Nitrites.*

The *nitrites* are characterised by their emitting the nitrous acid in orange fumes, on the addition of sulphuric acid.

In this process, the sulphuric acid, by its superior affinity, combines with the potass of the nitre to form sulphat of potass, while the nitric acid is separated, and is not only converted into vapour by the application of the heat to the retort, but is also partially decomposed. A portion of oxygen escapes in a gaseous form, and the nitric oxyd gas combines with the nitric acid; so that the liquor condensed in the receiver is nitrous and not nitric acid.

In performing this process, we must take care, in pouring in the sulphuric acid, not to soil the neck of the retort. Instead of a common

* It does not form them by direct union, the nitric acid alone unites to the base, and nitrats are formed by the combination.

receiver, it is of advantage to use some modification of Woulfe's apparatus; and as the vapours are extremely corrosive, the fat lute must be used to connect the retort with it. The London college, intending that the product should be *nitric* acid, directs us to continue the process only until red fumes appear; but there are red fumes from the very first. Mr. Stocker says, that by careful distillation, the London process affords nine ounces of straw-coloured nitric acid, sp. gr. 1.5404; after which the fumes become deeper red, and the product darker, inclining to orange; but the total product is but slightly coloured, amounts to ten or eleven ounces, and has the sp. gr. required. The London college formerly used no more sulphuric acid than what was necessary to expel all the nitric acid, and the residuum was a neutral sulphat of potass, so insoluble, that it could not be got out without breaking the retort. The Edinburgh and Dublin colleges order as much sulphuric acid as renders the residuum an acidulous sulphat of potass, easily soluble in water, and the London college now employ a still larger quantity. We are informed by Dr. Powell, that the reason for the adoption of these proportions for nitric acid is expressed in the following report to the college.

Dried nitre.	Sulph. acid.	Colour of product.	Sp. Gr.	Weight of product.	Marble dissolv.	Relative value.
6	6	White.	1.50	4	0.73	29
6	3	Red.	1.53	3	0.70	21
60	29	Red.	1.456	30+	0.62	19+

When the proportions were 6 nitric and 3 sulphuric acid, there remained no redundant acid." this report cannot be correct. It was incredible, that there should be so great a difference between the second and third of the results stated in the report, when the difference in the materials used is so trifling; that the specific gravity of the first product, consisting of nitric acid, should be less than that of the second, red nitrous acid; and that of these two, the one whose specific gravity is least should dissolve most marble. Accordingly Mr. Phillips obtained, by the first and third processes, acids of a pale greenish yellow colour, and the specific gravity in the last instance was 1.51 instead of 1.456. Nitric acid, from Apothecaries' Hall, is greenish yellow, and weighs specific gravity 1.424. The former impression of this edition of the London Pharmacopœia stated, that a fluidounce of this diluted acid dissolved 420 grains of marble. The quantity is increased in the present to 480. Mr. Phillips found a fluidounce sp. gr. 1.5 to dissolve 476 grains. It is also to be regretted, that in the report, there is no statement of the results of the process of the Edinburgh and Dublin colleges, for although the old London proportion of one half acid was manifestly too little, equal parts may be too much, and the intermediate proportions of 6 to 4 may be preferable to either. The manufacturers of nitrous acid use *rough nitre* with one half its weight of sulphuric acid.

Nitrous acid is frequently impure. The presence of sulphuric acid is detected by nitrat of barytes; but before applying this test, the acid must be diluted, as otherwise the salt itself is precipitated in consequence of the acid attracting the water in which it is dissolved. Sulphuric acid is easily got rid of by re-distilling the nitrous acid from a small quantity of nitrat of potass, and this rectification forms part of the new London process; as, from the large proportion of sulphuric acid used by them, they seem to have anticipated this contamination, which however does not take place, not even, according to Mr. Stocker, when the distillation is continued, until the saline mass is brought into a state of fusion.

Muriatic acid is detected by the precipitate formed with nitrat of silver, and may be separated by dropping into the nitrous acid a solution of nitrat of silver, as long as it forms any precipitate, and drawing off the nitrous acid by distillation.

Sir H. Davy has shewn, that nitrous acid is a compound of nitric acid and nitric oxyd; and that, by additional doses of the last constituent, its colour is successively changed from yellow to orange, olive green, and blue green, and its specific gravity is diminished. As commonly prepared, the acid is more or less high coloured, and emits red fumes; whereas, pure nitric acid emits only white fumes. Hence the Edinburgh college have given a process for converting nitrous into nitric acid, which Dr. Powell thinks uneconomical, as not only nitrous gas, but a large proportion of the acid itself, passes to waste.

By the application of a gentle heat, the whole of the nitric oxyd is vaporized, and pure colourless nitric acid remains in the retort. The nitric oxyd, however, carries over with it a portion of the acid, and condenses with it in the receiver, in the form of a very high-coloured nitrous acid.

Richter has given the following process for preparing nitric acid.

Take of

Purified nitrat of potass, seven pounds;
Black oxyd of manganese, one pound two ounces;
Sulphuric acid, four pounds, four ounces and six drachms.

Into a retort capable of containing twenty-four pounds, introduce the nitre and manganese, powdered and mixed, and pour upon them gradually, through a retort funnel, the sulphuric acid. Lute on the receiver with flour and water, and conduct the distillation with a gradually increased heat.

From these proportions, Richter got three pounds nine ounces of very slightly coloured nitric acid. The operation will be conducted with less hazard in a Woulfe's apparatus, or by interposing between the retort and receiver a tubulated adopter, furnished with a bent tube, of which the further extremity is immersed in a vessel containing a small quantity of water.

The specific gravity of nitrous acid is probably stated too high by the Edinburgh college; for, although Rouelle makes that of the strongest nitric acid 1.583, yet Kirwan could produce it no stronger at 60° than 1.5543. Sir H. Davy makes it only 1.504, and when saturated with nitric oxyd, only 1.475; and Mr. Phillips says it varies from 1.509 to 1.519.

Officinal Preparation.

Spiritus ætheris nitrosi, E. L. D. - *vide Alcohol.*

ACIDUM NITROSUM DILUTUM. *Ed.*

Diluted Nitrous Acid.

Take of
Nitrous acid,
Water, equal weights.
Mix them, taking care to avoid the noxious vapours.

ACIDUM NITRICUM DILUTUM. L.

Diluted Nitric Acid.

Take of
Nitric acid, one fluidounce;
Distilled water, nine fluidounces.
Mix.

Nitrous acid has a great affinity for water, and attracts it from the atmosphere. During their combination there is an increase of temperature, part of the nitric oxyd is dissipated in the form of noxious vapours, and the colour changes successively from orange to green, and to blue, according as the proportion of water is increased. A mixture of equal parts of Kirwan's standard acid of 1.5543 and water, has the specific gravity 1.1911. The diluted acid of the London pharmacopœia is about 1.08.

In fact, one ounce of nitric acid, by measure, is equal to one ounce, three drachms, 21.75 grains, by weight; and one liquidounce saturates about 48 grains of white marble. The strength of the diluted nitric acid of the former London pharmacopœia is to that of the present as 4 to 1.

Table of the Quantity of Real Acid in 100 *Parts of Liquid Nitric Acid at* 60°. *Dalton.*

Atoms. Acid. Water.	Acid per cent. by weight.	Acid per cent. by measure.	Specific gravity.	Boiling point.
1 + 0	100	175?	1.75?	30°?
2 + 1	82.7	134	1.62	100?
1 + 1	72.5	112	1.54	175
	68	102	1.50	210
	58.4	84.7	1.45	240
1 + 2	54.4	77.2	1.42	248
	51.2	71.7	1.40	247
1 + 3	44.3	59.8	1.35	242
1 + 4	37.4	48.6	1.30	236
1 + 5	32.3	40.7	1.26	232
1 + 6	28.5	34.8	1.22	229
1 + 7	25.4	30.5	1.20	226
1 + 8	23	27.1	1·18	223
1 + 9	21	24.6	1.17	221
1 + 10	19.3	22.4	1.16	220
1 + 11	17.8	20.5	1.15	219
1 + 12	16.6	18.9	1.14	219

These acids, the nitrous and nitric, have been long employed as powerful pharmaceutic agents Their application in this way I shall have many opportunities of illustrating.

Medical use.—Lately, however, their use in medicine has been considerably extended. In the state of vapour they have been used to destroy contagion in gaols, hospitals, ships, and other places where the accumulation of animal effluvia is not easily avoided. The fumigating such places with the vapour of nitrous acid has certainly been attended with success; but we have heard that success ascribed entirely to the ventilation employed at the same time. Ventilation may unquestionably be carried so far, that the contagious miasmata may be diluted to such a degree that they shall not act on the body; but to us it appears no less certain, that these miasmata cannot come in contact with nitric acid or oxymuriatic acid vapour, without being entirely decomposed and completely destroyed. Fumigation is, besides, applicable in situations which do not admit of sufficient ventilation; and where it is, the previous diffusion of acid vapours is an excellent check upon the indolence and inattention of servants and nurses, as by the smell we are enabled to judge whether they have been sufficiently attentive to the succeeding ventilation. Nitric acid vapour, also, is not deleterious to life, and may be diffused in the apartments of the sick, without occasioning to them any material inconvenience. The means of diffusing it are easy. Half an ounce of powdered nitre is put into a saucer, which is placed in a pipkin of heated sand. On the nitre two drachms of sulphuric acid are then poured. The fumes of nitric acid immediately begin to rise. This quantity will fill with vapour a cube of ten feet; and by employing a sufficient number of pipkins, the fumes may be easily made to fill a ward of any extent. For introducing this practice, Dr. Carmichael Smyth received from the British Parliament a reward of five thousand pounds.

The internal use of these acids has also been lately much extended. In febrile diseases, water acidulated with them forms of the best antiphlogistic and antiseptic drinks we are acquainted with. Hoffman and Eberhard long ago employed it with very great success in malignant and petechial fevers; and in the low typhus, which frequently rages among among the poor in the suburbs of Edinburgh, I have repeatedly given it with unequivocable advantage. In the liver complaint of the East Indies, and in syphilis, nitric acid has also been extolled as a valuable remedy by Dr. Scott, and the evident benefits resulting from its use in these complaints has given rise to a theory, that mercury only acts by oxygenizing the system. It is certain that both the primary and secondary symptoms of syphilis have been removed by the use of these acids, and that the former symptoms have not returned, or been followed by any secondary symptoms. But in many instances they have failed; and it is doubtful if ever they effected a permanent cure, after the secondary symptoms appeared. Upon the whole, the opinions of Mr. Pearson on this subject, lately agitated with so much keenness, appear to us so candid and judicious, that we shall insert them here. He does not think it eligible to rely on the nitrous acid in the treatment of any one form of the lues venerea: at the same time, he by no means wishes to see it exploded as a medicine altogether useless in that disease. When an impaired state of the constitution renders the introduction of mercury into the system inconvenient, or evidently improper, the nitrous acid will be found, he thinks, capable of restraining the progress of the disease, while, at the same time, it will improve the health and strength of the patient. On some occasions, this acid may be given in conjunction with a mercurial course, and it will be found to support the tone of the stomach, to determine powerfully to the kidneys, and to counteract, in no inconsiderable degree, the effects of mercury on the mouth and fauces.

NITROGEN.—*AZOTIC OR NITROGEN GAS.*

Nitrogen, or *azotic gas*, constitutes 0.79 parts by bulk of the atmosphere; but as it has few attractions at ordinary temperatures, its principal effect on the chemical properties of the atmosphere seems to be the dilution of the oxygen gas, which in its pure state would be more active than is consistent with the economy of nature. It is permanently elastic, compressible, inodorous, and insipid; it converts very delicate vegetable blues to green; 100 cubic inches weigh between 29 and 30 grains; its specific gravity is 0.0012, water being 1; or 13, hydrogen gas being 1; it is unable to support respiration, vegetation or combustion; it is acidifiable; it dissolves phosphorus and carbon in small quantities, and water absorbs $\frac{1}{75}$ of its volume. Its number is 13 or 26.

Atmospheric air consists of 21 parts of oxygen gas, and of 79 of azotic gas by measure, or 23.47, and 76.53 by weight; it is transparent, compressible, and permanently elastic; its specific gravity is 0.00123, water being unity; or 13.8, hydrogen being unity; 100 cubic inches weighing 31 grains: it is inodorous and insipid, respirable, and capable of supporting inflammation. The atmosphere also contains other gases, vapour, &c.

Nitrous oxyd gas is composed of 15 in weight of oxygen, and 26 of nitrogen, or of equal volumes of their gases. It does not change vegetable colours; 100 cubic inches weigh between 48 and 49 grains; its specific gravity, hydrogen being 1, is 21; it suffers no diminution when mixed with oxygen gas. Water absorbs nine-tenths of its bulk, at a mean temperature. It does not combine directly with alkalies; it supports combustion; and its respiration, when perfectly pure, or mixed with atmospheric air, produces the highest excitement of which the animal frame seems capable.

Nitric oxyd gas (nitrous gas) consists, according to Sir H. Davy, of 26 nitrogen and 30 oxygen, or of one volume of nitrogen and two of oxygen gas. It does not change vegetable colours; 100 inches weigh about 32 grains; its specific gravity to hydrogen is 14. When mixed with half its bulk of oxygen gas, the compound condenses into red fumes (nitrous acid), which are entirely absorbed by water. The quantity of oxygen gas which any air contains is sometimes estimated by the diminution of volume which occurs, after a due proportion of nitrous gas has been added. Water absorbs about one-twentieth of its bulk of this gas. It is not inflammable, and only in very few instances supports combustion. It is noxious to vegetation, and its respiration is fatal to animals.

Nitrous acid gas consists, according to Davy, of 2 measures of nitric oxyd gas, and one of dry oxygen gas, condensed to half their volume. It has a deep orange colour, disagreeable smell and sour taste. It reddens litmus paper, and gives a yellow colour to animal substances. 100 cubic inches weigh 65.3 grains, and its specific gravity to hydrogen is 28. It is rapidly absorbed by water, which acquires a tint of green, by ether, oil and sulphuric acid. Its compounds are nitrites.

Hydro-nitrous acid is of a brown or red colour, exceedingly volatile, and emitting an intolerable and suffocating odour. By the addition of water, its colour is successively changed to blue, green and yellow.

Hydro-Nitric acid (aqua fortis) consists of nitric acid combined with water. It is liquid, colourless, and transparent. It is very corrosive, and tinges the skin of a yellow colour. When most concentrated, its specific gravity is 1.5543, and it contains 15 *per cent.* water. It produces heat when mixed with water, and absorbs water from the atmosphere. Acid of 1.42 rises unaltered at 248° Fahrenheit. Below 1.4 it strengthens by being boiled, and above 1.45 it becomes weaker. It is decomposed by many substances. Light converts it in part into nitrous acid gas. When highly concentrated, it sets fire to oils, to sulphureted hydrogen gas, to iron-filings, and to zinc, bismuth and tin, when poured on them in a state of fusion. It oxygenizes all the metals, except gold, platinum, and titanium. It consists of five parts, by bulk, of oxygen, and one of nitrogen, combined in the strongest acid with one, and in that of 1.42 with two of water. Its saline compounds are called nitrats.

Chloride of azote. Nitrogen forms a very singular compound with chlorine. It is obtained by confining chlorine over a saturated solution of nitrat of ammonia, at a very low temperature. The gas is absorbed, and a heavy oil falls, which explodes violently when put in contact with olive oil.

NITRUM. - - - - *Vide Nitras Potassæ.*

NUX MOSCHATA. - - - *Vide Myristica.*

O.

OLEA EUROPÆA. L. E. D.

Oleum fixum. Ed.

The olive tree. The oil expressed from the fruit.

Willd. g. 36. *sp.* 1. *Decandria Monogynia.*—Nat. ord. *Sepiariæ.*

THIS tree is a native of the south of Europe and north of Africa. It is cultivated in France, Spain, and Italy, for the sake of its fruit and the oil expressed from it. Olives, when fresh, have an acrid, bitter, extremely disagreeable, taste; but they are only eaten when pickled. They are first steeped for several days in a ley of wood-ashes, and then pickled in a strong solution of muriat of soda.

They are principally valued for the oil they afford by expression. For this purpose they are gathered when fully ripe, and immediately bruised and subjected to the press. The finest oil flows first, and a very bad oil is obtained by boiling the magma, which remains after expression, in water. According to Beaumè, they are gathered when sufficiently ripe. They are then dried, to deprive the mucilage, of which they contain a large quantity, of its water, and are expressed after being bruised, and moistened with a little water to render the oil more fluid. By rest, the mucilage and water which may have passed with it, separate. It is sometimes mixed with oil of poppy seeds; but, by exposing the mixture to the freezing temperature, the olive oil freezes, while that of the poppies remains fluid; and as oils which freeze with most difficulty are most apt to become rancid, olive is deteriorated by the admixture of poppy oil.

Good olive oil should have a pale yellow colour, somewhat inclining to green, a bland taste, without any rancidity, and no smell, and should congeal at 38° Fahrenheit.

Medical use.—Taken internally, it operates as a gentle laxative, and is given in cases of worms. It is also given in large quantities to mitigate the action of acrid substances taken into the stomach. It is used externally in frictions, in gargles, and in clysters; but its principal employment is for the composition of ointment and plasters.

OFFICINAL PREPARATIONS.

Oleum ammoniatum, E. L. - - - -	*vide Olea præparata.*
camphoratum, E. - - - - -	*Idem.*
sulphuratum, E. L. - - - - -	*Idem.*
It also enters into many of the unguents, cerates, plasters, &c. of the different pharmacopœias.	*Unguenta.*

OLEUM.—OIL.

D.	*Oli, Olie, Oly.*	P.	*Oleo.*
DA.	*Olje.*	POL.	*Oley.*
F.	*Huile.*	R.	*Maslo.*
G.	*Oehl.*	S.	*Aceite.*
I.	*Olio.*	SW.	*Olja.*

Oils are either fixed or volatile.

OLEA FIXA.—*FIXED OILS.*

Fixed oils are transparent, more or less coloured, somewhat viscid, inodorous fluids, having a mild taste and unctuous feel. In the different species of the specific gravity varies from 0.9403 to 0.9153. The point of congelation also differs considerably, but in general it is within the range of the ordinary temperatures of the atmosphere. Their boiling point exceeds 600°, and by being converted into vapour, they become empyreumatic. Fixed oils do not seem capable of combining with charcoal. When assisted by heat, they dissolve sulphur and phosphorus. They may be blended with sugar and gum by trituration as in emulsions, and they dissolve the volatile oils, and resins, and gummy resins. With the alkalies and earths they form soaps, and with metallic oxyds plasters. They are not soluble in water or in alcohol. They unite readily with oxygen, which renders them concrescible. Those oils which dry without losing their transparency, as linseed oil, are termed drying oils, in contra-distinction to the fat oils which from exposure become white, opaque and thick, and remain greasy, such as oil of olives or of almonds. When they become rancid, they undergo a further degree of decomposition, and are found to contain sebacic acid. Oil in the state of vapour is inflammable, and burns with a white flame. When the combustion is complete, the products are carbonic acid gas and water, but in general soot is deposited The sulphuric acid renders the fixed oils brown and thick, and converts them into water and charcoal. The nitric acid oxygenizes them. The oxygenized muriatic acid blanches them, and renders them concrete like tallow or wax. The oils oxydize several of the metals, and are oxydized by several of their oxyds. From Lavoisier's experiment on the combustion of olive oil, its constituent principles were estimated at 79 charcoal and 21 hydrogen; but by correction they appear to be 50.39 carbon, 20.28 hydrogen, and 29.38 oxygen.

These oils are commonly denominated *expressed* oils, an appellation which is manifestly improper, as in some instances they are obtained without expression, and other instances expression is employed to obtain volatile oils. The Edinburgh college have therefore distinguished these different classes of oils by the term of fixed and volatile, which accurately characterizes them.

Fixed oil is formed in no other part of vegetables than in their seeds. Sometimes, although very rarely, it is contained in the parenchyma of the fruit. Of this the best known example is the olive. But it is most commonly found in the seeds of dicotyledonous vegetables, sometimes also in the fruit of monocotyledonous plants, as the cocos butyracea. It has various degrees of consistency, from the tallow of the croton sebiferum of China, and the butter of the butter-tree of Africa, to the fluidity of olive oil.

Fixed oils are either

1. Fat, easily congealed, and not inflammable by nitric acid; oil of olives, almonds, rapeseed, and ben.
2. Drying, not congealable, inflammable by nitric acid; oil of linseed, nut and poppy.
3. Concrete oils, palm oil, &c.

Fixed oil is separated from fruits and seeds which contain it, either by expression or decoction. Heat, by rendering the oil more limpid, increases very much the quantity obtained by expression; but as it renders it less bland, and more apt to become rancid, heat is not used in the preparation of oils which are to be employed in medicine. When obtained by expression, oils often contain a mixture of mucilage, starch, and colouring matter; but part of these separate in course of time, and fall to the bottom. When oils become rancid, they are no longer fit for internal use, but are said to effect the killing of quicksilver, as it is called, more quickly. Decoction is principally used for the extraction of the viscid and consistent oils, which are melted out by the heat of the boiling water, and rise to its surface.

Those who prepare large quantities of the oil of almonds, blanch them, by steeping them in very hot water, which causes their epidermis to swell, and separate easily. After they peel them, they dry them in a stove, then grind them in a mill like a coffee mill, and lastly, express the oil from the paste inclosed in a hempen bag. By blanching the almonds, the paste which remains within the bag is sold with greater advantage to the perfumers, and the oil obtained is perfectly colourless. But the heat employed disposes the oil to become rancid, and the colour the oil acquires from the epidermis does not injure its qualities. For pharmaceutical use, therefore, the oil should not be expressed from blanch almonds, but merely rubbed in a piece of coarse linen, to separate the brown powder adhering to the epidermis, as much as possible. Sixteen ounces of sweet almonds commonly give five ounces and a half of oil. Bitter almonds afford the same proportions, but the oil has a pleasant bitter taste.

OLEUM AMYGDALÆ COMMUNIS. *Ed.*

OLEUM AMYGDALARUM. D. L.

Oil of Almonds.

Take of

Fresh Almonds, any quantity.

After having bruised them in a stone mortar, put them into a hempen bag, and express the oil without heat.

In the same manner are to be expressed,

Oleum lini usitatissimi, E. / *Lini*, L. D.	Linseed Oil.
Ricini, L.	Castor oil, from the seeds previously decorticated.
Sinapeos, L. / *Sinapis*, D.	Oil of mustard.

An account of the medical virtues of each will be found under their respective heads.

OLEA VOLATILIA.—*VOLATILE OILS.*

Volatile oils differ from the fixed oils most remarkably in being vaporized unchanged by a heat under 212°; by evaporating completely without leaving a stain on paper; by being sapid, often pungent, and odorous; and by being soluble in alcohol, and to a certain degree in water. They are more inflammable than the fixed oils, and burn with a large white flame, emit a great deal of smoke, and require more oxygen for their combustion. By exposure to air they become coloured and thick, and are at last converted into an almost inodorous resin. They are also oxydized and converted into resins by muriat of mercury, and muriat of antimony; the acids acts on them with great violence, and are even capable of inflaming them. On the other hand, they resist considerably the action of the alkalies. In their other general properties they agree with the fixed oils, from which they seem to differ in composition, only in containing a larger proportion of hydrogen. In other respects, these oils are infinitely varied, especially in their taste and odour. Some are as limpid as water, others are viscid, others congeal on a slight diminution of temperature, and are even naturally concrete, and others are capable of forming crystallizations. Their predominant colours are the different shades of yellow and red, but there are also blue, green, and glaucous essential oils. Their specific gravity varies from 0.8697 to 1.0439.

Substances which differ in volatility, may be separated from each other by applying a degree of heat capable of converting the most volatile into vapour, and by again condensing this vapour in a proper apparatus. Water is converted into vapour at 212°, and may be separated by distillation from the earthy and saline matters which it always contains in a natural state. But it is evident, that if any substances which are as volatile as water, be exposed to the same degree of heat, either by immersing them in boiling water, or exposing them to the action of its steam, they will rise with it in distillation. In this way the camphor and volatile oils of vegetable substances are separated from the more fixed principles.

Volatile oils are obtained only from odoriferous substances; but not equally from all of this class, nor in quantity proportional to their degree of odour. Some, which, if we were to reason from analogy should seem very well fitted for this process, yield extremely little oil, and others none at all. Roses and chamomile flowers, whose strong and lasting smell promises abundance, and found to contain but a small quantity of oil; the violet and jessamine flower, which perfume the air with their odour, lose their smell upon the gentlest coction, and do not afford any oil on being distilled, unless immense quantities are submitted to the operation at once: while savin, whose disagreeable scent extends to no great distance, gives out the largest proportion of volatile oil of almost any vegetable known.

Nor is the same plant equally fit for this operation, when produced in different soils or seasons, or at different times of their growth. Some yield more oil if gathered when the flowers begin to fall off than at any other time. Of this we have examples in lavender and rue; others, as sage, afford the largest quantity when young, before they have sent forth any flowers; and others, as thyme, when the flowers have just appeared. All fragrant herbs yield a larger proportion of oil, when produced in dry soils, and in warm summers, than in opposite circumstances. On the other hand, some of the disagreeable strong-scented plants, as wormwood, are said to contain most oil in rainy seasons, and when growing in moist rich grounds.

Several chemists have been of opinion, that herbs and flowers, moderately dried, yield a greater quantity of volatile oil, than if they were distilled when fresh. It is, however, highly improbable, that the quantity of volatile oil will be increased by drying; on the contrary, part of it must be dissipated and lost. But drying may sometimes be useful in other ways, either by diminishing the bulk of the subject to be distilled, or by causing it to part with its oil more easily; and aromatic waters, distilled from the dry herb, are more fragrant than from the fresh. But the directions of the London college to dry the herb used in the distillation of volatile oils, would be extremely inconvenient, as large quantities of the oils of lavender, peppermint, spearmint, and pennyroyal, are annually distilled in this country from the fresh herb; and the oils of aniseed, chamomile, caraway, juniper, origanum, rosemary and pimento, are usually imported.

The choice of proper instruments is of great consequence for the performance of this process to advantage. There are some oils which pass freely over the swan neck of the head of the common still: others, less volatile, cannot easily be made to rise so high. For obtaining these last, we would recommend a large low head, having a rim or hollow canal round it: in this canal, the oil is detained in its first ascent, and thence conveyed at once into the receiver, the advantages of which are sufficiently obvious.

We cannot separate the volatile oil from aromatic substances by distilling them alone, because the proportion of these oils is so small, that they could not be collected; and besides, it would be impossible to regulate the heat so as to be sufficient, and yet not to burn the subject, and destroy the product. Hence it is necessary to distil them with a proportion of water, which answers extremely well, as the oils are all more volatile in water, and soluble in it only to a certain extent.

With regard to the proportion of water to be employed; if whole plants, moderately dried, are used, or the shavings of wood, as much of either may be put into the vessel as, lightly pressed, will occupy half its cavity; and as much water may be added as will fill two-thirds of it. When fresh and juicy herbs are to be distilled, thrice their weight of water will be fully sufficient; but dry ones require a much larger quantity. In general, there should be so much water, that after all intended to be distilled has come over, there may be liquor enough left to prevent the matter from burning to the still. The water and ingredients, altogether, should never take up more than three-fourths of the still; there should be liquor enough to prevent any danger of empyreuma, but not so much as to be in danger of boiling over into the receiver.

The subject of distillation should be macerated in the water until it be perfectly penetrated by it. To promote this effect, wood should be thinly shaved across the grain, or sawn, roots cut transversely into thin slices, barks reduced into coarse powder, and seeds slightly bruised. Very compact and tenacious substances require the maceration to be continued a week or two, or longer; for those of a softer and looser texture, two or three days are sufficient, while some tender herbs and flowers not only stand in no need of maceration, but are even injured by it. The fermentation which was formerly prescribed in some instances, is always hurtful.

The fire ought to be quickly raised, and kept up during the whole process; but to such a degree only, that the oil may freely distil; otherwise the oil will be exposed to an unnecessary heat; a circumstance which ought, as much as possible, to be avoided. Fire communicates to all these oils a disagreeable impregnation, as is evident from their being much less grateful when newly distilled, than after they have stood for some time in a cool place; and the longer the heat is continued, the greater alteration it produces in them.

The greater number of oils require for their distillation the heat of water strongly boiling; but there are many also which rise with a heat considerably less; such as those of lemon and citron peel, of the flowers of lavender and rosemary, and of almost all the more odoriferous kinds of flowers. We have already observed, that these flowers have their fragrance much injured, or even destroyed, by beating and bruising them; it is impaired also by the immersion in water in the present process, and the more so in proportion to the continuance of the immersion and the heat; hence oils, distilled in the common manner, prove much less agreeable in smell than the subjects themselves. For the distillation of substances of this class, another method has been contrived: instead of being immersed in water, they are exposed only to its vapour. A proper quantity of water being put into the bottom of the still, the odoriferous herbs or flowers are laid lightly in a basket, of such a size that it may enter into the still, and rest against its sides, just above the water. The head being then fitted on, and the water made to boil, the steam, percolating through the subject, imbibes the oil, without impairing its fragrance, and carries it over into the receiver. Oils thus obtained, possess the odour of the subject in an exquisite degree, and have nothing of the disagreeable scent perceivable in those distilled by boiling them in water in the common manner.

Plants differ so much, according to the soil and season of which they are the produce, and likewise according to their own ages, that it is impossible to fix the quantity of water to be drawn from a certain weight of them to any invariable standard. The distillation may always be continued as l ng as the liquor runs well flavoured off the the subject, but no longer.

The mixture of water and oil which comes over may either be separated immediately, by means of a separatory, or after it has been put into large narrow-necked bottles, and placed in a cool place, that the portion of oil which is not dissolved in the water may rise to the top, or sink to the bottom, according to its specific gravity. It is then to be separated, either by a separatory, or by means of a small glass syringe; or by means of a filter of paper; or, lastly, by means of a woollen thread, one end of which is immersed in the oil, and the other lower end in a phial: the oil will thus pass over into the phial by capillary attraction, and the thread is to be squeezed dry.

The water employed in the distillation of volatile oils always imbibes some portion of the oil, as is evident from the smell, taste, and colour, which it acquires. It cannot, however, retain above a certain quantity; and hence, such as has been already used, and, therefore, almost saturated, may be advantageously employed, instead of common water, in a second, or any future distillation of the same subject.

After the distillation of one oil, particular care should be had to clean the worm perfectly before it be employed in the distillation of a different substance. Some oils, those of wormwood and aniseeds for instance, adhere to it so tenaciously, as not to be melted out by heat, or washed off by water; the best way of removing these, is to run a little spirit of wine through it.

Volatile oils, after they are distilled, should be suffered to stand for some days, in vessels loosely covered with paper, till they have lost their disagreeable fiery odour, and become limpid: then put them up in small bottles, which are to be kept quite full, and closely stopped, in a cool place. With these precautions, they will retain their virtues in perfection for many years.

Most of the oils mentioned above are prepared by our chemists in Britain, and are easily procurable in a tolerable degree of perfection: but the oils from the more expensive spices, though still introduced among the preparations in the foreign Pharmacopœias, are, when employed among us, usually imported from abroad.

These are frequently so much adulterated, that it is not easy to meet with such as are at all fit for use: nor are these adulterations easily discoverable. The grosser abuses, indeed, may be readily detected. Thus, if the oil be mixed with alcohol, it will turn milky on the addition of water; if with expressed oils, alcohol will dissolve the volatile, and leave the other behind; if with oil of turpentine, on dipping a piece of paper in the mixture, and drying it with a gentle heat, the turpentine will be betrayed by its smell. But the more subtile artists have contrived other methods of sophistication, which elude all trials of this kind.

Some have looked upon the specific gravity of oils as a certain criterion of their genuineness. This, however, is not to be absolutely depended on; for the genuine oils, obtained from the same subjects, often differ in gravity as much as those drawn from different ones. Cinnamon and cloves, whose oils usually sink in water, yield, if slowly and carefully distilled, oils of great fragrancy, which are specifically lighter than the aqueous fluid employed in their distillation; whilst, on the other hand, the last runnings of some of the lighter oils prove sometimes so ponderous as to sink in water.

As all volatile oils agree in the general properties of solubility in spirit of wine, sparing solubility in water, miscibility with water, by the intervention of certain intermedia, volatility in the heat of boiling water, &c. it is plain that they may be variously mixed with each other, or the dearer sophisticated with the cheaper, without any possibility of discovering the abuse by any trials of this kind: and, indeed, it would not be of much advantage to the purchaser, if he had infallible criteria of the genuineness of every individual oil. It is of as much importance that they be *good*, as that they be *genuine;* for genuine oils, from inattentive distillation, and long and careless keeping, are often weaker, both in smell and taste, than the common sophisticated ones.

The smell and taste seem to be the only certain tests of which the nature of the thing will admit. If a bark should have in every respect the appearance of good cinnamon, and should be proved indisputably to be the genuine bark of the cinnamon tree; yet if it want the cinnamon flavour, or has it but in a low degree, we reject it; and the case is the same with the oil. It is only from use and habit, or comparisons with specimens of known quality, that we can judge of the goodness, either of the drugs themselves, or of their oils.

Most of the volatile oils, indeed, are too hot and pungent to be tasted with safety: and the smell of the subject is so much concentrated in them, that a small variation in this respect is not easily distinguished; but we can readily dilute them to any assignable degree. A drop of the oil may be dissolved in spirit of wine or received on a bit of sugar, and dissolved by that intermedium in water. The quantity of liquor which it thus impregnates with its flavour, or the degree and quality of flavour which it communicates to a certain determinate quantity of liquor, will be the measure of the degree of goodness of the oil.

OLEA VOLATILIA. *Ed. Volatile Oils.*

Volatile oils are prepared nearly in the same manner as the distilled waters, except that less water is to be added. Seeds and woody substances are to be previously bruised or rasped. The oil comes over with the water, and is afterwards to be separated from it, according as it may be lighter than the water, and swim upon its surface, or heavier, and sink to the bottom.

Besides, in preparing these distilled waters and oils, it is to be observed, that the goodness of the subject, its texture, the season of the year, and similar causes, must give rise to so many differences, that no certain or general rule can be given to suit accurately each example. Therefore many things are omitted, to be varied by the operator according to his judgment, and only the most general precepts are given.

In distilling fennel, peppermint, spearmint, penny-royal, and pimento, the liquor which comes over along with the oil is to be preserved for use in the manner directed under the head of Distilled Waters.

According to these directions, prepare

Oleum Volatile. E. Oleum Distillatum. L. D.	Volatile, or distilled oil of
Carui. D. L.	Caraway, *from the seeds.*
Foeniculi Dulci. D.	Fennel, *from the seeds.*
Juniperi Communis. E. Juniperi. L. D.	Juniper, *from the berries.*
Juniperi Sabinæ. E. Sabinæ. D.	Savine, *from the leaves.*
Lauri Sassafras. E. Sassafras. D.	Sassafras, *from the root, bark, and wood.*
Lavendulæ Spicæ. E. Lavendulæ. L. D.	Lavender, *from the flowering spikes.*
Anthemidis. L.	Chamomile, *from the flowers.*
Menthæ Piperitæ. E. L. Menthæ Piperitidis. D.	Peppermint, *from the herb in flower.*
Menthæ Sativæ. D. Menthæ Viridis. L.	Spearmint, *from the herb in flower.*
Myrti Pimentæ. E. Pimento. D. Pimentæ. L.	Pimento, *from the fruit or berry.*
Origani. D. L.	Origanum, *from the herb in flower.*
Pimpinellæ Anisi. E. Anisi. L. D.	Aniseed, *from the seeds.*
Pulegii. L. D.	Pennyroyal, *from the herb in flower.*
Rorismarini Officinalis. E. Rorismarini. D. Rosmarini. L.	Rosemary, *from the flowering tops.*
Rutæ. D.	Rue, *from the herb in flower.*

Medical use.—Volatile oils, medicinally considered, agree in the general qualities of pungency and heat; in particular virtues, they differ as much as the subjects from which they are obtained, the oil being the direct principle in which the virtues, or at least a considerable part of the virtues of the several subjects reside. Thus, the carminative virtue of the warm seeds, the diuretic of juniper berries, the emmenagogue of savine, the nervine of rosemary, the stomachic of mint, the cordial of aromatics, &c. are supposed to be concentrated in their oils.

There is another remarkable difference in volatile oils, the foundation of which is less obvious, that of the degree of their pungency and heat. These are by no means in proportion, as might be expected, to those of the subject they were drawn from. The oil of cinnamon, for instance, is excessively pungent and fiery; in its undiluted state it is almost caustic; whereas cloves, a spice which, in substance, is far more pungent than the other, yields an oil which is much less so. This difference seems to depend partly upon the quantity of oil afforded, cinnamon yielding much less than cloves, and consequently having its active matter concentrated into a smaller volume, partly upon a difference in the nature of the active parts themselves; for though volatile oils contain always the specific odour and flavour of their subjects, whether grateful or ungrateful, they do not always contain the whole pungency: this resides frequently in a more fixed matter, and does not rise with the oil. After the distillation of cloves, pepper, and some other spices, a part of their pungency is found to remain behind; a simple tincture of them in alcohol is even more pungent than their pure essential oils.

The more grateful oils are frequently made use of for reconciling to the stomach medicines of themselves disgustful. It has been customary to employ them as correctors for the resinous purgatives: an use to which they do not seem to be well adapted. All the service they can here be of is, to make the resin sit more easily at first on the stomach; far from abating the irritating quality upon which the violence of its operation depends, these pungent oils superadded a fresh stimulus.

Volatile oils are never given alone, on account of their extreme heat and pungency; which in some is so great, that a single drop let fall upon the tongue produces a gangrenous eschar. They are readily imbibed by a piece of dry sugar, and in this form may be conveniently exhibited. Ground with eight or ten times their weight of sugar, they become soluble in aqueous liquors, and thus may be diluted to any assigned degree. Mucilages also render them miscible with water into an uniform milky liquor. They dissolve likewise in alcohol; the more fragrant in an equal weight, and almost all of them in less than four times their own weight. These solutions may be either taken on sugar, or mixed with syrups, or the like. On mixing them with water, the liquor grows milky, and the oil separates.

The more pungent oils are employed externally against paralytic complaints, numbness, pains, and aches, cold tumours, and in other cases where particular parts require to be heated or stimulated The toothach is sometimes relieved by a drop of these almost caustic oils, received on cotton, and cautiously introduced into the hollow tooth.

OLEUM TEREBINTHINÆ. L. D.

Oil of Turpentine.

Take of

Common turpentine, five pounds;

Water, four pints

Distil the turpentine with the water in a copper alembic. After the distillation of the oil, what remains, is yellow resin. (L.)

OLEUM TEREBINTHINÆ PURISSIMUM. *Ed.*

Oleum Terebinthinæ Rectificatum. L. D.

Rectified oil of Turpentine.

Take of
  Oil of turpentine, one pound;
  Water, four pints,
Distil, as long as any oil comes over. (E.)

This rectified oil, which, in many Pharmacopœias, is styled Ethereal, is said not to have its specific gravity, smell, taste, or medical qualities, much improved by this process, which is both tedious and accompanied with danger. It must be conducted with great care, for the vapour, which is apt to escape through the junctures of the vessel, is very inflammable.

Medical use.—The spirit of turpentine, as this essential oil has been styled, is frequently taken internally as a diuretic and sudorific; and it has sometimes a considerable effect when taken to the extent of a few drops only. It has, however, been given in much larger doses, especially when mixed with honey. Recourse has principally been had to such doses in cases of chronic rheumatism, particularly in those modifications of it which are termed sciatica and lumbago; but sometimes they induce bloody urine. Of its singularly beneficial and almost specific effects in tænia, we have already spoken at considerable length in the Materia Medica.

Oil of turpentine, melted with as much ointment of yellow resin as is sufficient to give it the consistence of a liniment, constitutes the application to recent burns, so strongly recommended by Mr. Kentish. He first bathes the part with heated oil of turpentine, alcohol, or tincture of camphor, and then covers it up with rags dipped in the liniment, which are to be renewed one at a time, once a-day. As the inflammation subsides, less stimulating applications are to be used; and when the secretion of pus commences, the parts are then to be covered with powdered chalk, heated to the temperature of the body. In this way, he assures us that he cured very many extensive burns in a few weeks, which, under the use of cooling applications, would have required as many months, or would have been altogether incurable.

OLEA VOLATILIA EMPYREUMATICA.

EMPYREUMATIC VOLATILE OILS.

Empyreumatic Oils agree in many particulars with the volatile oils already treated of, but they also differ from them in several important circumstances. The latter exist ready formed in the aromatic substances, from which they are obtained, and are only separated from the fixed principles by the action of a heat not exceeding that of boiling water. The former, on the contrary, are always formed by the action of a degree of heat considerably higher than that of boiling water, and are the product of decomposition, and a new arrangement of the elementary principles of substances, containing at least oxygen, hydrogen, and carbon. Their production is therefore always attended with the formation of other new products In their chemical properties they do not differ very remarkably from the volatile oils, and are principally distinguished from them by their unpleasant pungent empyreumatic smell and rough bitterish taste. They are also more apt to spoil by the contact of the air, and the oftener they are redistilled they become more limpid, less coloured, and more soluble in alcohol; whereas the essential oils, by repeated distillations, become thicker and less soluble in alcohol.

Their action on the body is exceedingly stimulant and heating.

OLEUM PETROLEI. L.

Oil of Petroleum.

Distil petroleum in a sand bath.

The oil obtained from this bitumen will be more or less thin according to the continuance of the distillation; and by its continuance the tar will at last be reduced to a black coal; and then the oil will be pretty deep in colour, but perfectly fluid, though very acrid and stimulating.

It is less disagreeable than some of the other empyreumatic oils which had formerly a place in the pharmacopœias, such as the oleum lateritium.

OLEUM SUCCINI PURISSIMUM. *Ed.*

Purified Oil of Amber.

OLEUM SUCCINI RECTIFICATUM. L. D.

Rectified Oil of Amber.

Distil oil of amber in a glass retort with six times its quantity of water till two thirds of the water have passed into the receiver; then separate this very pure volatile oil from the water, and keep it for use in close shut vessels. (E.)

The rectified oil has a strong bituminous smell, and a pungent acrid taste. Given in a dose of ten or twelve drops, it heats, stimulates, and promotes the fluid secretions: it is chiefly celebrated in hysterical disorders, and in deficiencies of the uterine purgations. Sometimes it is used externally, in liniments for weak or paralytic limbs, and rheumatic pains.

Moschus Artificialis.

Artificial Musk.

By treating one part of oil of amber with four of nitrous acid, added in small proportions at a time, and stirring them together with a glass rod, the oil is at last converted into a yellow resin, having the smell of musk, and known in Germany by the name of Artificial Musk, where it is often used as a substitute for that expensive drug. A tincture of it has been found useful in the hooping cough by some of our medical practitioners.

OLEUM CORNU CERVINI RECTIFICATUM. D.

Rectified Oil of Hartshorn.

Oleum Animale. L. *Animal Oil.*

Take of
  The oil which ascends in the distillation of the volatile liquor of hartshorn, three pounds;
  Water, six pounds.
Distil a pound and a half. (D.)

Animal Oil, thus rectified, is thin and limpid, of a subtle, penetrating, not disagreeable, smell and taste.

Medical use.—It is strongly recommended as an anodyne and antispasmodic in doses of from 15 to 30 drops. Hoffman reports, that it procures a calm and sweet sleep, which continues often for 20 hours, without being followed by any languor or debility, but rather leaving the patient more alert and cheerful than before: that it procures likewise a gentle sweat, without increasing the heat of the blood: that given to 20 drops or more, on an empty stomach, six hours before the accession of an intermittent fever, it frequently removes the disorder; and that it is likewise a very general remedy in inveterate and chronical epilepsies, and in convulsive motions, especially if given before the usual time of the attack, and preceded by proper evacuations. How far empyreumatic oils possess the virtues that have been ascribed to them, has not yet been sufficiently determined by experience; the tediousness and trouble of the rectification having prevented their coming into general use, or being often made. They are liable also to more material inconvenience in regard to their medicinal use, namely, precariousness in their quality; for how perfectly soever they may be rectified, they gradually lose, in keeping, the qualities they had received from that process, and return more and more towards their original fetid state.

OLEA PRÆPARATA.—*OILY PREPARATIONS.*

OLEUM AMMONIATUM; vulgo,

LINIMENTUM VOLATILE. *Ed.*

Ammoniated Oil, commonly called *Volatile Liniment.*

LINIMENTUM AMMONIÆ. L.

Liniment of Ammonia.

Take of
Olive oil, two ounces;
Water of ammonia, two drachms.
Mix them together. (E.)

The London college order a stronger liniment of ammonia of one ounce of water of pure ammonia, and two ounces of olive oil.

THE most commonly adopted generic name for the combination of oil with alkalies is soap, and the species are distinguished by the addition of that of the alkalies they contain. On these principles, volatile liniment should be called soap of Ammonia, as hard soap is soap of soda, and soft soap, soap of potass.

Medical use.—They are frequently used externally as stimulants and rubefacients. In inflammatory sore throats, a piece of flannel moistened with these soaps, applied to the throat, and renewed every four or five hours, is one of the most efficacious remedies. By means of this warm stimulating application, the neck, and sometimes the whole body, is put into a sweat, which, after bleeding, either carries off, or lessens the inflammation. When too strong, or too liberally applied, they sometimes occasion inflammations, and even blisters. Where the skin cannot bear their acrimony, a larger proportion of oil may be used.

THIS preparation is sometimes used internally, made into a mixture with syrup and some aromatic water. A drachm or two taken in this manner three or four times a-day, is a powerful remedy in some kinds of catarrh and sore throat.

LINIMENTUM AQUA CALCIS, sive

OLEUM LINI CUM CALCE. *Ed. Linseed Oil with Lime.*

Take of
Linseed oil,
Lime water, of each equal parts.
Mix them.

THIS liniment is extremely useful in cases of scalds or burns, being singularly efficacious in preventing, if applied in time, the inflammation subsequent to burns or scalds; or even in removing it, after it has come on.

It is also a species of soap, and might be called soap of lime, although it probably contains a great excess of oil.

OLEUM CAMPHORATUM. *Ed.*

Camphorated Oil.

Take of
 Olive oil, two ounces;
 Camphor, half an ounce.
Mix them so that the camphor may be dissolved.

This is a simple solution of camphor in fixed oil, and is an excellent application to local pains from whatever cause, and to glandular swellings.

OLEUM SULPHURATUM. *Ed.* L.

Sulphureted Oil.

Take of
 Olive oil, eight ounces;
 Sublimed sulphur, one ounce.
Boil them together in a large iron pot, stirring them continually, till they unite. (E.)

Göttling directs the oil to be heated in an iron pot, and the sulphur to be gradually added, while the solution is promoted by constant stirring with an iron spatula. The pot must be sufficiently large, as the mixture swells and boils up very much; and as it is apt to catch fire, a lid should be at hand to extinguish it by covering up the pot.

Medical use.— Sulphureted oil was formerly strongly recommended in coughs, consumptions, and other disorders of the breast and lungs: but the reputation which it had in these cases, does not appear to have been derived from any fair trial or experience. It is manifestly hot, acrimonious, and irritating; and should therefore be used with the utmost caution. It has frequently been found to injure the appetite, offend the stomach and viscera, parch the body, and occasion thirst and febrile heats. The dose of it is from ten to forty drops. It is employed externally for cleansing and healing foul running ulcers; and Boerhaave conjectures, that its use in these cases gave occasion to the virtues ascribed to it when taken internally.

Officinal Preparations.

Emplas. ammoniac. cum hydrarg. L.	- -	*vide Unguenta.*
litharg. cum hydrarg. L.	- - -	*Idem.*

PETROLEUM SULPHURATUM. L.

Sulphureted Petroleum.

This is prepared in the same way as sulphureted oil.

ONISCUS ASELLUS. MILLEPEDA. D. *Insecta aptera. Millepedæ.*

Slaters, killed by the vapour of alcohol.

THESE insects are found in cellars, under stones, and in cold moist places; in warm countries they are rarely met with. They have a faint disagreeable smell, and a somewhat pungent, sweetish, nauseous taste.

Neumann got from 480 parts 95 watery, and 10 alcoholic extract; and inversely, 52 alcoholic, and 45 watery. Nothing rose in distillation with either.

Their medical virtues have been very much over-rated.

The millepeds are prepared by enclosing them in a thin canvass cloth, and suspending it over hot proof spirit in a close vessel, till they be killed by the steam, and rendered friable.

This barbarous practice is now nearly exploded.

OPIUM. - - - *vide Papaver.*

ORCHIS MASCULA. *Salop.*

THE root of this plant, by maceration in water and beating, affords the fecula known by the name of salop. Its qualities and virtues are similar to those of sago. Both of these when boiled in milk or water, with the addition of sugar and wine, form a nutritious jelly, prescribed in diarrhœa and dysentery as a demulcent, and in convalescence as a nutritious article of diet, easy of digestion.

Dr. Cutler describes one species of orchis, the production of our own soil, thus,

LADY'S PLUME. *Female-handed Orchis.* Blossoms in large spikes; white or purplish, or flesh-coloured. In wet meadows. August.

ORIGANUM.

Willd. g. 1116. *Smith, g.* 273.—*Didynam. Gymnosp.*—Nat. ord. *Verticillatæ.*

ORIGANUM VULGARE. *Willd. sp.* 10. *Smith, sp.* 1. *Herba.* L. D.

Common marjoram. The herb.

THIS is a perennial plant, and is met with upon dry chalky hills, and in gravelly soils, in several parts of Britain. It has an agreeable smell, and a pungent taste, warmer than that of the garden marjoram, and much resembling thyme, with which it seems to agree in virtue.

An essential oil distilled from it is kept in the shops, and is very acrid.

ORIGANUM MAJORANA. *Sp.* 15. *Herba. Ed.* D.

Sweet marjoram. The plant.

Sweet marjoram is an annual plant, which grows wild in Portugal, but is cultivated in our gardens, principally for culinary purposes. It is a moderately warm aromatic, yielding its virtues both to aqueous and spiritous liquors by infusion, and to water in distillation.

Officinal Preparation.

Pulvis asari compositus, E. L. D. - - *vide Pulveres.*

OROBANCHE VIRGINIANA.

Virginian broom-rape. Beech-drops. Cancer-root.

This plant is common in many parts. It is astringent, and a peculiar and extremely nauseous bitter. It is most powerful when recent. It has been used in dysentery, and externally to obstinate ulcers; and is supposed to have formed a part of the late Dr. Martin's cancer powder.*

OSTREA EDULIS. Ostrea. *Testæ.* L.

Oyster. The shell.

Cl. *Vermes.* Ord. *Testacea.*

The oyster is a very nutritious article of diet, and in some diseases not only admissible, but even advantageous. Their shells, which are officinal, are composed, like all the mother-of-pearl shells, of alternate layers of carbonat of lime, and a thin membranaceous substance, which exactly resembles coagulated albumen in all its properties. By burning, the membrane is destroyed, and they are converted into lime, which, although very pure, possesses no advantage over that of the mineral kingdom.

OXALIS ACETOSELLA. *Folium.* L.

Common Wood-sorrel. The leaves.

Willd. g. 918. *sp.* 25. *Smith, g.* 217. *sp.* 1.—*Decandria Pentagynia.*—Nat. Ord. *Gruinales.*

his is a small perennial plant, which grows wild in woods, and

* Barton's Collections, Part II. p. 6.

shady hedges. The leaves contain a considerable quantity of super-oxalat of potass, and have an extremely pleasant acid taste. They possess the same powers with the vegetable acids in general, and may be given in infusion, or beaten with sugar into a conserve, or boiled with milk to form an acid whey. The super oxalat of potass is extracted in large quantities from them, and sold under the name of *Essential salt of Lemons.*

Twenty pounds of the fresh leaves yielded to Neumann six pounds of juice, from which he got two ounces two drachms and a scruple of salt, besides two ounces and six drachms of an impure saline mass.

Oxalic acid is obtained in quadrangular crystals, transparent and colourless, of a very acid taste. They are soluble in their own weight of water at 212°, and in about two waters at 65°. Boiling alcohol dissolves somewhat more than half its weight, and at an ordinary temperature, a little more than one third. It is soluble in the muriatic and acetous acids. It is decomposed by heat, sulphuric acid, and nitric acid. According to Fourcroy, it consists of 77 oxygen, 13 carbon, and 10 hydrogen.

Oxalats are decomposed by heat; form a white precipitate with lime water, which is soluble in acetous acid after being exposed to a red heat. The earthy oxalats are very sparingly soluble in water; the alkaline oxalats are capable of combining with excess of acid, and become less soluble.

OXYDUM.—*OXYD.*

By the term *oxyd*, is meant a substance composed of oxygen and some other body, and destitute of the properties which belong to acids.

The oxyds, like the acids, are simple or compound, and like them are either binary, ternary and quaternary.

The simple oxyds consist of oxygen in union with nitrogen, hydrogen, carbon, sulphur, phosphorus and the metals.

The compound oxyds are characterized by their great alterability, and by their affording, when burnt with a sufficient quantity of oxygen, both water and carbonic acid. They may be divided into

a. Ternary oxyds, containing various proportions of carbon, hydrogen, and oxygen.
b. Quaternary oxyds, consisting of nitrogen, carbon, hydrogen, and oxygen.

The ternary oxyds coincide nearly with the class of vegetable substances, and are characterized,

a. By their being converted entirely into water and carbonic acid gas, when completely decomposed by oxygen.
b. By their undergoing the acid fermentation, from the action of air and water.

c. And by their furnishing nitrous gas and carbonic acid, when treated with nitric acid.

The quaternary oxyds coincide nearly with animal substances, and are characterized,

a. By their furnishing, when decomposed by oxygen, ammonia as well as water and carbonic acid gas.
b. By their becoming putrid from the action of air and water.
c. And by their furnishing nitrogen gas when treated with nitric acid.

The ternary oxyds may be subdivided into gaseous, fluid, or easily fusible, and solid infusible. In general the gaseous and volatile compound oxyds contain the largest proportion of hydrogen, and the infusible dense oxyds the largest proportion of carbon.

For the names and references of the various ternary and quaternary oxyds, see *Carbo ligni*.

As most of the metals are capable of combining with different portions of oxygen, Dr. Thompson has proposed to call the oxyds with a minimum of oxygen, Protoxyds; and with additional doses Deutoxyds, Tritoxyds, &c. &c. in succession, and the oxyds with a maximum of oxygen, Peroxyds.*

OXYDUM ARSENICI. - - - - *Vide Arsenicum.*
OXYDUM PLUMBI ALBUM.
OXYDUM PLUMBI RUBRUM. } *Plumbum.*
OXYDUM PLUMBI SEMIVITRIUM.
OXYDUM ZINCI IMPURUM. *Zincum.*

* "As it is absolutely necessary to be able to distinguish the different oxyds of the same metal from each other with perfect precision, and as the present chemical nomenclature is defective in this respect, I shall, (says Dr. Thompson,) till some better method be proposed, distinguish them from each other, by prefixing to the word *oxyd* the first syllable of the Greek ordinal numerals. Thus the *protoxyd* of a metal will denote the metal combined with a minimum of oxygen, or the *first oxyd* which the metal is capable of forming; *deutoxyd* will denote the second oxyd of a metal, or the metal combined with two doses of oxygen. When a metal has combined with as much oxygen as possible, I shall denote the compound formed by the term *peroxyd;* indicating by it, that the metal is thoroughly oxydized.

"Thus we have the term *oxyd* to denote the combination of metals with oxygen in general; the terms *protoxyd* and *peroxyd* to denote the minimum and maximum oxydizement; and the terms *deutoxyd*, *tritoxyd*, &c. &c. to denote all the intermediate states which are capable of being formed."

Thompson's Chemistry, Vol. I. p. 103, *2d edition.*

The only objection to this mode of distinction, arises from the uncertainty of our acquaintance with all the oxyds, which the respective metals are capable of forming Hence, some, now called protoxyd, deutoxyd, &c. may at a future period, be found to require a different denomination; and such changes are illy calculated to promote the progress of science.

P.

PANAX QUINQUEFOLIUM. Ginseng. *Radix.*

Ginseng. The Root.

Polygamia Diœcia.—Nat. ord. *Hederaceæ.*

D.	*Ginseng, Ginsem.*	I.	*Ginseng.*
DA.	*Ginseng.*	P.	*Ginsao.*
F.	*Ginseng.*	S.	*Jin seng.*
G.	*Kraftwurzel, Ginseng.*	SW.	*Ginseng.*

This is a perennial plant, which grows in Tartary and North America. The root is about the thickness of the little finger; an inch or two in length, often dividing into two branches; of a whitish-yellow colour; wrinkled on the surface; of a compact, almost horny texture; when broken, exhibiting a resinous circle in the middle, of a reddish colour. It has no smell, but a very sweet taste, combined with a slight degree of aromatic bitterness.

The Chinese, probably on account of its scarcity, have a very extraordinary opinion of the virtues of this root, so that it sells for many times its weight in silver. The Americans, on the contrary, disregard it, because it is found plentifully in their woods. In fact, it is a gentle and agreeable stimulant.

The powdered root answers well as a substitute in making pills, for the liquorice root; and from a few imperfect trials, I am disposed to think its extract might equally supply the place of the extract of liquorice.

PAPAVER.

Willd. g. 1015. *sp.* 4. *Smith, g.* 243.—*Polyandria Monogynia.*—
Nat. ord. *Rhœades.*

PAPAVER RHOEAS. *Sp.* 5. Papaver Erraticum. *Flos.* L. D.

Corn-rose, or red poppy. The flower.

This species of poppy is annual, and very common in the corn fields of Britain. The petals give out a fine red colour when infused, and are supposed to possess slightly anodyne properties.

Officinal Preparation.

Syrupus papaveris erratici, L. - *vide Syrupi.*

PAPAVER SOMNIFERUM. *Willd. sp. 7. Smith, sp. 8. Capsula, et succus spissatus. Ed.* L. D.

White Poppy. The capsules and their inspissated juice, commonly called Opium.

The white poppy is also annual, and is sometimes found wild in Great Britain, but it is probably originally a native of the warmer parts of Asia. It is frequently cultivated for the beauty of the varieties of its flowers, and for its seeds. Some attempts have been made to obtain opium from its capsules; and Mr. Ball received a premium from the Society for encouraging the Arts, for specimens of British opium, in no respect inferior to the best eastern opium. But we apprehend that the climate of Great Britain is an insuperable obstacle to its becoming a profitable branch of agriculture.*

The leaves, stalks, and capsules of the poppy, abound with a milky juice, which may be collected in considerable quantity. by slightly wounding them when almost ripe: this juice, exposed for a few days to the air, thickens into a stiff tenacious mass, which in fact is opium. It is then worked up into masses, and covered with poppy or tobacco leaves. By decoction and expression this juice is partially extracted, together with a considerable quantity of mucilage. The liquor strongly pressed out, suffered to settle, clarified with whites of eggs, and evaporated to a due consistence, yields about one fifth, or one sixth the weight of the heads, of extract. This possesses the virtues of opium in a very inferior degree; but it does not come to Great Britain unless when used to adulterate the genuine opium. A strong decoction of the dried heads, mixed with as much sugar as is sufficient to reduce it into the consistence of a syrup, becomes fit for keeping in a liquid form; and is the only officinal preparation of the poppy. It is, however, a very unequal preparation, as the real quantity of opium it contains is very uncertain, and by no means equal to syrup, to which a certain quantity of solution of opium is added.

The seeds of the poppy are simply emulsive, and contain none of the narcotic principle. They yield a considerable quantity of fixed oil by expression.

OPIUM. *Ed.* L. D.

Turkey opium. The concrete juice of the capsules before they are ripe.

Opium is the inspissated juice of the poppy. In the evening several superficial longitudinal incisions are made in the capsules, when they are almost ripe, with a knife having from three to five blades. The juice which exudes during the night, next day after it has been thickened, by the heat of the sun, is collected by means of iron scrapers, and put in an earthen pot. The operation is repeated as long as the heads furnish juice in sufficient quantity, and the opium is worked into masses with a wooden spatula, in the heat of the sun, until it

* It has been procured in the United States, where this objection will not prevail. See Philadelphia Medical Museum, Vol. II. p. 428.

acquires the due degree of thickness, when the masses are covered with poppy or tobacco leaves.

Two kinds of opium are found in commerce, distinguished by the names of Turkey and East-India opium.

Turkey opium is a solid compact substance, possessing a considerable degree of tenacity; when broken, having a shining fracture and uniform appearance; of a dark-brown colour; when moistened, marking on paper a light-brown interrupted streak, and becoming brown when reduced to powder; scarcely colouring the saliva when chewed, exciting at first a nauseous bitter taste, which soon becomes acrid, with some degree of warmth; and having a peculiar heavy disagreeable smell. The best kind is in flat pieces, and besides the large leaves in which it is enveloped, is covered with the reddish capsules of a species of rumex, probably used in packing it. The round masses which have none of the capsules adhering to them, are evidently inferior in quality. Opium is bad if it be soft, or friable, mixed with any impurities, have an intensely dark or blackish colour, a weak or empyreumatic smell, a sweetish taste, or draw upon paper a brown continuous streak.

East-Indian opium has much less consistence, being sometimes not much thicker than tar, and always ductile. Its colour is much darker; its taste more nauseous, and less bitter; and its smell rather empyreumatic. It is considerably cheaper than Turkish opium, and is supposed to be of only half the strength. One-eighth of the weight of the cakes is allowed for the enormous quantity of leaves with which they are enveloped. In the East Indies, when opium is not good enough to bring a certain price, it is destroyed under the inspection of public officers.

Opium is not fusible, but is softened even by the heat of the fingers. It is highly inflammable. It is partially soluble both in alcohol and in water. Neumann got from 1920 parts of opium, 1520 alcoholic, and afterwards 80 watery extract, 320 remaining undissolved; and inversely 1280 watery, and 200 alcoholic extract, the residuum being 440.

The solutions of opium are transparent, and have a brown or vinous colour. The watery solution is not decomposed by alcohol. A small quantity of matter, which, as far as my experiments go, is neither fusible nor remarkably inflammable, is separated from the alcoholic solution by water. The watery solution of opium, and the alcoholic, after it has been precipitated by water, does not redden vegetable blues, is not precipitated by acids or alkalies, but is precipitated copiously by carbonat of potass, muriat and super-nitrat of mercury, oxymuriat of tin, sulphat of copper, sulphat of zinc, acetat of lead, nitrat of silver, and red sulphat of iron. The precipitate in the last case was of a dirty brown colour, not resembling those by alkaline or astringent substances. The solutions of opium, especially the watery, are also copiously precipitated by infusion of galls. This precipitate seems to resemble that produced by cinchonin, and to be different from that produced by gelatin.

The narcotic virtues of opium are imparted by distillation to alcohol and to water, and they are diminished, or entirely dissipated, by long boiling, roasting, or great age. The part of opium which is not soluble either in water or in alcohol, is albumen, according to Gren; caoutchouc, according to Bucholz; a virulent glutinous substance, acccording to Josse; and Proust says it contains wax. From experiments made some years ago, Dr. Duncan concluded that it was perfectly similar to the gluten of wheat flour, or fibrine. Long ago it was proposed to separate the resinous parts of opium by the same process that fibrine of wheat flour is obtained. The fact is, that if Turkey opium be kneaded in a large quantity of water, the soluble parts are removed, and there remains in the hand an adhesive plastic mass, of a paler colour, not fusible, but becoming ductile when immersed in hot water, inflammable, imparting some colour to alcohol, but not soluble in it. East-India opium, treated in the same way, is entirely dissolved or diffused in the water, and leaves no plastic mass in the hand.

Upon the whole, it appears that the active constituent of opium, though not perfectly understood, is of a volatile nature, but sometimes fixed by its combination with the other constituents; that it is soluble both in water and in alcohol; that it is dissipated in the process recommended for purifying opium by solution and evaporation; and that the attempts made by some pharmaceutists, to obtain a preparation of opium, which should possess only its sedative, without its narcotic effects, only succeeded so far as they diminished its activity.

By evaporating a watery solution of opium, to the consistence of a syrup, Derosne obtained a precipitate, which was increased by diluting it with water. He dissolved this in hot alcohol, from which it again separated on cooling. When purified by repeated solutions, it crystallized in rectangular prisms, with rhomboidal bases, had no taste or smell, was insoluble in cold water, and soluble in 400 parts of boiling water, did not affect vegetable blues, was soluble in 24 parts boiling alcohol, and 110 cold; soluble in hot ether and volatile oils, and separated from them as they cooled; very soluble in all acids, and highly narcotic. These observations are curious, and the experiments deserve to be repeated.

Medical use.—The action of opium on the living system has been the subject of the keenest controversy. Some have asserted that it is a direct sedative, and that it produces no stimulant effects whatever; while others have asserted as strongly, that it is a powerful, and highly diffusible stimulus, and that the sedative effects, which it undeniably produces, are merely the consequence of the previous excitement. The truth appears to be, that opium is capable of producing a certain degree of excitement, while the sedative effects which always succeed, are incomparably greater than could be produced by the preceding excitement. The stimulant effects are most apparent from small doses. These increase the energy of the mind, the frequency of the pulse, and the heat of the body, excite thirst, render the mouth dry and parched, and diminish all the secretions and excretions, except the cuticular discharge, which they increase. These effects are succeeded by languor and lassitude. In larger doses, the stimulant effects are not so apparent; but the excitability is remarkably diminished, and confusion of head, vertigo, and sleep are produced. In excessive doses it proves a violent narcotic poison, producing headach, vertigo, delirium, and convulsions, accompanied with a very slow pulse, stertorous breathing, and a remarkable degree of insensibility or stupor, terminated by apoplectic death. In one case, where Dr. Duncan inspected the body after death, the inner membrane of the stomach was remarkably corrugated, and with some inflammation; but as large doses of sulphat of zinc, and flour of mustard had been also taken, no inference can be drawn from these appearances. The bad effects of an over-dose of opium are often prevented by the occurrence of vomiting, and they are best counteracted by making the patients drink freely of acids and coffee, and chiefly by not permitting him to yield to his desire of sleeping. By habit, the effects of opium on the body are remarkably diminished. There have been instances of four grains proving fatal to adults, while others have been known to consume as many drachms daily. The habitual use of opium produces the same effects with habitual dram-drinking; tremors, paralysis, stupidity, and general emaciation: and like it, can scarcely ever be relinquished.

In disease, opium is chiefly employed to mitigate pain, diminish morbid sensibility, procure sleep, allay inordinate actions, and to check diarrhœas, and other excessive discharges. It is contra-indicated in gastric affections, plethora, a highly inflammatory state of the body, and determination of the blood to particular viscera.

In intermittents, it is said to have been used with good effect in every stage. Given even in the hot stage, it has been observed to allay the heat, thirst, headach, and delirium, to induce sweat and sleep, to cure the disease with less bark, and without leaving abdominal obstructions or dropsy.

In fevers of the typhoid type, accompanied with watchfulness or diarrhœa, it is extremely useful; but when not indicated by particular symptoms, it does harm, by augmenting thirst, and producing constipation.

Especially when combined with calomel, it has lately been much employed in inflammations from local causes, such as wounds, fractures, burns, absorption of morbid poisons, as in swelled testicle, &c. and even in active inflammations, accompanied with watchfulness, pain, and spasm, after blood-letting.

In small pox, when the convulsions before eruption are frequent and considerable, or when the accompanying fever is of the typhoid type, opium is liberally used. It is likewise given from the fifth day onwards; and is found to allay the pain of suppuration, to promote the ptyalism, and to be otherwise useful.

In dysentery, after the use of gentle laxatives, or along with them, opium, independently of any effect it may have on the fever, is of consequence in allaying the tormina and tenesmus, and in obviating that laxity of bowels which so frequently remains after that disease.

In diarrhœa, the disease itself generally carries off any offending acrimony, and then, or after purgatives, opium is used with great effect. Even in the worst symptomatic cases, it seldom fails to alleviate.

In cholera and pyrosis, it is almost the only thing trusted to.

In colic, it is employed with laxatives; and often prevents ileus and inflammation, by relieving the spasm. Even in ileus it is sometimes used to allay the vomiting, the spasms, and the pain.

It is given to allay the pain, and favour the descent of calculi, and to give relief in jaundice and dysuria proceeding from spasm.

It is of acknowledged use in the different species of tetanus; affords relief to the various spasmodic symptoms of dyspepsia, hysteria, hypochondriasis, asthma, rabies, canina, &c. and has been found useful in some kinds of epilepsy.

In syphilis it is only useful in combating symptoms, and in counteracting the effects resulting from the improper use of mercury, for it possesses no power of overcoming the venereal virus.

It is found useful in certain cases of threatened abortion and lingering delivery, in convulsions during parturition, and in the after-pains and excessive flooding.

The administration of opium to the unaccustomed, is sometimes very difficult. The requisite quantity is wonderfully different in different persons, and in different states of the same person. A quarter of a grain will in one adult produce effects which ten times the quantity will not do in another; and a dose that might prove fatal in cholera or colic, would not be perceptible in many cases of tetanus or mania.* When given in too small a dose, it is apt to produce disturbed sleep, and other disagreeable consequences; but sometimes a small dose has the desired effect, while a larger one gives rise to vertigo and delirium, and with some constitutions it does not agree in any dose or form. Its stimulant effects are most certainly produced by the repetition of small doses; its anodyne by the giving of a full dose at once. In some it seems not to have its proper effect till after a considerable time. The operation of a moderate dose is supposed to last in general about eight hours from the time of taking it.

Externally, opium is used to diminish pain, and to remove spasmodic affections. It is found particularly serviceable in chronic ophthalmia, when accompanied with morbidly increased sensibility.

Opium may be exhibited,

1. In substance, made up in the form of a pill, lozenge or electuary. Its most efficient form.
2. Dissolved in diluted alcohol, or white wine.
3. Dissolved in water, or watery fluids. Very perishable.
4. Dried and reduced to powder.†

It is often given in combination with aromatics, astringents, emetics, bitters, camphor, soap, distilled waters, mucilage, syrups, acids, carbonat of ammonia, ether, acetat of lead, tartrat of antimony and potass, and unctuous substances. Some of these are certainly unchemical mixtures, for by experiment we find that the solutions of opium are copiously precipitated by astringents, the alkaline carbonats, and all the metallic salts.

* In the life of the celebrated John Baptiste Michel Bucquet, a French physician, we are told that "he was known to take in one day two pounds of ether and 100 grains of opium."—General Biography, second edit. p. 347. 4to.

† It is difficult to pulverize opium, unless advantage is taken of the cold of winter, when it is readily accomplished.

Officinal Preparations.

Opium purificatum, L. D. - -	*vide Extracta.*
Extractum opii, - - - -	*Idem.*
Pilulæ opii, E. L. - - - -	*Pilulæ.*
Trochisci glycyrr. cum opio, - -	*Trochisci.*
Electuarium sive confectio opiata, E. L.	*Electuaria.*
catechu, E. D. - -	*Idem.*
Tinctura opii, E. L. D. - -	*Tincturæ.*
camphorata, L. D. -	*Idem.*
ammoniata, E. -	*Idem.*
Syrupus opii, D. - - - -	*Syrupi.*
papaveris somniferi, E. L.	*Idem.*
Pulvis opiatus, E. - - -	*Pulveres.*
ipecacuanhæ et opii, E. -	*Idem.*

PASTINACA OPOPONAX. Opoponax. *Gummi-resina.* L.

Opoponax. A gum-resin.

Willd. g. 558. *sp.* 3.—*Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

This plant is perennial, and grows wild in the south of Europe; but the gum-resin which is said to be obtained by wounding the stalk or root, is brought from the Levant and East Indies, sometimes in round drops or tears, but more commonly in irregular lumps, of a reddish yellow colour on the outside with specks of white, inwardly of a paler colour, and frequently varigated with large white pieces. It has a peculiar strong smell, and a bitter, acrid, somewhat nauseous taste.

Neumann got from 480 parts, 166 alcoholic, and afterwards 180 watery extract, and inversely 226 watery, and 60 alcoholic. Both the water and alcohol distilled from it were impregnated with its flavour. It forms a milky solution with water, and yields a little essential oil on distillation. It is supposed to be emmenagogue, but is rarely used.

Officinal Preparation.

Pilulæ galbani compositæ, L. - - *vide Pilulæ.*

PHASIANUS GALLUS. *Ovum. Putamen.* L. D.

The dunghill-fowl. The egg, and egg-shell.

Cl. *Aves.* Ord. *Gallinæ.*

From what country this useful bird originally came, is not ascertained. It is now domesticated almost every where, and furnishes one of the most wholesome and delicate articles of food.

The egg only is officinal. The shell consists principally of carbonat of lime, with a small quantity of phosphat of lime and animal matter. When burnt, the animal matter and carbonic acid are destroyed, and we obtain a lime, mixed with a little phosphat of lime.

The contents of the egg consist of two substances, the white, and the yolk. The white is albumen,* combined with a little soda and sulphur. The yoke is also albuminous, but contains also a bland oil, and some colouring matter. The latter is sometimes used in pharmacy for suspending oily and resinous substances in water. The former is used for clarification.

Officinal Preparations.

Ovorum testæ præparatæ, D. *vide Carbonas calcis præparatus.*
Cataplasma aluminis, L. D. *Cataplasmata.*

PHOSPHORUS.—*PHOSPHORUS.*

Phosphorus is a semi-transparent solid, slightly brilliant, and of a waxy consistence; specific gravity 1.770; taste in some degree acrid and disagreeable; smell alliaceous. It is brittle under 32°; its fracture is vitreous, brilliant, and sometimes lamellated; above 32° it softens a little, becomes ductile about 90°, melts at 99°, becoming transparent like a white oil; at 180° begins to be vaporized, and at 554° boils. It is crystallizable into prismatic needles or long octohedrons. It exists in many minerals, and is obtained from bones and other animal substances.

Primary Compounds of Phosphorus.

a. With oxygen:
1. Oxyd of phosphorus.
2. Phosphorous acid.
3. Phosphoric acid.

b. With nitrogen. Phosphureted nitrogen gas.
c. With hydrogen. Phosphureted hydrogen gas.
d. With sulphur. Phosphuret of sulphur.
e. With metals. Metallic phosphurets.
f. With salifiable bases. Alkaline and earthy phosphurets.

* Albumen is a brittle, transparent substance, of a pale yellow colour, and glutinous taste, without smell, readily soluble in cold water, insoluble in boiling water, but softened and rendered opaque and white when thrown into it; insoluble, and retaining its transparency in alcohol; swelling; becoming brown and decrepitating when suddenly exposed to heat. It generally exists in the form of a viscid, transparent fluid, having little taste or smell, and readily soluble in cold water. When exposed to a temperature of 165°, it coagulates into a white opaque mass, of considerable consistency; it is also coagulated by alcohol and acids. Albumen forms with tannin a yellow precipitate, insoluble in water. *Coagulated albumen* is not soluble either in cold or in boiling water. It is soluble, but with decomposition, in the alkalies and alkaline earths. It is also soluble in the acids, greatly diluted, but may be precipitated from them by tannin. When slowly dried, it becomes brittle, transparent, and of a yellow colour, resembling amber. When decomposed by nitric acid or heat, it is found to contain more nitrogen than gelatin does. White of egg consists of albumen, combined with a very little soda, sulphur, and phosphat of lime. Albumen also forms a large proportion of the serum of the blood, and is found in the sap of vegetables. It is highly nutritious.

In its solid state, phosphorus is not acted upon by pure oxygen gas, but when melted, burns in it at 80° with a dazzling splendour, absorbing about half its weight of oxygen, and forming phosphoric acid. In atmospheric air, it undergoes a slow combustion at 43°, emitting light in the dark, but without the production of sensible heat; absorbing a portion of oxygen, and forming phosphorous acid; at 148° it burns rapidly, but less brilliantly than in oxygen gas, forming phosphoric acid. It is therefore always kept immersed in boiled water; but even there its surface is oxydized, becoming white and opaque.

Oxyd of phosphorus is a solid of a red colour, not volatile, and requiring a heat above 212° for its fusion. Sir H. Davy thinks it may consist of two parts of phosphorus and one of oxygen.

Hydro-phosphorous acid is a white crystalline solid, but water is essential to its composition. It contains four of phosphorous acid and two of water. It is readily soluble in water. The solution has a fetid odour, and disagreeable taste; and gives out a thick white smoke and vivid flame when strongly heated. It is decomposed by ignited charcoal, and by heating it in contact with ammonia.

Phosphoric acid is also composed of phosphorus and oxygen. It is crystallizable, fusible, and vitrescent. It specific gravity is 2.687. It dissolves in water, producing great heat. It readily attracts moisture from the atmosphere, and then its specific gravity becomes 1.417. It is decomposed at a high temperature by hydrogen and carbon, and by several of the metals. It consists of 40 phosphorus and 60 oxygen.

Phosphorus burns in chlorine with a pale flame, throwing off sparks, and forms two compounds according to their proportions. *Prochloride of phosphorus* is a fluid as clear as water, to which its sp. gr. is 1.45. It emits acid fumes when exposed to the air by decomposing the air. It does not redden dry litmus paper. Its vapour burns in the flame of a candle. It dissolves phosphorus when heated. It is decomposed by water, forming phosphorous and muriatic acids, and by ammonia, depositing a part of its phosphorus. It is converted by chlorine into the perchloride. It consists of one proportion of phosphorus, and two of chlorine.

Perchloride of phosphorus is a snow-white substance, crystallizable, very volatile, but fusible under pressure. It produces flame when exposed to a lighted taper. Its vapour reddens litmus paper. It forms an insoluble compound with ammonia, having characters analogous to an earth. It is decomposed in a red-hot tube by oxygen, and it acts violently on water, forming phosphoric and muriatic acids. It consists of one of phosphorus and four of chlorine.

Phosphureted hydrogen gas varies in specific gravity from 4 to 7, hydrogen being 1. It has a disagreeable alliaceous smell. It explodes with a most intense white light in oxygen gas. It detonates with a brilliant green light in chlorine. Water absorbs about $\frac{1}{40}$ of its volume; and it is decomposed by electricity, heated metals, &c.

Hydrophosphoric gas, disagreeable smell, specific gravity 12. to hydrogen. Water absorbs $\frac{1}{8}$ of its volume. It explodes with a white flame in chlorine, one volume absorbing four of the latter. It does not explode spontaneously with oxygen, but detonates violently when heated to 303 Fahrenheit, three volumes absorbing more than five.

Sulphureted phosphorus contains various proportions of its elements. It is exceedingly inflammable and more fusible than either of its constituents. 1 of phosphorus and 3 of sulphur congeal at 100 Fahrenheit. 2 of phosphorus and 1.5 of sulphur remain liquid at 40°, and 8 of phosphorus and 1 of sulphur at 68°.

Nitrogen gas dissolves phosphorus, forming a fetid gas, which inflames at a low temperature.

Phosphuret of lime is insoluble in water, but they decompose each other, producing phosphureted hydrogen gas, which arises in bubbles to the surface of the water, where they explode with a clear flame. Phosphuret of baryta is a brown mass; of a metallic appearance; very fusible; luminous in the dark; decomposed by exposure to air; emitting an alliaceous smell when moistened; and decomposed by water, furnishing phosphureted hydrogen gas. The phosphuret of strontia is very similar.

Officinal Preparations.

Phosphas sodæ,	- -	*vide Soda.*
calcis,	- -	*Cervus elaphus.*
hydrargyri,	- -	*Hydrargyrum.*

PHYSETER MACROCEPHALUS. *Sevum. Ed.* L. D.

SPERMACETI. L. D.

Spermaceti-whale. The suet. Spermaceti.

Cl. *Mammalia.* Ord. *Cetacea.*

D.	*Walschot.*	P.	*Espermaceti.*
DA.	*Hvalrav, Hvalsperme.*	POL.	*Spermaceti, Olbrod.*
F.	*Blanc de baleine, Sperme de baleine.*	R.	*Spermazet.*
G.	*Wallrath.*	S.	*Esperma de ballena, Espermaceti.*
I.	*Spermaceti.*	SW.	*Vallrat, Valraf.*

THE spermaceti whale is characterized by his enormous head, great part of which is occupied by a triangular cavity of bone, covered only by the common integuments. In the living animal this cavity is filled with a white, fluid, oily substance, amounting sometimes to many tons in weight. On the death of the whale, it congeals into a white unctuous mass, from which a considerable quantity of very pure whale oil is obtained by expression. The residuum, afterwards freed from impurities, by washing with water, melting, straining, expression through linen bags, and, lastly, washing in a weak ley of potass, is the peculiar substance well known by the name of spermaceti. It is also contained in solution in the common whale and other fish-oils; for it is often found deposited, by a species of crystallization, in the reservoirs containing them.

Spermaceti may be obtained crystallized in white argentine plates, of an unctuous feel and taste, and a vapid smell. It melts between 90° and 95°, and at a higher temperature may be sublimed almost unchanged. Its vapour is inflammable, and its flame is bright, clear, and without smell. By exposure to air it becomes rancid. It is soluble, especially by the assistance of heat, in alcohol and in ether. In its other properties it agrees with the fixed oils, with which it unites very readily by fusion. Muscular flesh by long maceration in water is converted into a substance very analogous to spermaceti, but more fusible, melting at 82°; and biliary calculi often consist of another, which is much less fusible, requiring a heat of 192° for its fusion. For all these varieties, Fourcroy has proposed the generic name *Adipocere.*

As a medicine, for internal use, it agrees with the fixed vegetable oils; and in the composition of ointments, &c. its place may be very well supplied by a mixture of oil and wax.

PHYTOLACCA DECANDRA.

American Nightshade. Garget. The leaves, berries, and root.

THIS is one of the most common North American plants, well known in New-England by the name of cunicum, shoke, or coakum. In the southern states it is called pokeweed. It has a thick, fleshy, perennial root as large as parsnips. From this rise many purplish herbaceous stalks, about an inch thick, and six or seven feet long; which break into many branches irregularly set with large, oval, sharp pointed leaves, supported on short foot stalks. These are, at first, of a fresh green colour, but as they grow old they turn reddish. At the joints and divisions of the branches, come forth long bunches of small bluish coloured flowers, consisting of five concave petals each, surrounding ten stamina and ten stiles. These are succeeded by round depressed berries, having ten cells, each of which contains a single smooth seed. The young stems when boiled are as good as asparagus, but when old they are to be used with caution, being a plant of great activity, operating both as an emetic and cathartic. A tincture of the ripe berries in brandy or wine, is a popular remedy for rheumatism and similar affections; and it may be given with safety and advantage in all cases where guaiacum is proper. The extract of the juice of the ripe berries has been employed in some cases of scrofula; and cancerous ulcers have been greatly benefited by its application. The juice of the leaves, however, is said to be more effectual.

Dr. Shultz in his ingenious inaugural dissertation on this subject observes, that " scabies and herpes have often been removed by it. In these cases, a solution of the extract in water is generally substituted where the expressed juice cannot be had. In rheumatisms, the whole substance of this plant has at different times been of essential service; although the berries have generally been preferred. In those rheumatic affections which sometimes occur to syphilitic patients, its virtue far exceeds that of opium; and it seems more valuable than guaiacum, especially when combined with mercury.

"For medicinal purposes, the leaves should be gathered about July, when the foot stalks begin to assume a reddish colour, dried in the shade, and powdered for use. An extract may easily be obtained from the leaves when gathered at this period, by gently evaporating their expressed juice to a proper consistence."

A tincture may be made by dissolving either the extract or the leaves, in their green or dry state, in common brandy, or in the spirit distilled from the berries.

An ointment is also made by powdering the dried leaves, and mixing them well with hogs lard, or simple cerate; or by boiling some hogs lard and bees wax with fresh leaves, and straining the mass. The proper time for gathering the berries in this climate is in October, when they become soft and ripe, and are of a blackish colour.

The root is to be gathered about November or December, when the stalks of the plant are perfectly dead, and to facilitate drying, it should previously be divided into small pieces. An extract may be made from the root in the same manner as from the leaves or berries.

It is affirmed by a physician of reputation and experience, that the leaves of phytolacca decandra have been found an admirable remedy in hæmorrhois. A strong infusion is given internally, and if it does not speedily relieve, the same infusion is to be injected into the rectum. This method will in general effect a perfect cure.

According to the experience of Drs. Jones and Kollock, of Savannah, this plant may be relied on as an effectual remedy for syphilis in its various stages, even without the aid of mercury; and they employ it with much confidence, both internally and externally, in rheumatisms, and in cutaneous eruptions. One ounce of the dried root infused in a pint of wine, and given to the quantity of two spoonfuls, operates kindly as an emetic. The roots are sometimes applied to the hands and feet of patients in ardent fevers. Many country people use the extract with great confidence in its efficacy in discussing indolent tumours, and in healing various kinds of ulcers. It is found to operate as a mild vegetable caustic, cleansing and healing foul ulcers better than most other remedies of that class. In three cases of apparent *fistula lachrymalis*, it is reputed to have performed cures, by being applied to the tumours twice a day for two or three weeks. This root has also been employed in compounds as an article of dyeing.

PILULÆ.—*PILLS.*

This form is peculiarly adapted to those drugs which operate in a small dose, and whose nauseous and offensive taste or smell require them to be concealed from the palate.

Pills should have the consistence of a firm paste, a round form, and a weight not exceeding five grains. Essential oils may enter them in small quantity: deliquescent salts are improper. Efflorescent salts, such as carbonat of soda, should be previously exposed, so as to fall to powder: deliquescent extracts should have some powder combined with them. The mass should be beaten until it become perfectly uniform and plastic. Powders may be made into pills with extracts, balsams, soap, mucilages, bread crumb, &c.

Gum-resins, and inspissated juices are sometimes soft enough to be made into pills, without addition: where any moisture is requisite, spirit of wine is more proper than syrups or conserves, as it unites more readily with them, and does not sensibly increase their bulk. Light dry powders require syrup or mucilages: and the more ponderous, as the mercurial and other metallic preparations, thick honey, conserve or extracts.

Light powders require about half their weight of syrup; or of honey, about three fourths their weight; to reduce them into a due consistence for forming pills. Half a drachm of the mass will make five or six pills of a moderate size.

Gums and inspissated juices, are to be first softened with the liquid prescribed: the powders are then to be added, and the whole beat thoroughly together, till they be perfectly mixed.

The masses for pills are best kept in bladders, which should be moistened now and then with some of the same kind of liquid that the mass was made up with, or some proper aromatic oil.

When the mass is to be divided into pills, a given weight of it is rolled out into a cylinder of a given length, and of an equal thickness throughout, and is then divided into a given number of equal pieces, by means of a simple machine. These pieces are then rounded between the fingers; and, to prevent them from adhering, they are covered either with starch, or powder of liquorice, or orris root. In Germany the powder of lycopodium is much used. Magnesia is perhaps preferable to any other powder for covering pills.

PILULÆ ALOETICÆ. *Ed. Aloetic Pills.*

Take of
  Aloes, in powder,
  Soap, equal parts.
Beat them with simple syrup into a mass fit for making pills.

PILULÆ ALOES CUM ZINGIBERE. *Dub.*

Pills of Aloes and Ginger.

Take of
  Hepatic aloes, one ounce;
  Ginger root, in powder, one drachm;
  Soap, half an ounce;
  Essence of peppermint, half a drachm.
Powder the aloes with the ginger, then add the soap and the oil, so as to form an intimate mixture.

PILULÆ ALOES COMPOSITÆ. L.

Compound Pills of Aloes.

Take of
Socotorine aloes, powdered, one ounce;
Extract of gentian, half an ounce;
Oil of caraway seeds, two scruples;
Syrup of ginger, as much as is sufficient.
Beat them together into an homogeneous mass.

Although soap can scarcely be thought to facilitate the solution of the aloes in the stomach, as was supposed by Boerhaave and others, it is probably the most convenient substance that can be added to give it the proper consistence for making pills. When extract of gentian is triturated with aloes, they re-act upon each other, and become too soft to form pills, so that the edition of any syrup to the mass is perfectly unnecessary, unless at the same time some powder be added to give it consistency.

These pills have been much used as warm and stomachic laxatives: they are very well suited for the costiveness so often attendant on people of sedentary lives. Like other preparations of aloes, they are also used in jaundice, and in certain cases of obstructed menses. They are seldom used for producing full purging; but if this be required, a scruple or half a drachm of the mass may be made into pills of a moderate size for one dose.

PILULÆ ALOES ET ASSÆ FŒTIDÆ. *Ed.*

Pills of Aloes, and Assa Fœtida.

Take of
Socotorine aloes, in powder,
Assa Fœtida,
Soap, equal parts.
Form them into a mass with mucilage of gum arabic.

These pills, in doses of about ten grains twice a-day, produce the most salutary effects in cases of dyspepsia, attended with flatulence and costiveness.

PILULÆ ALOES CUM COLOCYNTHIDE. *Ed.*

Pills of Aloes with Colocynth.

Take of
Socotorine aloes,
Scammony, of each eight parts;
Colocynth, four parts;
Oil of cloves,
Sulphat of potass with sulphur, of each one part.

Reduce the aloes and scammony into a powder with the salt; then let the colycynth, beat into a very fine powder, and the oil, be added; lastly, make it into a proper mass with mucilage of gum arabic. (E.)

In these pills we have a very useful and active purgative; and where the simple aloetic pill is not sufficient for obviating costiveness, this will often effectually answer the purpose. Little of their activity can depend upon the salt which enters the composition. These pills often produce a copious discharge in cases of obstinate costiveness, when taken to the extent only of five or ten grains; but they may be employed in much larger doses. They are, however, seldom used with the view of producing proper catharsis. Half a drachm of the mass contains about five grains of the colocynth, ten of the aloes, and ten of the scammony.

PILULÆ ALOES ET MYRRHA. *Ed.* D. L.

Pills of Aloes and Myrrh.

Take of
- Socotorine aloes, two ounces;
- Myrrh, one ounce;
- Saffron, half an ounce.

Beat them into a mass with a proper quantity of syrup. (E.)

These pills have long continued in practice, without any other alteration than in the syrup with which the mass is made up, and in the proportion of saffron, which might indeed be altogether omitted, without any disadvantage. The virtues of this medicine may be easily understood from its ingredients. Give to the quantity of half a drachm or two scruples, they prove considerably cathartic, but they answer much better purposes in smaller doses as laxatives or alteratives.

PILULÆ ARSENICI CUM OPIO.

Pills of Arsenic with Opium.

Take of
- White oxyd of arsenic (arsenious acid) one grain;
- Opium, four grains.

Make them into a mass with conserve of roses, or honey, or soap. To be divided into sixteen pills.

An adult may take two or three of these pills at different periods of the day and night. Arsenic is sometimes used in larger doses, but the above quantity is sufficient in the space of twenty-four hours, for most cases of intermittents.*

* Barton's Collections for an Essay towards a Materia Medica of the United States, Part II. p. 19.

PILULÆ ASSÆ FŒTIDÆ COMPOSITÆ. *Ed.*

Compound Pills of Assa Fœtida.

PILULÆ MYRRHÆ COMPOSITÆ. D.

Compound Pills of Myrrh.

Take of
Assa fœtida,
Galbanum,
Myrrh, each eight parts;
Rectified oil of amber, one part.
Beat them into a mass with simple syrup. (E.)

PILULÆ GALBANI COMPOSITÆ. L.

Compound Pills of Galbanum.

Take of
Galbanum, one ounce;
Myrrh,
Sagapenum, of each one ounce and a half;
Assa fœtida, half an ounce;
Simple syrup, as much as is sufficient.
Beat them together into an homogeneous mass.

THESE pills are designed for anti-hysterics and emmenagogues, and are very well calculated for answering those intentions; half a scruple, a scruple, or more, may be taken every night or oftener.

The rectified oil of amber is a very injudicious addition, as it prevents the pills from acquiring a proper degree of hardness. The tincture of assa fœtida is preferable, and this is certainly the case with all those pills, formed of substances of which a tincture is likewise prepared.

PILULÆ CAMBOGIÆ COMPOSITÆ. L.

Compound pills of Gamboge.

Take of
Gamboge, in powder,
Socotorine aloes, in powder,
Compound powder of cinnamon, of each one drachm;
Soap, two drachms.
Mix the powders, then add the soap, and beat the whole into an homogeneous mass.

THIS is a very useful purgative pill, being considerably more active than aloes alone.

PILULÆ AMMONIURETI CUPRI. *Ed.*

Pills of Ammoniuret of Copper.

Take of
Ammoniuret of copper, sixteen grains;
Bread crumb, four scruples;
Water of carbonat of ammonia, as much as may be sufficient.
Beat them into a mass, to be divided into thirty-two equal pills. (E.)

EACH of these pills weighs about three grains, and contains somewhat more than half a grain of the ammoniuret of copper. They seem to be the best form of exhibiting this medicine.

PILULÆ FERRI COMPOSITÆ. *Lond.*

Compound Pills of Iron.

Take of
Myrrh in powder, two drachms;
Subcarbonat of soda,
Sulphat of iron,
Sugar, of each one drachm.
Powder the myrrh with the subcarbonat of soda; then having added the sulphat of iron, rub them again; then beat the whole, mixed together, into an homogeneous mass.

THIS is Griffith's mixture in a solid form, and may often be convenient.

PILULÆ HYDRARGYRI. *Ed.* L. D.

Mercurial Pills.

Take of
Purified quicksilver, two drachms;
Conserve of roses, three drachms;
Liquorice root powdered, one drachm.
Rub the quicksilver with the conserve until the globules disappear; then, adding the liquorice powder, mix them together. (L.)

THE common mercurial pill is one of the best preparations of mercury, and may in general, supersede most other forms of this medicine. In its preparation the mercury is minutely divided, and probably converted into the black oxyd. To effect its mechanical division it must be triturated with some viscid substance. Soap, resin of guaiac, honey, extract of liquorice, manna, and conserve of roses, have all been at different times recommended. The soap and guaiac have been rejected on account of their being decomposed by the juices of the stomach; and the honey, because it was apt to gripe some people. With regard to the others, the grounds of selection are not well understood; perhaps the acid contained in the conserve of roses may contribute to the extinction of the mercury. We learn when the mercury is completely extinguished, most easily, by rubbing a very li tle of the mass with the point of the finger on a piece of paper, if no globules appear. As soon as this is the case, it is necessary to mix with the mass a proportion of some dry powder, to give it a proper degree of consistency. For this purpose, powder of liquorice root has been commonly used; but it is extremely apt to become mouldy, and cause the pills to spoil. The Edinburgh college have, therefore, with great propriety, substituted for it starch, which is a very unalterable substance, and easily procured at all times in a state of purity. It is necessary to form the mass into pills immediately, as it soon becomes hard. One grain of mercury is contained in four grains of the Edinburgh mass, and three of the London and Dublin. The dose of these pills must be regulated by circumstances; from two to six five-grain pills may be given daily.

It is believed, that experiments fairly made, would sanction the manna in preference to any other substance for the speedy and effectual extinction of the quicksilver: and whatever may be thought of the conserve of roses, it appears probable its use is only dependent on the sugar in its composition.

PILULÆ HYDRARGYRI SUBMURIATIS COMPOSITÆ. L.

Compound Pills of Submuriat of Mercury.

Take of
  Submuriat of quicksilver,
  Precipitated sulphuret of antimony, of each one drachm;
  Guaiac, in powder, two drachms.
Triturate the submuriat with the precipitated sulphuret of antimony, and then with the guaiac; add as much mucilage of gum arabic, as will give the mass a proper consistence.

These pills were recommended to the attention of the public, about forty years ago, by Dr. Plummer, whose name they long bore. He represented them, in a paper which he published in the Edinburgh Medical Essays, as a very useful alterative; and on his authority they were at one time much employed; but they are now less extensively used than formerly.

PILULÆ SCILLÆ COMPOSITÆ. *Lond.*

Compound Pills of Squill.

Pilulæ Scillæ cum Zingibere. *Dub.*

Squill Pills with Ginger.

Pilulæ Scilliticæ. *Ed. Squill Pills.*

Take of
  Powder of Squills, one drachm;

Ginger, in powder, two drachms;
Essential oil of aniseed, ten drops.
Triturate together, and form into a mass with jelly of soap.

This is an elegant and commodious form for the exhibition of squills, whether for promoting expectoration, or with the other intentions to which that medicine is applied: As the virtue of the compound is derived chiefly from the squills, the other ingredients are often varied in extemporaneous prescription.

PILULÆ SAPONIS cum OPIO. L.

Pills of Soap with Opium.

Take of
Hard opium, in powder, half an ounce;
Hard soap, two ounces.
Beat them into an homogeneous mass.

PILULÆ E STYRACE. D.

Storax Pills.

Take of
Purified storax, three drachms;
Soft purified opium,
Saffron, of each one drachm.
Beat them into an uniform mass.

PILULÆ OPIATÆ; olim PILULÆ THEBAICÆ. *Ed.*

Opiate, or *Thebaic Pills.*

Take of
Opium, one part;
Extract of liquorice, seven parts;
Jamaica pepper, two parts.
Soften the opium and extract separately with diluted alcohol; and having beat them into a pulp, mix them: then add the pepper reduced to a powder: and lastly, having beat them well together, form the whole into a mass.

It is unfortunate that these compositions should differ so much in strength, the first containing one grain of opium in three, the second one in five, and the last only one grain of opium in ten of the mass. Under the idea that opium is to operate as a sedative, the addition of the pepper is somewhat injudicious. The title adopted by the Edinburgh college is ambiguous, as it may be mistaken for pills of opium, without any addition. That of the Dublin college is better, although it does not mention the only active ingredient, as it is often necessary to conceal from our patients that we are giving them opium, which both the name and smell of the storax enable us to do. But that of the London college is upon the whole perhaps the best.

PILULÆ RHEI COMPOSITÆ. *Ed.*

Compound Pills of Rhubarb.

Take of
- Rhubarb, one ounce;
- Socotorine aloes, six drachms;
- Myrrh, half an ounce;
- Essential oil of peppermint, half a drachm.

Make them into a mass, with a sufficient quantity of syrup of orange peel. (E.)

This pill is intended for moderately warming and strengthening the stomach, and gently opening the belly. A scruple of the mass may be taken twice a day.

PIMPINELLA ANISUM. *Semen. Ed.* L. D.

Anise. The seed.

Willd. g. 562. *sp.* 8. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

D.	*Anys.*	P.	*Anis, Anise.*
DA.	*Anis.*	POL.	*Anyz.*
F.	*Anis.*	R.	*Anis.*
G.	*Anis.*	S.	*Anis.*
I.	*Anice, Anese.*	SW.	*Anis.*

Anise is an annual umbelliferous plant, growing naturally in Crete, Syria, and other places of the east. It is cultivated in some parts of France, Germany and Spain, and may be raised also in England: the seeds brought from Spain, which are smaller than the others, are preferred.

Aniseeds have an aromatic smell, and a pleasant warm taste, accompanied with a degree of sweetness. Water extracts very little of their flavour; rectified spirit the whole.

Officinal Preparations.

Ol. volat. anisi, E. L. D. - - *vide Olea volatilia.*
Spiritus anisi, L. - - - - *Spiritus destillati.*

PINUS.

Willd. g. 1711. *Smith, g.* 408. *Monœcia Adelphia.*—Nat. ord. *Coniferæ.*

PINUS SYLVESTRIS. *Willd. Smith, sp.* 1. Scotch fir. E. L. D.

Resina. Pix liquida. Terebinthina vulgaris.

Ol. Terebinthina.

Resina alba.

Common turpentine. Oil of turpentine. Rosin. Tar. Black pitch.

PINUS LARIX. *Willd. sp.* 7. The Larch. E. D. L.

Resina. Terebinthina Veneta, vel Resina liquida.

Oleum volatile.

Venice turpentine. Oil of turpentine.

PINUS BALSAMEA. *Willd. sp.* 27. Hemlock fir. E. D. L.

Resina. Balsamum Canadense. Balsam of Canada. Canada turpentine.

PINUS ABIES. *Willd. sp.* 32. Spruce fir. E. L. D.

Resina, Pix Burgundica.

Resina alba.

Burgundy-pitch. Common Frankincense.

THESE different species of fir are all natives of sandy situations. The first only grows wild in Great Britain. They all abound in every part with a resinous juice, which possesses the same general qualities, but presents some varieties, according to the nature of the species and mode of preparation.

The products may be arranged,

1. Into those which exude spontaneously.
2. Into those produced by wounding the tree.
3. Into those procured by decoction. And
4. Into those which are procured by the action of fire.

By exudation.

The pinus larix exudes a species of manna, called Briançon Manna, but it is not used; as, besides the saccharine matter, it evidently contains turpentine.

From the pinus abies, and also from the pinus sylvestris, in warm seasons and climates, a resinous juice exudes spontaneously, which hardens into tears, by exposure to the air. It is the common frankincense, or *Thus* of the former editions of the London Pharmacopœia, but no longer officinal. It is a solid brittle resin, brought to us in tears, or masses, of a brownish or yellowish colour on the outside;

internally whitish, or variegated with whitish specks, of a bitterish, acrid, not agreeable taste, with little smell.

Real burgundy pitch is collected, according to Tingry, from the Pinus picea, or spruce fir tree. The resinous juice which exudes from this species is less fluid and less transparent than the proper turpentines. It is collected by the peasants, strained through cloths, and put into barrels. If its consistence be too thick, it is mixed over the fire with a little turpentine and oil of turpentine.

By incision.

To obtain the products of the second kind, a series of wounds is made through the bark into the wood, beginning at the bottom, and rising gradually upwards, until a stripe of the bark, about nine feet high, be removed, which is commonly effected in about four years. The same operation is then repeated on the opposite side. The operation is then recommenced close to the edge of the former wound, which by this time is nearly closed. A tree worked in this manner will survive, and furnish turpentine for near a century. The juice, or turpentine, which flows from these wounds, during summer, is collected in a small cavity formed in the earth, at the bottom of the incisions, from which it is occasionally removed into proper reservoirs, previous to its purification.

As the trees exude very little juice during cold weather, no new incisions are made in winter; but the old ones get covered with a soft resinous crust (called *barras*, when it is impure, and mixed with bits of bark, dust, and sand; *gallipot*, when collected with more care; or *white incense*, when it is allowed to remain so long exposed that it becomes resinified), which is scraped off, and also collected for subsequent purification. All these products are purified by liquefaction and filtration. They consist almost entirely of essential oil and a resin, and differ only in the proportions, the turpentine containing the largest proportion of oil, and the gallipot of resin. Although gallipot contains essential oil, the quantity is so small, that it is never subjected to distillation, but is purified by melting it with a very gentle fire, and filtrating it. By this process it still contains essential oil, and is often sold by the name of Burgundy pitch. If boiling water be added to it after it is strained, but while it is still fluid, and they be agitated together till the mass cools, we have a yellow resin, which, from still containing some essential oil, is preferred to that prepared, by a similar process, from the residuum of the distillation of turpentine. A simple mixture of gallipot and barras, made without heat, is often sold under the name of Burgundy pitch; but the mass resulting from this combination soon becomes friable. It has neither the unctuosity, viscidity, tenacity, nor smell which distinguish the real kind.

Turpentines.

Turpentines, or fluid resinous juices obtained by incision, have different appellations, chiefly according to the country from which they are procured.

Balsam of Canada, from the *Pinus balsamea* and *Pinus Canadensis.*
Resina liquida Pini Balsameæ. E.
Terebinthina Canadensis. L.
Balsamum Canadense. D.
Cyprian turpentine, from the *Pistacia terebinthus.*
Terebinthina chia. L.
Strasburgh turpentine, from the *Pinus picea.*
Venice turpentine, from the *Pinus larix.*
Resina liquida pini laricis. E.
Terebinthina veneta. D.
Common turpentine, from the *Pinus sylvestris.*
Terebinthina vulgaris. L. D.
Hungarian balsam from the *Pinus sylvestris, var. Mughos.*
Carpatian balsam, from the *Pinus cembra.*

None of these are properly balsams; which term is now confined by chemists to those resinous substances which contain benzoic acid. The Edinburgh college have denominated them liquid resins, which is rather a description than a name. Perhaps the London college have done better in retaining Turpentine as a proper generic name for these resinous juices.

All these species of turpentine possess the same general properties. They are more or less fluid, with different degrees of transparency: of a whitish or yellowish colour; a penetrating smell, and a warm, pungent, bitterish taste. They are entirely soluble in alcohol, combine with fixed oil, and impart their flavour to water, but are not soluble in it. They are decomposed by a moderate heat, being separated into an essential oil and a resin, and are exceedingly inflammable, burning with a large white flame, and much smoke.

Each species has some peculiarities. The Canadian is reckoned the best, and next to it the Chian. They are more transparent, and have a more agreeable flavour than the other kinds. The common turpentine, as being the most offensive, is rarely given internally; its principal use is in plasters and ointments among farriers, and for the distillation of the essential oil.

Medical use.—Taken internally; they are active stimulants, open the bowels, and increase the secretion of urine, to which they give the smell of violets, even though applied only externally. In all cases accompanied with inflammation, they ought to be abstained from, as this symptom is increased, and not unfrequently occasioned by them. They are principally recommended in gleets, fluor albus, and the like. Their dose is from a scruple to a drachm and a half. They are most commodiously taken in the form of a bolus, or blended with watery liquors, by the mediation of the yolk of an egg, or mucilage. They also may be given in the form of electuary, mixed with twice their weight of honey, and in the dose of a drachm of the compound twice or twice or thrice a-day; or of clyster, half an ounce being well triturated with the yolk of an egg, and mixed with half a pound of gruel, or decoction of chamomile.

By distillation turpentines are analysed into two products, a solid resin and a volatile oil.

Oil of turpentine is officinal in the Edinburgh and London Pharmacopœias; by the Dublin college directions are given for its preparation At Queensferry, there is a considerable turpentine work: the turpentine used comes from America, and therefore it is not a product of any of the officinal species of pine.

Oil of turpentine is lighter than water, transparent, limpid, and volatile. It has a hot pungent taste, and a penetrating smell; is highly inflammable, and possesses all the other properties of essential oils.

It is remarkably difficult of solution in alcohol, although turpentine itself dissolves easily. One part of the vôlatile oil is indeed apparently taken up by seven of alcohol; but on standing, the greatest part of the oil falls to the bottom, a much larger quantity of alcohol being necessary to retain it in solution.

Medical use.—As a medicine, it is highly stimulating and penetrating. Internally it acts as a diuretic or sudorific in very small doses. It has also been given in large doses, mixed with honey, principally in those modifications of chronic rheumatism which are styled *sciatica* and *lumbago*. But it has not been often successful, and sometimes has had the effect of inducing bloody urine.

Lately, however, its use in very large doses has been renewed, and with almost invariable success, in one of the most obstinate complaints to which the human body is subject, the tape worm. For this valuable discovery we are indebted to Dr. Fenwick of Durham; although its use both in worms and epilepsy seems to have been previously known to Dr. Latham, P. L. C. P.; and cases of its efficacy have been published by Drs. Bateman and Laird. It has been given to the extent of four ounces in one dose, without any perceptible bad effects, and scarcely more inconvenience than would follow from an equal quantity of gin. In large doses it is not apt to produce strangury, but only an approach to intoxication, and it generally acts as a speedy purgative, and discharges the worm in all cases, *dead*.

Dr. Percival of Dublin has also lately given it in epilepsy, and with some success. ʒii. ʒiv. or ℥i. were mixed by means of syrup, with ℔j. of mint water; and of this emulsion, one or two table spoonfuls were given every four hours. In this form, and given to the extent of several drachms in the course of the day, it produced no distressing symptoms of the urinary organs, stomach, or bowels. It generally procured immediate and decided relief, but it was not always lasting. Dr. Latham suggests, that a large dose should at first be given, and then small doses, so as to keep up the affection of head peculiar to its use.

Externally it often produces excellent effects as a discutient in indolent tumours; as a stimulus in paralysis of the extremities, and in bruises; as an antispasmodic; and as a styptic, when applied on compresses to the bleeding mouths of the vessels, as hot as the patient can bear it, and it is particularly useful as a domestic application in cases of burns.*

* Since the spruce pine and other varieties afford with molasses, a species of beer, highly useful in scurvy; may it not be worth trial, whether oil of turpentine mixed with sugar so as to unite with water, might not be capable, by fermentation, of yielding a liquor that might be useful on ship-board, where the fresh leaves, &c. or the extract of spruce could not be obtained?

*Resins.**

The residuum of the distillation gets different names, according to some peculiarities in its treatment. When the distillation is performed without addition, and continued until the whole essential oil be driven off, and there appear some traces of empyreuma, the residuum is Fiddlers rosin, or Colophony; but if, while the mass is still fluid, a quantity of water be added, and thoroughly blended with the resin by long and constant agitation, it is then called Yellow rosin.

The under part of the cake of the residuum of the distillation resembles fiddlers rosin, the action of the fire having entirely expelled the water and volatile oil, and rendered it slightly empyreumatic and transparent, while the upper part, from retaining some water, is opaque and yellow.

By decoction.

A fluid extract prepared by decoction from the twigs of the pinus sylvestris, is the well known essence of spruce, which, fermented with molasses, and water, forms the fashionable and wholesome beverage of Spruce Beer.

By fire.

The last kind of products from the different species of fir is obtained by the action of fire. With this view, a conical cavity is dug out in the earth, communicating at the bottom with a reservoir. Billets or thin laths of wood are then placed, so as not only to fill the cavity, but to form a conical pile over it, which is covered with turf, and kindled at the top. The admission of air is so regulated that it burns from above downwards, with a slow and smothered combustion. The wood itself is reduced to charcoal, and the smoke and vapours formed are obliged to descend into the excavation in the ground, where they are condensed, and pass along with the matters liquefied into the receiver. This mixture is denominated Tar, *Pix liquida. Ed.* L. D. By long boiling, tar is deprived of its volatile ingredients, and converted into Pitch, *Resina nigra.* L.

Tar is a mixture of resin, empyreumatic oil, charcoal, and acetic acid. Its colour is derived from the charcoal; and the other properties in which it differs from a common resin depend on the presence

* Resins are concrete substances, possessing a certain degree of transparency, and are generally of an amber or brownish red colour. Their texture is homogeneous, and their fracture vitreous. They are easily reduced to powder, which readily agglutinates. Their specific gravity varies from 1 0452 to 1.2289. They have little taste or smell. They are electrics. Exposed to a certain degree of heat, they melt without suffering alteration, but they are decomposed when converted into vapour. Their vapour is inflammable, and burns with a large strong flame and a great deal of soot. Resins unite by fusion with sulphur, difficultly with phosphorus. They are soluble in alcohol, the fixed and the volatile oils, alkalies, and in nitric acid with evolution of nitric oxyd gas. They are insoluble in water, and are not acted upon by metallic oxyds. *Officinal.* Pine resins, dragons blood, guaiac, balsams of Peru, Tolu, Gilead, and Canada, turpentine, benzoin, storax, olibanum, tacamahac, mastiche, sandarac, elemi.

Amber, Copal, and about one fifth of sandarac differ from the resins in not being soluble in alcohol without particular management.

of acetic acid and empyreumatic oil. The acid itself is not only soluble in water, but also renders the empyreumatic oil more soluble.

Medical use.—Tar-water is a heating diuretic and sudorific remedy; but by no means so powerful, or so generally admissible, as it was represented by Bishop Berkeley. Tar is applied externally, in tinea capitis and some other cutaneous diseases.

Dr. Bateman has seen good effects in ichthyosis from pitch given internally. It occasioned the rough cuticle to crack and fall off, without the aid of external means, and left a sound skin underneath. This medicine, made into pills with flour, or any farinaceous powder, may be taken to a great extent, ʒiij. or ℥ss. daily, not only without injury, but with advantage to the general health; and affords one of the most effectual means of controlling the languid circulation, and the inert and arid condition of the skin.

AQUA PICIS LIQUIDÆ. *Dub. Tar-water.*

Take of
 Tar, two pints;
 Water, one gallon.
Mix, by stirring them with a wooden rod, for a quarter of an hour, and, after the tar has subsided, strain the liquor, and keep it in well-corked phials.

Tar Water should have the colour of white wine, and a sharp empyreumatic taste. It is, in fact, a solution of empyreumatic oil, effected by means of acetous acid. It was at one time much extolled as a panacea, but has of late been little employed. It acts as a stimulant, raising the pulse, and increasing the discharge by the skin and kidneys. It may be drunk to the extent of a pint or two in the course of a day.

PIPER.

Willd. g. 74. *Diandria Trigynia.*—Nat. ord. *Piperitæ.*

PIPER NIGRUM. *Sp.* 1. *Fructus. Ed.* L. D.

Black pepper. The berry.

D.	*Peper.*	P.	*Pimenta.*
DA.	*Peber.*	POL.	*Pieprz.*
F.	*Poivre.*	R.	*Perez.*
G.	*Pfeffer.*	S.	*Pimienta.*
I.	*Pepe.*	SW.	*Peppar.*

The black pepper is the fruit of a shrubby creeping plant, which grows wild in the East Indies, and is cultivated in Java and Malabar, by which means the fruit is much improved. The berries are gathered before they are ripe, and are dried in the sun. They become black and corrugated on the surface; their taste is hot and fiery, and their smell slightly aromatic.

Neumann got from 7680 parts 4300 watery, and afterwards 180 alcoholic extract; and inversely, 1080 alcoholic, and 3640 watery. The principle on which the pungency depends, was soluble both in water and in alcohol, and was not volatile, for 7680 grains furnished about 150 of a very bland volatile oil. From this analysis Dr. Thomson's differs remarkably. By macerating pepper in alcohol, and distilling the tincture, he got a green volatile oil, having the whole flavour and pungency of the pepper. Besides this essential principle, he found it to contain an extractive and starch.

It is singular, that the Sumatrans, who eat such vast quantities of Cayenne pepper, never mix black pepper with their food. They esteem the latter heating, and ascribe a contrary effect to the former; and Mr. Marsden, from experience, agrees with them.

White pepper is the fruit of the same plant, gathered after it is fully ripe, and freed of its external coat, by maceration in water. It is smooth on the surface, and less pungent than the black pepper.

Officinal Preparation.

Emplastrum meloës vesicatorii compositum, E. *vide Unguenta.*

PIPER LONGUM. *Sp.* 12. *Fructus. Ed.* L. D.

Long pepper. The fruit.

The plant which bears the long pepper is also a sarmentaceous climber. The berries are small round grains, disposed spirally in a long cylindrical head. They are gathered before they are ripe, and dried; and are the hottest of all the peppers.

The warmth and pungency of these spices reside entirely in a resin; their aromatic odour in an essential oil. In medicine they are sometimes employed as acrid stimulants; but their chief use is in cookery as condiments.

Officinal Preparations.

Tinctura cinnamomi composita, E. L. D. -	*vide Tincturæ.*
Confectio opiata, L. - - - - -	*Electuaria.*
Pulvis aromaticus, L. D. - - - - -	*Pulveres.*
cretæ compositus, L. - - - -	*Idem.*

PISTACIA.

Willd. g. 1782. *Dioecia Pentandria.*—Nat. ord. *Amentaceæ.*

PISTACIA TEREBINTHUS, *Sp.* 4. *Therebinthina Chia.* L.

Chian Turpentine.

The shrub which yields this turpentine grows in India, the north of Africa, and south of Europe, but the turpentine is principally collected in the islands of Chios and Cyprus, by wounding the tree. It does not differ in any thing material, except its price, from the other turpentines.—See Pinus.

PISTACIA LENTISCUS. *Sp.* 6. *Resina. Ed.* L.

Masticше. *Resina.* L. *Mastich. A resin.*

This species is a native of the same countries with the former. It is obtained principally in the island of Chios, by making transverse incisions in the tree, and allowing the juice to harden. It is brought in small yellowish, semi-transparent, brittle grains; of a smooth and shining fracture, softening when chewed, fusible, burning with a pleasant smell, insoluble in water, and partially soluble in alcohol and fixed oils. Neumann found that during digestion with alcohol, a portion separates insoluble in alcohol, though in appearance resinous, amounting to about one tenth of the mastich, and analogous to caoutchouc. La Grange and Vogel say it contains free acetic acid.

Its flavour is communicated to water. It is therefore a resin, combined with a little essential oil. It is principally used by the Turkish women as a masticatory, to preserve the teeth, and give a pleasant smell to the breath.

PLANTAGO. *Plantain. The leaves.*

Great plantain is perennial, common in fields and by the road sides, flowering from June to August. The country people apply the bruised leaves of this vegetable to slight wounds, and inflamed sores and swellings, with a favourable effect. It has been recorded in a Virginia Gazette, 1802, that a gentleman was bitten above the knee by a venomous spider. In a few minutes he observed a pain shooting upwards from the spot, which presently reached his heart. A quantity of plantain leaf was immediately procured, and the juice being bruised out was swallowed largely, by which the progress of the poison was stopt, and finally a cure was effected. Some oil was also swallowed, but the plantain leaf had the entire credit of his recovery, and but for this remedy, he said he could not have survived an hour longer.

PLATINUM.—*PLATINA.*

This metal is found in South-America, Spain, and St. Domingo, and as far as is known only in those countries. It has been asserted to have been discovered in Siberia, but this has not been confirmed. In the former, at Choco, Santa Fee, and in a district of the Brazils, in form of small roundish flattened grains, &c. In Spain, in a vein principally consisting of silver. It is obtained from its ore, by solution in nitro-muriatic acid, and precipitating by the muriat of ammonia. The yellow powder which falls down, is reduced to the metallic state by various processes detailed in chemical writings.

The metal is of a white colour, between silver and lead; it is not so hard as malleable iron; and by hammering is capable of being brought to a specific gravity of 23. It is consequently the heaviest of all known bodies. It is ductile and malleable; capable of being drawn into wires of about $\frac{1}{2000}$ of an inch diameter, and of being hammered into thin plates. A wire of 0.078 of an inch diameter supports a weight of 274.31 lbs. avoirdupois. It is infusible by the heat of a forge.

Dr. Bollmann, of this city, having lately paid much attention to this singular metal, and rendered it malleable, it occurred to him to ascertain whether perhaps it might not be possessed of medicinal virtues? He made for that purpose a very convenient preparation—the nitro-muriatic solution of the *purified metal*, combined with soda; convinced himself that it might be given with safety, by taking it in small quantities himself, without experiencing from it any disagreeable effects; and then supplied with this preparation several of the most eminent practitioners of Philadelphia. Professor Barton used it in several decided cases of syphilis, in all of which the medicine effected a prompt, and. to all appearance, a perfect cure. Mercury, however, had been used previously in all of those cases, except one; but in this, though no medicine whatever had been taken before, and venereal ulcers in the throat attested, unequivocally, the presence of the disease, the beneficial operation of the platina was as prompt, and satisfactory, as in the former cases. There seems therefore to be sufficient ground for further trials, the result of which will, no doubt, be laid before the public, as soon as a sufficient number of facts have been collected to warrant positive conclusions with regard to the medical efficacy of this substance.*

The only effect apparently produced, was a diminution of the appetite. Further experiments are necessary to establish its antisyphilitic virtues. As it is, professor Barton was disposed to think very favourably of it. The cases in which it has been administered have continued well during an interval of several months.

PLUMBUM. *Ed. L.—LEAD.*

D.	*Lood, Loot.*	P.	*Chumbo.*
DA.	*Bly, B.ye.*	POL.	*Olow.*
F.	*Plomb.*	R.	*Swinez.*
G.	*Blei.*	S.	*Plomo.*
I.	*Piombo.*	SW.	*Bly.*

Lead is of a grey, blue, livid colour, streak grey, disagreeable

* Since the last edition of this work, the use of Platina does not appear to have become common; and nothing further has come to my knowledge, beyond what is stated above.

taste, and odour: specific gravity 11.352; soft; very laminable; hardens little under the hammer; very flexible; slightly tenacious; fusible at 612° Fahrenheit; volatile at a red heat; tarnished in the air; slightly oxydized by air and water; by heat and air it forms a grey, then a yellow, and lastly, a red oxyd, which is vitrifiable. Its phosphuret and sulphuret are brittle; it forms alloys with arsenic, bismuth, antimony, mercury, zinc, and tin; it is oxydized by, and combines with the sulphuric, nitric, muriatic, phosphoric, and other acids. Its oxyds impart to glass a uniform density, and strong refracting power.

Lead is found,

I. Oxydized:

1. Lead ochre of different colours.

II. Oxydized, and combined with acids.

2. Carbonated lead. White lead spar.
3. Murio-carbonated.
4. Phosphated lead. Green lead ore.
5. Arseniated lead.
6. Arsenio-phosphated lead.
7. Molybdated lead.
8. Sulphated lead.

III. Sulphureted:

9. Sulphureted lead. Galena.
10. Sulphureted oxyd of lead.

Lead is obtained by various processes from these ores. In its metallic form it is scarcely an officinal article, as its different oxyds are purchased from the manufacturers, and never prepared by the apothecary.

States of oxidation of Lead.

	Thompson.		Davy.	
	Lead.	Oxygen.	Lead.	Oxygen.
1. Yellow, -	91.5	8.5		
2. Yellow, Massicot,	90.5	9.5	398	30
3. Red, Red lead,	88.	12.	398	45
4. Brown, -	80.	20.	398	60

Medical use.—Its effects on the body are emaciation, violent colics, paralysis, tremors, and contractions of the limbs; and as they generally come on gradually, the cause is sometimes overlooked till it be too late. Poisoning from lead is never intentional, but only accidental, 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 painters and plumbers, and who are not sufficiently attentive to avoid swallowing any of it.

The presence of the lead in any suspected liquor is detected by the hydro-sulphuret of potass, which forms with it a brown precipitate, not insoluble in diluted muriatic acid; and still more certainly by evaporating a portion of it to dryness, and exposing the extract to a heat sufficient to reduce the lead.

OXYDUM PLUMBI ALBUM. *Ed. White oxyd of lead.*

CERUSSA. *Cerusse.*

SUB-ACETAS PLUMBI. D. *Sub-acetat of lead.*

SUB-CARBONAS PLUMBI. L. *Sub-carbonat of lead.*

White lead. Carbonat of lead.

THIS substance, which is now said to be a carbonat of lead, is manufactured in several countries. It is prepared by exposing lead to the vapour of vinegar. To accelerate the oxydizement, the lead is cast in thin plates, which are rolled up spirally. A number of these are placed perpendicularly on a support, over a flat vessel containing vinegar, which is converted into vapour by a gentle heat, such as that of dung. The plates become slowly covered with a white crust, which is in due time removed; and the remains of the plates again exposed to the vapour of vinegar, until they be entirely corroded.

Van Mons says, that if lead ashes be dissolved in nitric acid, and precipitated by chalk in impalpable powder, the precipitate, when washed and dried, will be cerusse in its purest state.

White oxyd of lead has a scaly or foliated texture, is brittle, friable, heavy, of a snowy whiteness, and a sweet taste. It is often adulterated with earthy substances, which may be discovered by mixing it with oil, and reducing the lead in a crucible. Although very friable, the coarser particles cannot be separated by means of a sieve, because its interstices soon get filled up. It can only be obtained in the state of a fine powder, by rubbing a loaf of cerusse on a sieve placed over a sheet of paper. It consists of 84 yellow oxyd of lead, and 14 carbonic acid.

In pharmacy the white oxyd of lead is used in the composition of ointments and plasters.

OFFICINAL PREPARATIONS.

Acetis plumbi, E. L. D. - -	
Unguentum oxydi plumbi albi, E. -	*vide Unguenta.*
Pulv. cerussæ comp. L. - - -	*Pulveres.*

OXYDUM PLUMBI RUBRUM. *Ed.*

MINIUM, *Red oxyd of lead.*

THE preparation of red lead is so troublesome and tedious, as scarce ever to be attempted by the apothecary or chemist; nor indeed is this commodity expected to be made by them, the preparation of it being a distinct branch of business. The makers melt large quantities of lead at once, upon the bottom of a reverberatory furnace built for this purpose, and so contrived, that the flame acts upon a large surface of the metal, which is continually changed by the means of iron rakes drawn backwards and forwards, till the fluidity of the lead is destroyed; after which, the oxyd is only now and then turned.

The red oxyd of lead is obtained in the form of a very heavy powder, consisting of minute shining scales, of a bright scarlet, verging towards yellow, especially if triturated It is sometimes adulterated with red oxyd of iron, red bole, or powdered brick. These frauds are detected by the inferiority of colour, by mixing it with oil, and subjecting it to the test of reduction; and by its forming a black precipitate with tincture of galls when dissolved in nitrous acid.

OXYDUM PLUMBI SEMIVITREUM. *Ed.* D.

LITHARGYRUM. L. D. *Litharge.*

Semi-vitrified oxyd of lead.

If oxydized lead be urged with a hasty fire, it melts into the appearance of oil, and on cooling concretes into litharge. Greatest part of the litharge met with in the shops, is produced in the purification of silver from lead, and the refining of gold and silver by means of this metal. According to the degree of fire and other circumstances, it proves of a pale or deep colour; the first has been commonly called Litharge of Silver, the other Litharge of Gold.

The oxyds of lead dissolve by heat, in expressed oils; these mixtures are the basis of several officinal plasters and ointments.

Lead and its oxyds when undissolved, have no considerable effects as medicines. Dissolved in oils, they are supposed to be (when externally applied) anti-inflammatory and desiccative. Combined with vegetable acids, they are remarkably so: and taken internally, prove powerful though dangerous styptics.

OFFICINAL PREPARATIONS.

Aqua lythargyri acetati, L. D. - -	
Emplast. ox. plumbi semivit. E. L. D.	*vide Unguenta.*
Ceratum saponis, L. D. - - -	*Idem.*

ACETIS PLUMBI; olim, SACCHARUM SATURNI. *Ed.*

Acetite of Lead; formerly *Sugar of Lead.*

SUPER-ACETAS PLUMBI. L. *Super-Acetat of Lead.*

ACETAS PLUMBI. D. *Acetat of Lead.*

Take of

White oxyd of lead any quantity;

Put it into a cucurbit, and pour upon it of

Distilled acetous acid, ten times its weight.

Let the mixture stand upon warm sand till the acid become sweet;

when it is to be poured off, and fresh acid added until it cease to become sweet. Then evaporate all the liquor, freed from impurities, in a glass vessel, to the consistence of thin honey, and set it aside in a cold place, that crystals may be formed, which are to be dried in the shade. The remaining liquor is again to be evaporated, that new crystals may be formed; and the evaporation is to be repeated until no more crystals concrete. (E.)

THE acetat of lead is seldom prepared by the apothecary, as he can procure it at an infinitely cheaper rate from those who manufacture it in large quantities. The preparation of it as directed by the colleges, is a case of simple solution. The process frequently fails, from he oxyd of lead employed being adulterated with carbonat of lime, or some other earthy substance. The acetic acid employed, should be as strong as can be procured; for with a weak acid the product of pure salt is small, and the quantity of mother-water is increased. The addition of a small quantity of alcohol to the solution after it has been duly evaporated, is said to improve the beauty of the crystals. The mother-water may also be made to furnish pure crystals, by adding to it a fresh portion of acetic acid; for without that precaution it furnishes only a very heavy, yellow, pulverulent, mass, in which there seems to be an excess of oxyd of lead, and hence it is probably essentially the same with Goulard's extract of lead.

The manufacture of acetat of lead is conducted more economically when the oxyd is dissolved in the acid at the same time that it is prepared; which is done by alternately exposing plates of lead to the vapour of acetic acid, and immersing the plates, thus covered with oxyd, into the acid itself.

Acetat of lead has a sweet styptic taste. It has a white colour, and crystallizes in flat parallelopipeds, terminated by a wedge, or more commonly in shining needles. It is soluble in water, and in alcohol; effloresces slightly in the air, and is decomposed by heat and light. It is also decomposed by the alkalies, and most of the earths and acids.

Medical use.—The internal use of acetat of lead, has of late been much greater than formerly, and it promises to be a most valuable addition to our list of active remedies, although Dr. Duncan and others, have proscribed it from internal use. It has been successfully employed in several cases of epilepsy.* It is strongly recommended in cases of hemorrhage. It forms a very valuable external application in superficial and phlegmonic inflammations, bruises, and diseases of the skin. It is always applied in solution, either simply, as to the eyes, or by means of cloths soaked in it, or mixed with bread-crumb. A drachm, with five ounces of any distilled water, forms a strong solution, and with ten ounces of water, a weak solution. If common water be used, the addition of about a drachm of acetous acid will be necessary to keep the lead in solution.

* Philadelphia Medical Museum, Vol. I. and II.

Officinal Preparations.

Acidum acetosum forte, E. -	*vide Acidum acetosum.*
Solutio acetitis zinci, E. - -	*Zincum.*
Unguentum acet. zinci, E. L. D. -	*Unguenta.*

AQUA LITHARGYRI ACETATI. L.

Liquor Lithargyri Acetati; olim, Extractum Saturni. D.

Water of Acetated Litharge, formerly *Extract of Lead.*

Take of
Litharge, two pounds;
Distilled vinegar, one gallon.
Mix and boil to six pints, constantly stirring; then set it aside.
After the feces have subsided, strain. (L.)

Mr. Phillips thinks, that too much litharge is employed by the London college in this preparation, as a gallon of distilled vinegar, sp. gr. 1.007, will dissolve only ten of the twenty-four ounces ordered, and the residuum having its bulk much increased by the action of the acid, retains much of the solution. When properly prepared, it is of a straw colour, with a slight admixture of green, and has a sp. gr. of 1.22, and it is not, as said by Dr. Powell, "a dense solution of a deep brown colour," unless the acid which remains after the distillation of vinegar be employed instead of the distilled vinegar.

Notwithstanding Scheele showed that a solution of sugar of lead was converted into Goulard, by allowing it to act for a day on a plate of lead, yet, until the experiments of Dr. Bostock, it was generally believed that these preparations did not differ, except in the accidental variations of strength to which the latter was subject. By his analysis, however, it appears that the constituents in the saturated solution of the sugar of lead, and of the water of acetated litharge, are respectively,

	Former.	Latter.
Oxyd of lead, - - -	16.8	23.1
Acetic acid, - - - -	7.5	5.
Water, - - - -	75.7	71.9
	100.	100.

Thenard obtained the salt in crystallized plates, by boiling 150 parts of litharge in a solution of 100 parts of sugar of lead; and on analysing it, found it to consist of 17 acid, 78 oxyd, and 5 water. These experiments, the coincidence of which confirm their accuracy, show, that in sugar of lead, 100 parts of acid are combined with 224 of oxyd of lead, and in Goulard's extract, with 450 or 460, or somewhat more than twice the quantity of oxyd. Now, according to the doctrine of definite proportions, any acid always combines with the same proportion of oxygen in oxyds, whatever the proportion of metal may be: it is therefore evident, that the oxygen in the oxyd of lead, contained in Goulard's extract, is combined with twice as much lead as it is in the oxyd in the sugar of lead; or Goulard's extract is the acetat of the protoxyd of lead, and sugar of lead the acetat of the peroxyd of lead.

Officinal Preparation.

Ceratum lithargyri acetati, L. D. - *vide Unguenta.*

LIQUOR SUB-ACETATIS LITHARGYRI COMPOSITUS. D.

Compound Liquor of Acetated Litharge.

Take of
- Liquor of acetated litharge, a drachm;
- Distilled water, fourteen ounces;
- Weaker spirit of wine, a drachm.

Mix the spirit and liquor of acetated litharge, then add the distilled water. (D.)

These preparations do not differ from solutions of the same strength of acetat of lead, and are less proper, as their strength is apt to vary. The vitrified oxyd of lead made use of in this instance, is less easily soluble, on account of its great force of aggregation, than the white oxyd; but, on the other hand, it is less liable to be adulterated. The addition of the diluted alcohol to the weak solution, is intended to prevent its decomposition, but it also renders it slightly stimulant.

PODOPHYLLUM PELTATUM.

May-apple. Mandrake, &c. The root.

This plant is very common throughout North America. The fruit is esculent and by many thought delicious. The leaves are poisonous. The root is an excellent purgative in doses of 20 grains. It is most advantageously used in combination with calomel, or crystals of tartar. An extract from the root is also sometimes employed, and has been found useful in colica pictonum. This plant is thought by some, to be especially adapted as a purge, to cases of intermittents, remittents, and dropsy. The root also often operates as an anthelmintic, and as such it is used by the Cherokee, and other southern Indians. The late Dr. Barton thought this plant possessed some narcotic quality.

The best time for gathering the May-apple, for medical purposes, is the autumn, when the leaves have turned yellow, and are about falling off. The Indians dry it in the shade and powder it for use.*

* Barton's Collections, Part I. p. 30, 38.

POLYGALA SENEGA. *Radix. Ed.* L. D.

Seneka, or Rattlesnake Root.

Willd. g. 1313. *sp.* 67. *Diadelphia Octandria.*—Nat. ord. *Lomentaceæ.*

SENEKA is a perennial plant, which grows wild in North America, particularly in Virginia and Pennsylvania. This root is usually about the thickness of the little finger, variously bent and contorted, and appears as if composed of joints, whence it is supposed to resemble the tail of the animal whose name it bears; a kind of membranous margin runs on each side, the whole length of the root.

The root was first introduced into use in 1739, by Dr. Tennent, of Virginia, who wrote a pamphlet on the subject, and highly extolled it as a remedy for many complaints, and particularly, as a specific for the cure of the bite of the rattle-snake.

The bark is the active part of the root. Its taste is at first acrid, afterwards very hot and pungent. It has no smell.

Its acrimony resides in a resin; for it is entirely extracted by alcohol; is precipitated by water; does not rise in distillation; and is not destroyed by keeping.

Medical use.—It is an active stimulus, and increases the force of the circulation, especially of the pulmonary vessels. It has therefore been found useful in typhoid inflammations of the lungs: but it is apt to disorder the stomach, and to induce diarrhœa. Dr. Brandreth of Liverpool has derived great benefit in some cases of lethargy from an extract of seneka combined with carbonat of ammonia.

Some have likewise employed this root in hydropic cases, and not without success. There are examples of its occasioning a plentiful evacuation by stool, urine, and perspiration; and by this means removing the disease, after the common diuretics and hydragogues had failed.

It sometimes induces salivation, and it possesses diuretic, emetic, cathartic, expectorant and diaphoretic powers. It has become greatly celebrated in the cure of cynanche trachealis, and is used by the Indians in syphilis and malignant sore throat. The Polygala sanguina, a new species discovered at Savannah, has been used as a substitute for it.*

Dr. Archer, of Maryland, discovered the great utility of seneka snake-root, as a remedy for that fatal disease, the *croup*, and speaks with confidence as to the general good effects produced by it. The decoction of the root is the manner in which he generally gives it; the strength must be determined by the physician; it must be so strong, as to act sensibly on his own mouth and throat, in exciting coughing, &c. for in this disease, the larynx (mouth of the wind-pipe) in a manner loses its natural sensibility. Half an ounce of the root of seneka, bruised, and simmered in a close vessel, in half a pint of water, until reduced to four ounces, will, probably, in most cases be sufficiently strong. A tea-spoonful of this to be given every hour or half hour, as the urgency of the symptoms shall demand; and during these

* Barton's Collections, Medical Repository, &c.

intervals, a few drops occasionally, to keep up a sensible action of the medicine, in the mouth and throat, until it acts as an emetic and cathartic; then repeat in small quantities, and so frequently as to keep up a constant stimulus in the same. By these means, in the course of two, four, six, or eight hours, a membrane is often times discharged by the mouth, one, two, and often three inches in length; sometimes it is swallowed and voided by stool.

Patients who use the medicine should not be permitted to drink any thing whatever, for some minutes after each dose. The reason must be obvious to all. The powder has lately been used by Drs. Archer and Son, in doses of four or five grains, mixed with a little water, with effects equally as pleasing as the decoction, and more so, unless the latter have been carefully prepared. It should be remarked that this powerful stimulant cannot with safety be exhibited during the inflammatory stage of croup. It is in the third or last stage only, it has been found extremely useful in exciting the vessels of the trachea and lungs to a powerful excretion.

Seneka has been usefully employed in the decline of pleurisies and catarrhs, to promote expectoration. In suppressed coughs of aged persons, and in asthma, it is doubtless useful; a gentle and constant stimulus on the throat should be kept up in these diseases. It has also been exhibited as a powerful remedy in cases of female obstructions. Professor Chapman has found it of great utility in obstinate amenorrhœa when given in decoction prepared by adding an ounce of the root to a pint of boiling water, which is slowly reduced by simmering to the quantity of one third. Four ounces of the decoction is to be taken during the day, increasing it when the menstrual effort is expected, as far as the stomach will allow. If this excite nausea, he adds aromatics. To prevent disgust, it is omitted a week or two in the intervals of the menstrual periods.

Officinal Preparation.

Decoct. polygalæ senegæ, - - - *vide Decocta.*

POLYGONUM BISTORTA. *Radix. Ed.* L. D.

Great Bistort, or Snakeweed. The root.

Willd. g. 785. *sp.* 3. *Smith, g.* 196. *sp.* 6.—*Octandria Trigynia.*— Nat. ord. *Oleraceæ.*

This plant is perennial, and grows wild in moist meadows in several parts of Britain. The root is about the thickness of the little finger, of a blackish-brown colour on the outside, and reddish within: it is writhed or bent vermicularly (whence the name of the plant) with a joint at each bending, and full of bushy fibres; the root of the species here mentioned has, for the most part, only one or two bendings; others have three or more. All the parts of bistort have a rough austere taste, particularly the root, which is one of the strongest of the vegetable astringents.

Medical use.—It is employed in all kinds of immoderate hemorrhagies and other fluxes, both internally and externally, where astringency is the only indication. It is certainly a very powerful styptic, and it is to be looked on simply as such. To the sudorific, antipestilential, and other virtues attributed to it, it has no other claim than in consequence of its astringency. The largest dose of the root in powder is one drachm.

POLYPODIUM FILIX MAS. *Radix. Ed.* D.

Aspidium Filix Mas. L.

Male Fern. Male shield Fern. The root.

Willd. g. 1962. *sp.* 94. *Smith, g.* 429. *sp.* 4. *Cryptogamia. Filices.*—Nat. ord. *Filices.*

This fern is perennial, and grows in great abundance in almost every part of Britain where the ground is not cultivated. The greatest part of the root lies horizontally, and has a great number of appendages placed close to each other in a vertical direction, while a number of small fibres strike downwards The large root, together with its appendages, are to be reserved for use. The two ends, however, are to be cut off, the one being too old and spongy, the other too new and green.

When chewed, its taste is somewhat mucilaginous and sweet, and afterwards slightly astringent and bitter. Its smell is also weak.

Medical use.—This root was used as an anthelmintic in the days of Dioscorides. It gradually became neglected; but its use was again revived at different times by Madame Nuffer, Herrenschwand, and others, who certainly frequently succeeded in killing and expelling the tænia, both lata and cucurbitina, by the exhibition of secret remedies, of which the fern-powder was, or rather was supposed to be, the principal ingredient; for there is much reason to believe, that the active purgatives with which it was always combined, were really the remedies which effected the cure.

The same, or nearly a similar, secret, has been bought by different potentates, and published for the benefit of those suffering under this obstinate disease.

The internal solid part of the root only is to be powdered, and the powder should have a reddish colour; and as the dose and exhibition of the remedy must be regulated according to the age, sex, and constitution of the patient, it must be given always under the direction of an experienced practitioner.

POPULUS TREMULA.

Aspen.

The bark of this tree is a powerful tonic, and deserves the attention of the American physician. It has been used in intermittents; and has been found useful as a stomachic, in the diseases of our horses.*

POTASSA.—*POTASS.*

Alkalizable metals. The heavier earths, and even the alkalies, have long been supposed by different chemists to be metallic oxyds, and were even stated to have been reduced to their metallic form. But their supposition rested only on the vaguest analogies, and their experiments were completely fallacious. The merit of discovering the metallic bases of the earths and alkalies belong to Sir H. Davy, to whose ingenuity and skill, in applying the powerful agency of galvanism, we are indebted for the most unexpected conclusions ever obtained in experimental chemistry.

Potassium, the base of potass, is a white metal, brittle and crystallized; in its section resembling polished silver; and at 150° perfectly fluid, very much resembling quicksilver. At a red heat it is converted into vapour. Its specific gravity is between 8 and 9, water being 10. Exposed to the air, it attracts oxygen, and becomes covered with a crust of potass; when gently heated, it burns with an intense heat, and a red light. It explodes and inflames with water, and even with ice. It acts upon all bodies containing water or much oxygen. It burns vividly in chlorine. It is soluble in hydrogen gas, forming a compound which inflames with atmospheric air. It combines with sulphur and phosphorus, and the metals, forming readily oxydizable compounds.

Protoxyd of potassium scarcely known; of a greyish colour, effervesces with water without inflaming.

Potassa, (Sir H. Davy), a difficultly fusible substance of a grey colour, vitreous in its fracture, dissolving in water, without effervescence, but with much heat, forming an alkaline solution.

Potass (hydrat of potassa) is a solid white substance, containing 90 potassa and 17 water, which cannot be separated by heat; extremely acrid to the taste; unctuous to the feel, but highly caustic; destroying the skin, and dissolving all soft animal substances. It is deliquescent, and soluble in half its weight of water at 58° Fahrenheit; it is fusible, and may be vaporized, but is perfectly incombustible; it is capable of crystallizing into very long quadrangular, compressed prisms, terminated by sharp pyramids; it changes vegetable blues to green, and combines with all the acids, oils, sulphur, sulphureted hydrogen, and the earths. It is obtained from the ashes of vegetables, and exists in some minerals. *Officinal.*

Orange oxyd of potassium, fusible, the result of the slow combustion of potassium in oxygen or air. It supports the combustion of inflammable bodies, supplying the oxygen. It is decomposed by water and carbonic acid, oxygen being evolved.

* Barton's Collections, Part I. p. 14.

Chloride of potassium (muriat of potass.) When muriatic acid and solution of potass are mixed and heated to redness, the hydrogen of the acid and the oxygen of the alkali are set free as water, while the metal and the chlorine combine to form the substance known by the name of muriat of potass. Chlorine also decomposes potassa and the orange oxyd, expelling its oxygen, and potassium attracts chlorine from hydrogen and phosphorus. *Officinal.*

AQUA POTASSÆ; VULGO LIXIVIUM CAUSTICUM. *Ed.*

Solution of Potass, commonly called *Caustic Ley.*

LIQUOR POTASSÆ. L. *Solution of Potass.*

AQUA KALI CAUSTICI. D. *Solution of Caustic Kali.*

Take of

Newly prepared lime, eight ounces;

Carbonat of potass, six ounces.

Put the lime into an iron or earthen vessel, with twenty-eight ounces of warm water. After the ebullition is finished, instantly add the salt; and having thoroughly mixed them, cover the vessel till they cool. When the mixture had cooled, agitate it well, and pour it into a glass funnel, the throat of which is obstructed with a piece of clean linen. Cover the upper orifice of the funnel, and insert its tube into another glass vessel, so that the solution of potass may gradually drop through the rag into the lower vessel. As soon as it ceases to drop, pour into the funnel some ounces of water, but cautiously, so that it may swim above the matter in the funnel. The solution of potass will again begin to drop, and the affusion of water is to be repeated in the same manner until three pounds have dropped, which will happen in the space of two or three days; then mix the superior and inferior parts of the liquor together by agitation, and keep it in a well-stopt phial. (E.)

The specific gravity of this liquor is to that of distilled water as 1100 to 1000.

THE processes of the colleges do not differ materially. They are founded upon the affinity of lime being stronger than that of potass for carbonic acid. Of course, when lime comes in contact with carbonat of potass, the carbonic acid quits the potass to unite with the lime, and the results of the mixture are potass and carbonat of lime. Now, as the carbonat of lime is insoluble in water, and the potass is very soluble, they may be separated by filtration. In doing this, however, we must take care to employ instruments on which the solution of potass does not act, and to prevent the free access of air, from which it would attract carbonic acid, and thus frustrate the whole operation. The latter object is attained by covering the upper or broad end of the funnel with a plate of glass, and inserting the lower end into the neck of a phial, which it fits pretty closely. The former object is attended with greater difficulties, and indeed scarcely to be effected, so powerful and general is the agency of potass. All animal substances are immediately attacked and destroyed by it; therefore, our filters cannot be made of silk, woollen, or paper which contains glue; and although neither vegetable matters nor silica entirely escape its action, linen and sand are, on the whole, the least objectionable. A filter of sand was used by Dr. Black: he first dropt a rugged pebble into the tube of the funnel, in some part of which it formed itself a firm bed, while the inequalities on its surface afforded interstices of sufficient size for the passage of the filtering liquor. On the upper surface of this stone he put a thin layer of lint or clean tow; immediately above this, but not in contact with it, he dropped a stone similar to the former, and of a size proportioned to the swell in the upper part of the tube of the funnel. The interstices between this second stone and the funnel were filled up with stones of a less dimension, and the gradation uniformly continued till pretty small sand was employed. Finally, this was covered with a layer of coarser sand, and small stones to sustain the weight of the fluid. A filter of sand being thus constructed in the funnel, it was washed perfectly clean, by making clean water pass through it, till it dropt from the lower extremity of the funnel perfectly clear and transparent; and before using it, it was allowed to stand for some days, that no water might remain among the interstices of the sand.

From the spongy nature of the residuum which remains upon the filter, and especially if we use that of sand, a considerable quantity of the solution of potass will be retained. It is, however, easily obtained, by pouring gently over it, so as to disturb it as little as possible; a quantity of water; the ley immediately begins again to drop from the funnel, and as, from the difference of their specific gravity, the water does not mix with it, but swims above it, the whole ley passes through before any of the water. By means of the taste we easily learn when the whole ley has passed.

As it is natural to suppose that the strongest solution will pass first, and the weakest last, we are directed to agitate the whole together, to render their strength uniform.

If the solution of potass be pure, it will be colourless, and it will neither effervesce with acids, nor form a precipitate with carbonat of potass. If it effervesces, carbonic acid is present, and must be separated by again boiling the solution with a little lime, or by dropping it into lime-water, as long as it produces any precipitate. But Mr. Phillips has remarked, that even when a small quantity of carbonic acid is contained in it, no precipitate is produced unless a considerable quantity of lime-water be added. If, on the contrary, it contain lime, from too much of it having been employed in the preparation, it may be separated by dropping into the ley a solution of the carbonat of potass. When we have thus purified our solution of potass, it must be again filtered. Mr. Phillips objected to this process as in the London Pharmacopœia of 1809, that the quantity of lime employed was much too large, and that a half of the weight of the subcarbonat is sufficient, as in fact 33 parts of lime will saturate the 26 of carbonic acid commonly contained in 100 parts of subcarbonat of potass; and his suggestion has been adopted in the edition of 1815. But this objection is obviated by the mode of filtration used by the Edinburgh college; and although from calculation the quantity of lime seems excessive, it is necessary to render the potass perfectly caustic.

Medical use.—The solution of caustic potass, under various names, has at different times been celebrated as a lithontriptic, and as often fallen again into disuse. The very contradictory accounts of its effects as a solvent are now, in some degree, explicable, since it has been discovered that urinary calculi are very different in their natures, so that some of them are only soluble in acids, and others only in alkalies. Of the last description are the calculi of uric acid,* which are very frequent, and those of urat of ammonia. On these, therefore, alkalies may be supposed to make some impression; and that alkalies, or alkaline carbonats, taken by the mouth, have occasionally relieved calculous complaints, is certain. It is however said, that their continued use debilitates the stomach; and M. Fourcroy has proposed applying the remedy immediately to the disease, by injecting into the bladder a tepid solution of potass or soda, so dilute that it can be held in the mouth. Before the alkaline solution be injected, the bladder is to be completely evacuated of urine, and washed out with an injection of tepid water. After the alkaline injection has remained in

* *Urea* is obtained in the form of brilliant micaceous crystals, in groups, forming a mass of a yellowish white colour, adhering to the vessel containing it; difficult to cut or break; hard and granulated in its centre; gradually becoming soft, and of the consistence of honey on its surface; of a strong disgusting alliaceous odour; of an acrid, pungent, disagreeable taste. It is deliquescent; its solution causes a sensible diminution of temperature; it is also soluble in alcohol, especially when assisted by heat. On cooling, the alcoholic solution deposits crystals of pure urea. By the application of heat it melts, swells rapidly, and at the same time begins to be decomposed; emitting an insupportably fetid odour, and is converted into carbonat of ammonia, and carbureted hydrogen gas. Urea is charred by concentrated sulphuric acid; diluted sulphuric acid aided by heat, is capable of converting it entirely into acetous acid and ammonia; concentrated nitrous acid decomposes it with rapidity; diluted nitric acid aided by heat, changes it almost entirely into carbonic acid gas and nitrogen gas; muriatic acid dissolves and preserves it; oxy-muriatic acid converts it into ammonia and carbonic acid; potass aided by heat, converts it into the carbonat and acetat of ammonia. It influences the form of the crystallization of the muriats of ammonia and soda. The solution of urea in water varies in colour from a deep brown to a pale yellow, according to its quantity. With eight parts of water it is perfectly fluid; it scarcely undergoes spontaneous decomposition when pure, but the addition of some albumen occasions it to putrefy rapidly. By repeated distillation it is completely converted into carbonat of ammonia. With nitric acid it forms a pearly crystalline precipitate; it also forms precipitates with the nitrats of lead, mercury, and silver. It is not precipitated by tannin or gallic acid. Urea is only obtained from urine by evaporating the solution of a thick extract of urine and alcohol.

Uric acid is obtained in the form of acicular brilliant crystals, of a pale yellow colour, almost insoluble in cold, and very sparingly soluble in boiling water, but becoming very soluble when combined with an excess of potass or soda. It is decomposed at a high temperature, and furnishes carbonat of ammonia, and carbonic acid, with very little oil or water, and leaves a charcoal which contains neither lime nor alkali. It is also decomposed by the nitric and oxygenized muriatic acids.

The *urats* are almost insoluble in water. The sub-muriats of soda and potass are very soluble, and the uric acid is precipitated from the solutions even by the carbonic acid.

the bladder half an hour or more, it is to be evacuated, and allowed to settle. If, on the addition of a little muriatic acid, a precipitate be formed, we shall have reason to conclude that the calculus contains uric acid, and that the alkali has acted on it.

Very dilute alkaline solutions may also be taken into the stomach as antacids, but we possess others which are preferable.

Mr. Brandish, who has strongly recommended the solution of caustic potash for the cure of scrofula, gives the following complicated formula for its preparation.

Take of
American pearl ashes, six pounds;
Fresh burnt lime,
Fresh ashes of ash wood, each two pounds;
Boiling water, six gallons.

He reverses the common method of slaking lime, by desiring it to be gradually added to the water kept boiling: He then adds the pearl ashes, then the wood ashes; stirs all together, and lastly draws off the clear liquor slowly. He used to prepare it without the pearl ashes, but found they rendered it softer, which no doubt they would, as the quantity of lime is insufficient to abstract all the carbonic acid, and would leave the liquor in a state of subcarbonat. He says that a wine pint of his solution should weigh 18 or 19 ounces. He recommends the addition of a drop or two of genuine oil of juniper to the pint of liquor, and orders it to be taken twice a-day in the following doses; to a child from four to six, 1 drachm by measure; from six to eight, one drachm and a half; eight to fifteen, 2 drachms; fifteen to eighteen, two and a half; to adults 3 and sometimes 4. It should, however, be begun in rather smaller doses. The vehicle may be fresh beer, malt-tea, barley-water, or water-gruel.

Externally, alkaline solutions have been more frequently, used either very dilute, simply as a stimulus, in rickets, gouty swellings, gonorrhœa, and spasmodic diseases, or concentrated as a caustic, to destroy the poison of the viper, and of rabid animals.

POTASSA; OLIM CAUSTICUM COMMUNE ACERRIMUM. *E.*

Potass; formerly *Strongest Common Caustic.*

POTASSA FUSA. L. *Melted Potass.*

KALI CAUSTICUM. D. *Caustic Kali.*

Take of
The solution of potass, any quantity.

Evaporate it in a covered very clean iron vessel, till, on the ebullition ceasing, the saline matter flow gently like oil, which happens before the vessel becomes red. Then pour it out on a smooth iron plate; let it be divided into small pieces before it hardens, and immediately deposited in a well-stopt phial. (E.)

THE principal thing to be attended to in this operation, is to conduct the evaporation so rapidly that the ley shall not absorb any carbonic acid from the atmosphere. As long as any water of solution remains, the ebullition is evident, and the evaporation is to be continued until it cease. The heat is then to be increased a little, which renders the potass perfectly fluid, and gives it the appearance of an oil, when it is ready to be poured out either on a slab, as directed by the colleges, or into iron moulds, such as are used for the melted nitrat of silver.

The potass prepared according to these directions is sufficiently pure for medical use, but is not fit for chemical experiments. We can, however, obtain it perfectly white and crystallized, according to Berthollet, by adding to the ley, when evaporated so far that it would assume the consistence of honey, if permitted to cool, a quantity of alcohol equal to one-third of the carbonat of potass operated on, mixing them together, and letting them boil a minute or two. The mixture is then to be poured into a glass vessel, and corked up, when the impurities will gradually subside, partly in a solid form, and partly dissolved in water. The supernatant alcoholic solution is then to be evaporated rapidly, till its surface become covered with a black crust, which is to be removed, and the liquid below is to be poured into a porcelain vessel, when it will concrete into a white substance, which is to be broken in pieces, and immediately excluded from the action of the air.

A less expensive way of obtaining potass perfectly pure is that of Lowitz. Evaporate a solution of potass till a thick pellicle form on its surface; allow it to cool, separate all the crystals formed, as they consist of foreign salts: renew the evaporation, in an iron or silver bason; and remove the pellicles which form on the surface with an iron skimmer, as long as any appear. When the ebullition ceases, remove the vessel from the fire, and agitate the fused salt with an iron spatula while it cools. Dissolve the saline mass in twice its weight of water, and evaporate in a silver bason till it begins to crystallize. The crystals are pure potass. The fluid which swims over them has a dark brown colour, and must be poured off: but if kept in a close-stopt phial, it will deposite its colouring matter, and by evaporation will furnish more crystals of potass.

Medical use.—Potass is only used as a caustic, or to form solutions of a known strength; and even its use as a caustic is inconvenient, from its being so quickly affected by the air, and from its rapid deliquescence, which renders it apt to spread.

Officinal Preparations.

Alkali vegetabile sulphuratum, D.
Alcohol, L. D. - - - - - *vide Alcohol.*
Æther sulphuricum, E. L. D. - - *Idem.*

POTASSA CUM CALCE. *Ed.* L.

Potass with Lime.

KALI CAUSTICUM cum CALCE. D.

Caustic Kali with Lime.

Take of
Solution of potass, any quantity.
Evaporate it in a covered iron vessel till one-third remains; then mix it with as much new slaked lime as will bring it to the consistence of pretty solid pap, which is to be kept in a vessel closely stopt (E.)

THE addition of the lime in this preparation renders it less apt to deliquesce, more easily managed, and milder in its operation than fused potass.

CARBONAS POTASSÆ IMPURUS. *Ed.*

CINERES CLAVELLATI. L. D.

Pearl ashes. Potashes. Impure Carbonat of Potass.

D.	*Potäs.*	P.	*Potassa.*
DA.	*Pottaske.*	POL.	*Potasz.*
F.	*Potasse.*	R.	*Potasch.*
G.	*Pottasche.*	S.	*Potassa.*
I.	*Potassa.*	SW.	*Potaska.*

THE potashes of commerce are sent to Britain from the shores of the Baltic and from America. They are prepared by lixiviating the ashes of vegetables in barrels, first with cold and then with hot water, filtering the ley, and evaporating it to dryness in an iron pot. In this state they still contain some vegetable matter, not perfectly incinerated, which gives them a brown or black colour. To destroy this, and render their colour purer, they are again burnt in a reverberatory furnace. They now get the name of pearl ashes; but even yet they are very impure, and often contain the sulphats of potass and of lime, and the muriat of potass. They are also frequently adulterated with vegetable ashes, sand, and sulphat of potass. The ashes are detected by their difficult and imperfect solution, the sand, by the precipitation of silica in a gelatinous form by the addition of an acid, and the sulphat of potass by its crystallization. All vegetables which grow at a distance from the sea afford potashes by incineration; herbs give the largest proportion, then the leaves of trees, then shrubs, and woods the least. It formerly had the name of Fixed Vegetable Alkali, but it is also found, though much more sparingly, both in the animal and mineral kingdoms.

Vauquelin has given a table of the quantity of pure potass, and of heterogeneous matters, contained in 1152 parts of the different potashes of commerce.

	Potass.	Sulphat of potass.	Muriat of potass.	Insoluble residuum.	Carb. acid and water.
Russian potashes,	772	65	5	56	254
American do.	857	154	20	2	119
Pearl ashes,	754	80	4	6	308
Potashes of Treves,	720	165	44	24	199
Dantzick ashes,	603	152	14	79	304
Potashes of Vosges,	444	148	510	34	.304

The potass was estimated by the quantity of diluted nitrous acid saturated by it; the sulphat of potass by the precipitate formed with nitrat of baryta; and the muriat of potass by that formed with nitrat of silver.

All these different potashes, except the last, may be purified sufficiently for pharmaceutical purposes, by lixiviating them with a small proportion of cold water, and evaporating the ley to dryness in an iron pot.

Medical use.—Carbonat of potass is used in form of lotion, in rachitic and some cutaneous diseases, and as a stimulant to the inactive state of the vessels in certain ulcers. It is used internally as a diaphoretic or diuretic, and of late in calculous complaints and diseases of the alimentary canal: but its continued use seldom fails to injure the constitution, or the intestinal canal.

Officinal Preparations.

Carbonas potassæ, E. L. D.
Alcohol ammoniatum, E. L. D. - *vide Ammonia.*
Spiritus ammoniæ fœtidus, - - *Spiritus destillati.*

CARBONAS POTASSÆ. *Ed.*

Carbonat of Potass.

Potassæ Subcarbonas. L. *Subcarbonat of Potass.*

Subcarbonas Kali. D. *Subcarbonat of Potash.*

Let impure carbonat of potass (called in English *pearl ashes*) be put into a crucible, and brought to a low red heat, that the oily impurities, if there be any, may be burnt out: then triturate it with an equal weight of water, and mix them thoroughly by agitation. After the feces have subsided, pour the liquor into a very clean iron pot, and boil to dryness, stirring the salt towards the end of the process, to prevent its sticking to the vessel. (E.)

A purer subcarbonat of potass may be prepared in the same manner from Tartar, previously burnt till it becomes of an ash colour.

CARBONAS POTASSÆ PURISSIMUS; OLIM, SAL TARTARI. *Ed.*

Pure Carbonat of Potash; formerly *Salt of Tartar.*

KALI E TARTARO. D. *Kali from Tartar.*

POTASSÆ CARBONAS. L. *Carbonat of Potass.*

Take of
Impure super-tartrat of potass, any quantity.
Wrap it up in moist bibulous paper, or put it into a crucible, and burn it into a black mass, by placing it among live coals. Having reduced this mass to powder, expose it in an open crucible to the action of a moderate fire, till it become white, or at least of an ash-grey colour, taking care that it do not melt. Then dissolve it in warm water; strain the liquor through a linen cloth, and evaporate it in a clean iron vessel, diligently stirring it, towards the end of the process, with an iron spatula, to prevent it from sticking to the bottom of the vessel. A very white salt will remain, which is to be left a little longer on the fire, till the bottom of the vessel becomes almost red. Lastly, when the salt is grown cold, keep it in glass vessels, well stopped. (E.)

THE potash of commerce we have already shown to contain a considerable proportion of foreign salts. By the process directed by the colleges, it is purified from those which are crystallizable; and, although it still contains muriat of potass and silica, it is sufficiently pure for the purposes of medicine. Mr. Phillips says, when prepared from pearl ash, it consists of about 26 carbonic acid, 71 potash and water, two muriat of potash, and one sulphat of potash, and a little silica.

The purest subcarbonat of potass, in common use, is that obtained by incinerating the impure supertartrat of potass, as all the substances it contains, except the potass, are decomposed by the heat. The tartaric acid and colouring matter are destroyed, and part of the carbonic acid, which is formed, unites with the potass.

But this salt, in whatever way obtained, is not strictly entitled to the appellation of carbonat, given it by the Edinburgh college; for it is not saturated with the acid, or rather it is a mixture of potass and carbonat of potass, in variable proportions. It is owing to the uncombined potass that it is still deliquescent, and in some degree caustic.

Subcarbonat of potass is easily saturated with carbonic acid, by exposing it, in solution, to the contact of the air for a considerable time, or more quickly by making a stream of carbonic acid gas evolved from carbonat of lime by sulphuric acid, pass through a solution of it, or by distilling it with carbonat of ammonia, as proposed by Berthollet, and directed by the London college. The last is more expensive than the second, but it does not require any particular apparatus. M. Curadow has invented a cheaper mode of saturating potass with carbonic acid. He dissolves the potass in a sufficient quantity of boiling water, mixes it with as much dried tanner's bark as to make it pretty dry, and then exposes the mixture, in a covered crucible, to the heat of a reverberatory furnace for half an hour. By lixiviation and crystallization, the mixture affords beautiful permanent crystals of carbonat of potass. In this state it consists of about 43 acid, 40 potass, and 17 water. The saturation with carbonic acid is one of the best means of purifying the subcarbonat of potass; for it always separates silica from the uncombined alkali; and hence, perhaps, the employment of the subcarbonat from tartar is unnecessarily expensive.

Medical use.—Subcarbonat of potass is frequently employed in medicine, in conjunction with other articles, particularly for the formation of saline neutral draughts and mixtures; but it is used also by itself, in doses from three or four grains to fifteen or twenty; and it frequently operates as a powerful diuretic, particularly when aided by proper dilution.

Officinal Preparations.

Aqua potassæ, E. L. D. - - - -	
Aqua super-carbonatis potassæ, E. D. -	
Acetis potassæ, E. L. D. - - - -	
Sulphas potassæ, E. - - - -	
Sulphuretum potassæ, E. L. - - -	
Tartris potassæ, E. L. D. - - -	
Sulphur stibiatum fuscum, D. - - -	*vide Antimonium.*
Calx stibii præcipitatum, D. - - -	*Idem.*
Alcohol, L. D. - - - - -	*Alcohol.*

LIQUOR POTASSÆ SUBCARBONATIS. L.

Solution of Subcarbonat of Potass.

Aqua Subcarbonatis Kali. D. *Solution of Subcarbonat of Kali.*

Take of
  Subcarbonat of potass, one pound;
  Distilled water, twelve fluidounces.
Dissolve the subcarbonat of potass in the water, and filter through paper. (L.)

The preparation of the Dublin college is the old *Oleum tartari per deliquium*, and is a solution of carbonat of potass in a variable quantity of water; for, by exposure to the air, the subcarbonat attracts not only water, but carbonic acid. It is therefore improperly named. The name of the London college is correct, and the preparation nearly uniform in point of strength. Dr. Powell says, that the quantities ordered by the college will commonly give a solution amounting to nearly 18 ounces in bulk.

AQUA SUPERCARBONATIS POTASSÆ. *Ed.*

Solution of Supercarbonat of Potass.

Take of
Water, ten pounds;
Pure carbonat of potass, one ounce.
Dissolve, and expose the solution to a stream of carbonic acid, arising from
Carbonat of lime in powder,
Sulphuric acid, each three ounces;
Water, three pounds, gradually and cautiously mixed.
The chemical apparatus invented by Dr. Nooth is well adapted for this preparation. But, if a larger quantity of the liquor be required, the apparatus of Dr. Woulfe is preferable.
The colder the air, and the greater the pressure, the better will the solution be, which must be kept in well-corked vessels.

As soon as the preparation is finished, the liquor should be drawn off into pint bottles, which are to be well corked, and kept in a cool situation, with the head down, or laid on one side. It should be perfectly transparent, and have an acidulous, not at all alkaline, taste; and, when poured out of the bottles, it should have a sparkling appearance.

Medical use.—In this solution, carbonat of potass is combined with excess of carbonic acid, by which means it is better adapted for internal use, as it is rendered not only more pleasant to the taste, but is less apt to offend the stomach. Indeed, it is the only form in which we can exhibit potass in sufficient doses, and for a sufficient length of time, to derive much benefit from its use in calculous complaints. It has certainly been frequently of advantage in these affections, but probably only in those instances in which the stone consists of uric acid, or urat of ammonia: for, although supersaturated with carbonic acid, yet the affinity of that acid for potass is so weak, that it really operates as an alkali.

Six or eight ounces may be taken two or three times a-day. It in general proves powerfully diuretic, and sometimes produces inebriation. The last effect is ascribed to the carbonic acid.

ACETIS POTASSÆ. *Ed. Acetite of Potass.*

Potassæ Acetas. L. *Acetat of Potass.*

Acetas Kali. D. *Acetat of Kali.*

Take of
Pure carbonat of potass, one pound.
Boil it with a very gentle heat, in four or five times its weight of distilled acetous acid, and add more acid at different times, till on the watery part of the preceding quantity being nearly dissipated by evaporation, the new addition of acid ceases to raise any effervescence, which will happen when about twenty pounds of acid have

been consumed. It is then to be slowly dried. The impure salt remaining is to be melted with a gentle heat, for a short time, but no longer than necessary, and afterwards dissolved in water, and filtered through paper. If the liquefaction has been properly performed, the filtered liqour will be limpid; but if otherwise, of a brown colour. Afterwards evaporate this liquor with a very gentle heat, in a very shallow glass vessel, occasionally stirring the salt as it becomes dry, that its moisture may be sooner dissipated. Lastly, the acetite of potass ought to be kept in a vessel very closely stopped, to prevent it from deliquescing. (E.)

This is both a troublesome and expensive preparation; for, when attempted to be made by simply evaporating to dryness, the salt has always a dark unpleasant colour, which can neither be removed by repeated solution and crystallization, nor even by solution in alcohol. It is doubtful to what the colour is owing. It has been ascribed by some to part of the acetic acid being decomposed by heat during the exsiccation of the salt: they accordingly recommend the evaporation to be conducted very gently, and the pellicles to be skimmed from the surface of the liquor as fast as they are formed; and in this way, they say, they have procured, at once, a very white salt. Others again ascribe it to accidental impurities, contracted during the operation, and recommend the utmost attention to cleanliness, and the use of earthen vessels; while others ascribe it to some foreign matter, which rises in distillation with the last portions of the acetous acid, and therefore direct, that only the first portions which come over should be used, or that the acetous acid should be distilled with charcoal. The last opinion appears to be the most probable, since, when acetic acid procured from the distillation of an acetat is employed, a colourless solution is obtained, and solutions which become coloured do not at the same time become alkaline. But to whatever cause it be owing, the colour is most effectually destroyed by fusing the salt. The heat necessary to do this decomposes the colouring matter; and on dissolving the fused mass in water, and filtering the solution, we find a fine light charcoal on the filter. But this fusion is attended with considerable loss; for part of the acetic acid itself is decomposed.

To ascertain the exact saturation, litmus and turmeric paper should be alternately employed. Mr. Phillips says, that rather more than 21 pints of distilled vinegar, of 1.007, are required to saturate 18 ounces of subcarbonat of potass.

The operator must be particularly careful, in melting it, not to use a greater heat, nor keep it longer liquefied, than what is absolutely necessary: a little should be occasionally taken out and put into water; and, as soon as it begins to part freely with its black colour, the whole is to be removed from the fire.

The exsiccation of the solution of the salt, after it has been fused, must be conducted very carefully, as it is exceedingly apt to be decomposed, which would render a new solution and exsiccation necessary. The test of its purity, by dissolving it in alcohol, as directed by the London college, is to discover if any of the acetic acid itself has been decomposed in the operation; for the carbonat of potass, which is in that case formed, is insoluble in alcohol.

To spare trouble and expense, attempts have been made to prepare acetat of potass with undistilled vinegar, and even with the residuum of the distillation of acetic acid: and they have been, to a certain degree, successful: but, as repeated fusion and crystallization are necessary to bring the salt to a certain degree of purity, it does not appear that they were more economical. But if, to acetat of potass, prepared with impure vinegar, we add a sufficient quantity of sulphuric acid, we obtain by distillation an acetic acid of great strength, which forms a beautiful acetat of potass without fusion. Lastly, this salt may be prepared by the decomposition of acetats; for example, of the acetat of lime, by tratrat of potass.

Acetat of potass has a sharp, somewhat pungent taste. It is deliquescent, and is soluble in about its own weight of water, at 60°, but Mr. Phillips says in half its weight, at 40°. It is also, according to Dr. Powell, soluble in alcohol in four times its weight. It is decomposed by the stronger acids; by a decoction of tamarinds; by the sulphats of soda and of magnesia; by muriat of ammonia; by the tartrat of soda and potass; and by some metalline salts. Its acid is destroyed by a high temperature.

Medical use.—Acetat of potass, however prepared, provided it be properly made, is a medicine of great efficacy, and may be so dosed and managed as to prove either mildly cathartic, or powerfully diuretic: few of the saline deobstruents equal it in virtue. The dose is from half a scruple to a drachm or two. A simple solution, however, of carbonat of potass in vinegar, without exsiccation, is perhaps not inferior, as a medicine, to the more expensive salt. Two drachms of the alkali, saturated with vinegar, have produced, in hydropic cases, ten or twelve stools, and a plentiful discharge of urine, without any inconvenience.

OFFICINAL PREPARATIONS.

Tinctura ferri acetati, D. - - - *vide Tincturæ.*
Acetis hydrargyri, E. L. D. - - - *Hydrargyrum.*

SULPHAS POTASSÆ. E. L.

Sulphat of Potass, formerly *Vitriolated Tartar.*

SULPHAS KALI. D. *Sulphat of Kali.*

Take of

Sulphuric acid, diluted with six times its weight of water, any quantity.

Put it into a capacious glass-vessel, and gradually drop into it of pure carbonat of potass, dissolved in six times its weight of water, as much as is sufficient thoroughly to neutralize the acid. The effervescence being finished, strain the liquor through paper; and after evaporation, set it aside to crystallize.

Sulphat of potass may be also conveniently prepared from the residuum of the distillation of nitrous acid, by dissolving it in warm water, and saturating it with carbonat of potass. (E.)

This salt is very seldom prepared on purpose, as it may be obtained from the residuum of many other preparations, by simple solution and crystallization. For so strong is the affinity between sulphuric acid and potass, that they scarcely ever meet without combining to form this salt. All the sulphats, except that of baryta, are decomposed by potass and most of its combinations; and reciprocally, all the compounds of potass are decomposed by sulphuric acid and most of its combinations; and in all these decompositions, sulphat of potass is one of the products.

The greatest part of the sulphat of potass of commerce is obtained from the residuum of the distillation of sulphat of iron with nitrat of potass, by lixiviating it, supersaturating the solution with carbonat of potass, filtering it boiling hot; and allowing it to crystallize. The liquor remaining after the precipitation of magnesia, is also a solution of sulphat of potass. It is also got in considerable quantities from the residuum remaining in the retort, after the distillation of nitrous acid; and all the colleges have given directions for obtaining it in this way, by simply saturating the excess of acid with subcarbonat of potass. Mr. Phillips says it would be more economical to saturate any unavoidable excess of acid by lime, and reject the sulphat of lime formed, as the sulphat of potass is not so costly as the carbonat of potass used to make it.

As the residuum of the distillation of nitrous acid may not always be at hand, the Edinburgh college also give a receipt for making this salt, by directly combining its constituents. It would have been more economical to have used a solution of sulphat of iron, in place of sulphuric acid, by which means not only an equally pure sulphat of potass would have been procured at less expense. but also a very pure carbonat of iron.

Sulphat of potass forms small, transparent, very hard crystals, generally aggregated in crusts, and permanent in the air. Their primitive form is a pyramidal dodecahedron with isosceles triangular faces meeting at the summit, at an angle of about 66.15, and the base 113.45. It has a bitter taste, is slowly soluble in water, requiring 16 waters at 60°, and 4 at 212°. It is not soluble in alcohol. It decrepitates when thrown on live coals, and melts in a red heat.

It consists of 32.8 acid, and 67.2 potash and water, according to Mr. Phillips. It is decomposed by the barytic salts; by the nitrats and muriats of lime and of strontia; by the tartrats partially; and by the salts of mercury, silver, and lead.

Medical use.—Sulphat of potass, in small doses, as a scruple or half a drachm, is an useful aperient; in larger ones, as four or five drachms, a mild cathartic, which does not pass off so hastily as the sulphat of soda, and seems to extend its action farther.

Officinal Preparations.

Pulvis ipecacuanhæ et opii. E. L. D. - -	*vide Pulveres.*
scammonii compositus, L. - - - - -	*Idem.*

POTASSÆ SUPERSULPHAS. L.

Supersulphat of Potass.

Take of

The salt which remains after the distillation of nitric acid, two pound;

Boiling water, four pints.

Mix, dissolve the salt, and filter. Then boil down to one half, and set it aside to crystallize. Pour off the liquid, and dry the crystals on blotting paper.

THIS salt is acid to the taste, reddens vegetable blues, and effervesces with alkaline carbonats. Mr. Phillips found, that 100 grains required 25 of dried subcarbonat of soda for saturation. It is directed by Lowitz to be prepared by mixing seven parts of sulphuric acid with the same quantity of water in a large matrass, and adding to the hot mixture, as quickly as possible, four parts of potashes in fine powder. On cooling, the supersulphat of potass shoots in fine large crystals, whose primitive form is an acute rhomboid of 74° and 106°. These are to be quickly washed in water and dried. This mode of directly preparing it is, however, unnecessary, as it is produced in sufficient quantity in the distillation of nitric acid. Its preparation, however, is attended with some difficulty, and Mr. Phillips at first thought that there was no supersulphat, as he only obtained from the residuum of the distillation of nitrous acid, sulphat with acid adhering to it. From subsequent experiments, he is of opinion, that it may be made to yield supersulphat, or sulphat, according as the solution is more or less concentrated. When the residual salt is dissolved in only about an equal weight of water, Mr. Phillips found it deposite on cooling supersulphat of potass, without any appearance of pellicle; but if the solution be evaporated to a pellicle, according to the former directions of the college, the whole concretes into a solid mass; and when the solution is not perfectly concentrated, the crystals obtained are sulphat of potass. It is also with extreme surprise that we learned from Mr. Phillips, that on sending to Apothecaries Hall, where at least the directions of the college ought to be minutely adhered to, what he received was a mixture of 58 sulphat of potass, with 42 nitrat of potass. With such an excessive quantity of acid as the college order in preparing nitrous acid, it is perfectly impossible that so much, if any, nitre could have escaped decomposition. This salt was formerly call *Sal enixum* and *Tartarus vitriolatus acidus.* It is soluble in two waters at 60°, and less than one at 212°. It consists of 37 parts of sulphat of potass, and 33 sulphuric acid.

It is used in its unrefined state by silversmiths, and is recommended by Lowitz for preparing acetic acid, by decomposing acetat of soda. It promises to be a valuable medicine, as enabling us to give sulphuric acid in combination with an aperient salt, and being less disagreeable and more soluble than the neutral sulphat.

SULPHAS POTASSÆ CUM SULPHURE; olim, SAL POLYCHRESTUS. *Ed.*

Sulphat of Potass with Sulphur, formerly *Sal Polychrest.*

Take of
Nitrat of potass in powder,
Sublimed sulphur, of each equal parts.

Mingle them well together, and inject the mixture, by little and little at a time, into a red-hot crucible: the deflagration being over, let the salt cool, after which it is to be put up in a glass vessel well stopped. (E.)

In this process the nitric acid of the nitrat of potass is decomposed by the sulphur, which is in part acidified. But the quantity of oxygen contained in the nitric acid is not always sufficient to acidify the whole sulphur employed; therefore, part of it remains in the state of sulphurous acid, which is probably chemically combined with part of the potass in the state of sulphite; for the whole saline mass formed is more soluble in water than sulphat of potass. It is crystallizable, and by exposure to the air gradually attracts oxygen, and is converted into sulphat, or perhaps supersulphat of potass; for even when recently prepared, it is manifestly acid. But this preparation, like all those depending on the uncertain action of fire, is apt to vary. In some experiments which Dr. Duncan made to determine the state in which the sulphur existed in this salt carefully prepared, it seemed to be sulphuric acid; for it neither gave out a sulphureous smell on the addition of sulphuric acid, nor was a solution of it precipitated by acids. In others the presence of sulphureted hydrogen was obvious; but in no instance could sulphur, in any notable quantity, be detected. Hence its Edinburgh name *Sulphas potassæ cum sulphure*, and the mode of preparation proposed by some, of simply triturating these substances together, are are manifestly incorrect. In its medical effects and exhibition, it agrees with sulphureous mineral waters, which contain a proportion of neutral salt.

Officinal Preparation.

Pilulæ aloës cum colocynthide, E. - *vide Pilulæ.*

SULPHURETUM POTASSÆ; olim, HEPAR SULPHURIS. *Ed.*

Sulphuret of Potass, formerly *Liver of Sulphur.*

KALI SULPHURATUM. L. *Sulphureted Kali.*

ALKALI VEGETABILE SULPHURATUM. D. *Sulphureted Vegetable Alkali.*

Take of
Caustic vegetable alkali in powder,
Sublimed sulphur, each two ounces.

To the sulphur, melted by a gentle heat, add the alkali; covering the vessel, if the mixture shall take fire. (D.)

Keep the sulphuret in well-closed phials.

THERE exists a very strong affinity between sulphur and potass, but they must be united in a state of perfect dryness; because, if any moisture be present, it is decomposed, and alters the nature of the product. If potass be employed as directed by the Dublin college, it will unite with the sulphur by simple trituration, and will render one third of its weight of sulphur soluble in water. If carbonat of potass be used as directed by the other colleges, it is necessary to bring the sulphur into a state of fusion; it then acts upon the carbonat, and expels the carbonic acid. It is evident, that to combine with the same quantity of sulphur, a larger proportion of carbonat of potass than of potass is necessary; but the quantity ordered by the London college is certainly much too large. Göttling directs only one part of carbonat of potass to two of sulphur; and to save the crucible, he directs the mixture, as soon as it melts, to be poured into a heated mould, anointed with oil. The colleges also differ in the mode of conducting the process. The London and Dublin colleges direct the alkaline salt to be projected upon the melted sulphur. The fault of this process is, that there is a considerable loss of sulphur by sublimation, which is avoided, if the substances be previously intimately mixed, and brought into fusion by a very gradual and cautious application of heat, according to the process of the Edinburgh college; but, if the fusion be not very cautiously performed, the sudden extrication of so large a quantity of carbonic acid gas, is apt to throw the melted matter out of the crucible, and may be attended with unpleasant consequences. La Grange projects one part of sulphur, on one and a half of potass in fusion, and keeps the compound melted half an hour before he pours it out. If the heat be too great, and the crucible uncovered, the sulphureous vapour is apt to inflame, but it is easily extinguished by covering it up. For the preparation of precipitated sulphur. Hermbstaedt proposes to obtain the sulphuret of potass, by heating together in a crucible four parts of sulphat of potass with one of charcoal powder. The charcoal is converted into carbonic acid gas, and the sulphat into sulphuret.

Sulphuret of potass, properly prepared, is of a liver-brown colour, hard, brittle, and has a vitreous fracture. It has an acrid bitter taste, and the smell of sulphur. It is exceedingly prone to decomposition. It is deliquescent in the air, and is decomposed. It is very fusible, but a strong heat separates the sulphur by sublimation. The moment it comes in contact with water, there is a mutual decomposition. Part of the sulphur becomes acidified, deriving oxygen from the water, and forms sulphat of potass. Part of the hydrogen of the water decomposed, combines with another portion of the sulphur, and escapes in the form of sulphureted hydrogen gas: another portion of the hydrogen combines with a third portion of the sulphur, and remains in solution, united with the alkali, in the state of hydrogureted sulphuret of potass. By acids, sulphuret of potass is immediately decomposed, the acid forms a neutral salt with the potass, and the sulphur is separated.

OFFICINAL PREPARATION.

Sulphur præcipitatum, L. D. - - - *vide Sulphur.*

LIQUOR SULPHURETI KALI. *Dub.*

Sulphuret of Kali.

Take of
- Sublimed sulphur, half an ounce;
- Liquor of caustic kali, nine ounces, by measure.

Boil for ten minutes, and strain through paper. Keep the liquor in phials well corked.

The specific gravity of this liquor is 1120.

The Dublin college have substituted for the sulphuret of potass, a preparation which is exactly similar to a solution of it in water. When sulphur is boiled in a solution of caustic alkali, a portion of the water is decomposed; the oxygen forms, with some of the sulphur and potass, sulphat of potass, and the hydrogen with the remainder hydro-sulphuret of potass. The former being difficultly soluble, is precipitated and separated by filtration. The solution must be well preserved from the action of the air, which gradually decomposes it, forming sulphat of potass.

Medical use.—Hydro-sulphuret of potass is an exceedingly nauseous remedy; but it is used internally as an antidote to metallic poisons, to check excessive salivations from mercury, and in cutaneous affections. Externally, it is used with success against tinea capitis, and in psora. It is one of the articles which is particularly recommended in croup, by one of the successful candidates for the prize proposed by Bonaparte for the best treatise on that disease.

TARTRIS POTASSÆ; olim, TARTARUM SOLUBILE. *Ed.*

Tartrite of Potass, formerly *Soluble Tartar.*

ALKALI VEGETABILE TARTARISATUM. D. *Tartarised Vegetable Alkali.*

KALI TARTARISATUM. L. *Tartarised Kali.*

Take of
- Carbonat of potass, one pound;
- Super-tartrite of potass, three pounds, or as much as may be sufficient;
- Boiling water, fifteen pounds.

To the carbonat of potass dissolved in the water, gradually add the super-tartrite of potass in fine powder, as long as it raises any effervescence, which generally ceases before three times the weight of the carbonat of potass has been added; then strain the cooled liquor through paper, and after due evaporation set it aside to crystallize. (E.)

The tartaric acid is capable of uniting with potass in two proportions, forming in the one instance a neutral, and in the other an acidulous salt. The latter is an abundant production of nature, but it is easily converted into the former, by saturating it with potass, or by depriving it of its excess of acid. It is by the former method that the colleges direct tartrat of potass to be prepared, and the process is so simple, that it requires little comment. For the sake of economy, we should come as near the point of saturation as possible: but any slight deviation from it will not be attended with much inconvenience. Indeed, it is perhaps advisable to leave a slight excess of acid, which, forming a small quantity of very insoluble salt, leaves the remainder perfectly neutral. The evaporation must be conducted in an earthen vessel, for iron discolours the salt. It is easily crystallized, and the crystals become moist in the air. It has an unpleasant bitter taste. It is soluble in four parts of cold water, and still more soluble in boiling water, and it is also soluble in alcohol. It is totally or partially decomposed by all acids. On this account it is improper to join it with tamarinds, or other acid fruits; which is too often done in the extemporaneous practice of those physicians who are fond of mixing different cathartics together, and know little of chemistry. It is also totally decomposed by lime, baryta, strontia, and magnesia, and partially by the sulphats of potass, soda, and magnesia, and by the muriat of ammonia.

Medical use.—In doses of a scruple, half a drachm, or a drachm, this salt is a mild cooling aperient: two or three drachms commonly loosen the belly; and an ounce proves pretty strongly purgative. It has been particularly recommended as a purgative for maniacal and melancholic patients. It is an useful addition to the purgatives of the resinous kind, as it promotes their operation, and at the same time tends to correct their griping quality.

PRINOS VERTICILLATUS. *Lin.*

Black-alder. Virginian Winter-berry.

THIS is a very common shrub in many parts of the United States, and grows in the greatest perfection in swamps or marshy places. The bark is manifestly astringent. It is likewise considerably bitter and pungent. The berries greatly partake of the bitter quality, and if infused in wine or brandy, might be advantageously employed in cases where bitter tinctures are exhibited. The bark has been used as a substitute for Peruvian bark in intermittents and other diseases, both in substance and decoction. It is supposed to be chiefly useful in cases of great debility unaccompanied by fever; as a corroborant in anasarcous and other dropsies, and as a tonic in cases of incipient spacelus or gangrene. It is both given internally, and employed externally as a wash. On many occasions, it appears to be more useful than the Peruvian bark; and the late Professor Barton says it ought to have a place in the shops, and in the Pharmacopœia of this country, when such a desideratum shall be supplied.*

Dr. Mease says (Philadelphia Medical Museum, vol. II.) it is useful in mortification, united with the root of sassafras, in decoction, &c.

* Barton's Collections, Part II. p. 5.

PRUNUS.

Willd. g. 982. *Icosandria Monogynia.*—Nat. ord. *Pomaceæ.*

PRUNUS DOMESTICA. *Sp.* 29. *Fructus. Ed.* L. D.

Prunus Gallica.

Plum tree. The fruit, called French prunes.

This tree is found wild in hedges in England, but has probably originated from the stones of the cultivated kinds being dropped there by accident. Great quantities of the dried fruit are imported from the continent, but the French prunes are reckoned the best.

Medical use.—They contain much mucilaginous and saccharine matter, and their medical effects are, to abate heat, and gently loosen the belly, which they perform by lubricating the passages, and softening the excrement. They are of considerable service in costiveness, accompanied with heat or irritation, which the more stimulating cathartics would tend to aggravate: where prunes are not of themselves sufficient, their action may be promoted by joining with them a little rhubarb or the like; to which may be added some carminative ingredient to prevent their occasioning flatulency.

Officinal Preparation.

Electuarium sennæ, E. L. D. - - - *vide Electuaria.*

PRUNUS LAURO CERASUS. *Cherry Tree Laurel. The leaves.*

An exotic narcotic plant, not cultivated among us, but preserved in some hot houses and botanic gardens as a curiosity. The leaves have an odour slightly fragrant: their taste is extremely bitter. They possess a highly narcotic quality, which is extracted by infusion in alcohol or water, and is even brought over by distillation in the state of an essential oil, which the water partly dissolves. And the very singular fact has been established, that the volatile principle in which the narcotic quality of this plant resides is the prussic acid. It had often been observed, that the odour of this acid is similar to that of the cherry-laurel, peach blossom, and bitter almond. Bohn found, that the distilled water of the bitter almond contained prussic acid. Schroeder discovered it in the distilled water of the peach blossom and cherry-laurel, prussiat of potass being obtained by distilling them from the alkali; and Bucholz succeeded in separating the prussic acid from the essential oil of the cherry-laurel, by agitation with an alkaline solution. This acid in its pure state has been further found to be highly narcotic; and the narcotic power of all these plants no doubt depends on it.

The distilled water of the cherry-laurel has long been known as a poison to animals, and its effects are those of a pure narcotic. It has not, says Mr. Murray, been employed in medicine, but a cataplasm prepared from the leaves has been used as an anodyne application to painful tumours and ulcers.

Cherry-laurel has ever been considered as a poison of the most deleterious energy, but it is now known, it may be administered internally with perfect safety. In the few instances of its trial it has been found to give tone to the stomach, increase the appetite, and to exhilarate. Dr. Mayer, of Naples, gives the distilled water of laurel for the cure of virulent gonorrhœa, and by his advice an American captain affirms, that he cured thirty sailors by this medicine alone. It appears to retard the pulse and produce some sedative effects. It has been found serviceable in phthisis pulmonalis on a few trials. Professor Wurzer, of Bonn, gave fifty drops of the laurel water three times in a day, which was very efficacious in hypochondriac and nervous complaints. He finds the laurel water diminishes the too great irritability of the heart and muscular fibre, and augments at the same time, the action of the absorbent vessels. It is recommended by some German authors in hydrophobia. It may be given in saturated tincture, a few drops cautiously increased until some effect be observable.

PRUNUS SPINOSA. *Sp.* 32. PRUNUS SYLVESTRIS. L.

Fructus. L.

The Sloe tree. The fruit.

THE sloe also grows wild in Britain. The fruit has a very astringgent sourish taste. It contains malic acid.* The inspissated juice of the unripe fruit is very astringent, and is called *Acacia Germanica.* An infusion of a handful of the flowers is a safe and easy purge. The powdered bark will sometimes cure agues.

OFFICINAL PREPARATION.

Conserva pruni sylvestris, L. - - - *vide Conservæ.*

PRUNUS VIRGINIANA. *Wild Cherry Tree.*

THIS tree is very common. The bark has been found useful in intermittents. The leaves are poisonous to certain animals, and even the berries intoxicate different kinds of birds. The Indians use the bark in the cure of syphilis. It is considerably bitter and astringent, and possesses some aromatic warmth, and likewise an evident narcotic quality. It is manifestly stimulant. The bark of the root seems most powerful.

* *Malic acid* is a viscid fluid, incapable of crystallization, of a reddish brown colour, and very acid taste. It exists in the juice of apples, and combined with lime in that of the common house leek. It forms precipitates in the solution of the nitrats of mercury, lead, and silver. *Officinal.* Barberry, plum, sloe, elder, &c.

Malats having alkalies for their base, are deliquescent. The acidulous malat of lime is soluble in cold water.

It has been found useful in dyspesia, consumption of the lungs and lumbar abscess, (see Medical Repository, vol. V. No. III.)

The distilled water of the leaves is a powerful poison to different animals, which seems dependent on the presence of the same principle which exists in peach kernels, &c. lately shown to be prussic acid. A strong decoction of the bark is anthelmintic.*

PTEROCARPUS.

Willd. g. 1318. *Diadelphia Decandria.*—Nat. ord. *Papilionaceæ.*

PTEROCARPUS SANTALINUS. *Sp.* 6. *Lignum. Ed.* L. D.

SANTALUM RUBRUM. L. D. *Red Saunders wood.*

D.	*Sandelhout.*	P.	*Sandalo.*
DA.	*Sandelholt.*	POL.	*Cyndal.*
F.	*Santal, Sandal.*	R.	*Sandal.*
G.	*Sandelholz.*	S.	*Sandalo.*
I.	*Sandalo.*	SW.	*Sandel.*

THIS tree grows in the East Indies, and acquires a very large size. The wood is brought in large billets, of a compact texture, a dull red, almost blackish colour on the outside, and a deep brighter red within. It has no manifest smell, and little or no taste. It communicates a deep red to rectified spirit, but gives no tinge to aqueous liquors: a small quantity of the resin, extracted by means of spirit, tinges a large one of fresh spirit, of an elegant blood red. Neumann got from 960 grains 210 alcoholic, and afterward 20 of watery extract; and inversely, 126 tough watery extract, and 120 alcoholic. According to the same chemist, it gives out its colouring matter to volatile oil of lavender, but not to volatile oil of turpentine. Is this difference to be ascribed to the camphor contained in the former?

OFFICINAL PREPARATION.

Tinctura lavandulæ composita, E. L. D. *vide Tincturæ.*

PTEROCARPUS DRACO. *Sp.* 1. *Resina. Ed.*

SANGUIS DRACONIS. *Dragons blood. A resin.*

D.	*Draakenbloed.*	P.	*Sangue de drago.*
DA.	*Drageblod.*	POL.	*Smocza krew.*
F.	*Sang dragon.*	R.	*Drakonowa krow.*
G.	*Drachenblut.*	S.	*Sangro de drago.*
I.	*Sangue di drago.*	SW.	*Drakblod.*

THIS is also a very large tree. It is a native of South America, and the resin which exudes from incisions made in its bark used to be fre-

* Barton's Collections, Part I. and II.

quently sent from Carthagena to Spain. It is however doubtful, if the dragons blood of the shops be produced from this tree, as many others furnish a similar resin, as the dracæna draco, dalbergia monetaria, and especially the calamus draco, which probably furnishes all that is brought from the East Indies.

The best dragons blood is not in cakes, but is brought in small masses, of the size of a nutmeg, wrapt up in the dried leaves of some kind of reed, breaks smooth, free from any visible impurities, of a dark-red colour, which changes, upon being powdered, into an elegant bright crimson. This drug, in substance, has no sensible smell or taste: when dissolved, it discovers some degree of warmth and pungency. It is fusible and inflammable, and totally soluble in alcohol, tinging a large quantity of the menstruum of a deep red colour. It is likewise soluble in expressed oils, and gives them a red hue, less beautiful than that communicated by anchusa. It is not acted upon by water, but precipitated by it from its alcoholic solution. Dr. Duncan found that it is soluble in nitrous acid and alkalies, and that it neither precipitates gelatin, nor affects the colour of the salts of iron. It therefore appears to be a pure resin without any astringency. He has been more particular in proving that this resin is not astringent, because both Mr. Murray and Dr. Thompson have adopted Mr. Proust's account of it. But the substance examined by Mr. Proust could not be the resin known in this country by the name of Dragons blood, as it was as soluble in water as in alcohol. Dr. Fothergill, who first described kino, received it as the finest Dragons blood. Something similar must have happened to Mr. Proust, as the characters of his *sang dracon* correspond with those of kino.

Officinal Preparation.

Emplastrum thuris compositum, L. - *vide Unguenta.*

PULVERES.—*POWDERS.*

This form is proper for such materials only as are capable of being sufficiently dried to become pulverisable, without the loss of their virtue. There are several substances, however, of this kind, which cannot be conveniently taken in powder; bitter, acrid, fetid, drugs are too disagreeable; emollient and mucilaginous herbs and roots are too bulky; pure gums cohere, and become tenacious in the mouth: fixed alkaline salts deliquesce when exposed to the air; and volatile alkalies exhale. Many of the aromatics, too, suffer a great loss of their odorous principles when kept in powder; as in that form they expose a much larger surface to the air.

The dose of powders, in extemporaneous prescription, is generally about half a drachm; it rarely exceeds a whole drachm; and is not often less than a scruple. Substances which produce powerful effects in smaller doses are not trusted to this form, unless their bulk be increased by additions of less efficacy; those which require to be given in larger ones are better fitted for other forms.

The usual vehicle for taking the lighter powders, is any agreeable thin liquid. The ponderous powders, particularly those prepared from metallic substances, require a more consistent vehicle, as syrups; for from thin ones they soon subside: Resinous substances likewise are most commodiously taken in thick liquors; for in thin ones, they are apt to run into lumps, which are not easily again soluble.

IN PULVEREM TRITI. D. *Powders.*

Substances to be powdered, previously dried, are to be pulverized in an iron mortar. The powder is then to be separated, by shaking it through an hair-sieve, and is to be kept in close vessels.

PULVIS ALOES cum CANELLA. D.

Powder of Aloes with Canella.

Take of
Hepatic aloes, one pound;
White canella, three ounces.
Powder them separately, and then mix them.

This composition has long been known in the shops under the title of *Hiera picra*. It furnishes us with an useful aloetic purgative, the canella operating as a good corrigent for the aloes. But it is more frequently employed as the basis of electuaries, or pills.

PULVIS ALOES cum GUAIACO. D.

Powder of Aloes with Guaiacum.

Take of
Hepatic aloes, one ounce and a half;
Gum guaiacum, one ounce;
Aromatic powder, half an ounce.
Rub the aloes and gum guaiacum separately to powder; then mix them with the aromatic powder.

This also furnishes us with a useful purgative: but when taken only in small doses, its chief effect is that of promoting perspiration.

PULVIS ALOETICUS cum FERRO. L.

Aloetic powder with Iron.

Take of
Socotorine aloes, an ounce and a half;

Myrrh, two ounces;
Dry extract of gentian,
Vitriolated iron, of each one ounce.
Reduce them separately to powder, and mix them. (L.)

In this powder we have an aloetic and chalybeate conjoined. It is an useful medicine; and is particularly employed with advantage in cases of obstructed menstruation.

PULVIS AROMATICUS. *Ed.* D.

Aromatic powder.

P. Cinnamomi Compositus. L. *Compound powder of Cinnamon.*

Take of
Cinnamon, two ounces;
Cardamom seeds, an ounce and a half;
Ginger, one ounce;
Long pepper, half an ounce.
Rub them together to a very fine powder. (L.)

This composition is an agreeable, hot, spicy, medicine; and as such may be usefully taken in cold phlegmatic habits and decayed constitutions, for warming the stomach, promoting digestion, and strengthening the tone of the viscera. The dose is from ten grains to a scruple and upwards.

Officinal Preparations.

Pulvis aloes cum guaiaco, L.
Electuarium aromaticum, E.
opiatum, E.

PULVIS ASARI COMPOSITUS. *Ed.* D.

Compound Powder of Asarabacca.

Take of
The leaves of asarabacca, three parts;
The leaves of marjoram,
Flowers of lavender, of each one part.
Rub them together to powder. (E.)

This is an agreeable and efficacious errhine, and superior to most of those usually sold under the name of *herb snuff.* It is often employed with great advantage in cases of obstinate head-ach, and of ophthalmias resisting other modes of cure. Taken under the form of snuff to the extent of five or six grains at bed-time, it will operate the succeeding day as a powerful errhine, inducing frequent sneezing, and likewise a copious discharge from the nose. It is, however, necessary, during its operation, to avoid exposure to cold.

PULVIS CARBONATIS CALCIS COMPOSITUS; olim,

PULVIS CRETACEUS. *Ed.*

Compound Powder of Carbonat of Lime, formerly *Chalk Powder.*

PULVIS CRETÆ COMPOSITUS. L. *Compound Powder of Chalk.*

Take of
  Prepared carbonat of lime, four ounces;
  Nutmeg, half a drachm;
  Cinnamon, one drachm and a half.
Reduce them together to powder. (E.)

THE addition of the aromatics in the above formula, coincides with the general intention of the remedy, which is indicated in weakness and acidity in the stomach, and in looseness from acidity.

PULVIS CASSII. - - - *vide Aurum.*

PULVIS CRETÆ COMPOSITUS CUM OPIO. L.

Compound Powder of Chalk with Opium.

Take of
  Compound powder of chalk, six ounces and a half;
  Hard opium, powdered, four scruples.
Mix them.

FROM the addition of the opium this remedy becomes still more powerful than the preceding in restraining diarrhœa.

PULVIS CERUSSÆ COMPOSITUS. L.

Compound Powder of Ceruse.

Take of
  Ceruse, five ounces;
  Sarcocoll, an ounce and a half;
  Tragacanth, half an ounce.
Powder them together. (L.)

THIS is employed for external purposes, as in collyria, lotions, and injections for repelling acrimonious humours, and in inflammations; but for all these purposes it is very inferior to solutions of acetat of lead.

PULVIS CONTRAYERVÆ COMPOSITUS. L.

Compound Powder of Contrayerva.

Take of
  Contrayerva, powdered, five ounces;

Compound powder of chalk, one pound and a half.
Mix them.

THIS medicine has a very good claim to the title of an alexipharmic and sudorific. The contrayerva by itself proves very serviceable in low fevers, where the vis vitæ is weak, and a diaphoresis to be promoted.

PULVIS IPECACUANHÆ ET OPII. *Ed.*

PULVIS IPECACUANHÆ COMPOSITUS; olim, PULVIS DOVERI. L.

Powder of Ipecacuan and Opium; or *Compound Powder of Ipecacuan,* formerly *Dover's Powder.*

Take of
Ipecacuan in powder,
Opium, of each one part;
Sulphat of potass, eight parts.
Triturate them together into a fine powder. (E.)

THE sulphat of potass, from the grittiness of its crystals, is perhaps better fitted for tearing and dividing the tenacious opium than any other salt: this seems to be its only use in the preparation. The operator ought to be careful that the opium and ipecacuanha be equally diffused through the whole mass of powder, otherwise different portions of the powder must have differences in degree of strength.

This powder is one of the most certain sudorifics, and, as such was recommended by Dr. Dover as an effectual remedy in rheumatism. Modern practice confirms its reputation, not only in rheumatism, but also in dropsy and several other diseases, where it is often difficult by other means to produce a copious sweat. The dose is from five to twenty grains, according as the patient's stomach and strength can bear it. It is proper to avoid much drinking immediately after taking it, otherwise it is very apt to be rejected by vomiting before any other effects are produced.

PULVIS JALAPÆ COMPOSITUS. *Ed.*

Compound Powder of Jalap.

Take of
Jalap root, one part;
Super-tartrat of potass, two parts.
Grind them together to a very fine powder. (E.)

THE use of the tartrat in this preparation, is to break down and divide the jalap; and therefore they are directed to be triturated together, and not separately.

PULVIS KINO COMPOSITUS. L.

Compound Powder of Kino.

Take of
  Kino, fifteen drachms;
  Cinnamon, half an ounce;
  Hard opium, one drachm.
Reduce them separately to a very fine powder, them mix them.

This, though well known in extemporaneous prescription, is a new officinal preparation, and one which promises to be convenient. It is anodyne and astringent, containing one part of opium in twenty.

PULVIS MYRRHÆ COMPOSITUS. L.

Compound Powder of Myrrh.

Take of
  Myrrh,
  Dried savin,
  Dried rue,
  Russian castor, of each one ounce.
Rub them together into a powder. (L.)

This is a reformation of the Trochisci è Myrrha, a composition contrived by Rhazes against uterine obstructions. From a scruple to a drachm or more, two or three times a-day, may be taken in any convenient vehicle, or made into boluses.

PULVIS OPIATUS. *Ed.* L. *Opiate Powder.*

Take of
  Opium, one part;
  Prepared carbonat of lime, nine parts.
Rub them together to a fine powder. (E.)

In this powder the opium is the active ingredient; and it is immaterial whether the phophat (as the London college directs) or carbonat of lime be used to promote its mechanical division.

PULVIS SCAMMONII. E. *Powder of Scammony.*

Pulvis Scammonii Compositus. L.

Compound Powder of Scammony.

Take of
  Scammony,
  Hard extract of jalap, each two ounces;
  Ginger, half an ounce.
Powder them separately and then mix them. (L.)

In this composition, the ginger is an useful addition, and will render it less apt to gripe.

PULVIS SCAMMONII COMPOSITUS cum ALOE. L.

Compound Powder of Scammony with Aloes.

Take of
Scammony, six drachms;
Hard extract of jalap,
Socotorine aloes, of each an ounce and a half;
Ginger, half an ounce.
Powder them separately, and mix them. (L.)

In this formula, the combination of scammony, jalap, and aloes, furnishes a very active purgative, which, with some intentions at least, may be preferable to the preceding. From five to ten grains of it operate as a purgative, even in cases of obstinate costiveness.

PULVIS SCAMMONII cum CALOMELANE. L.

Powder of Scammony with Calomel.

Take of
Scammony, half an ounce;
Calomel,
Double refined sugar, of each two drachms.
Powder them separately, and then mix them. (L.)

In this formula, we have the scammony in a more simple state, united with such a proportion of calomel, as must very considerably aid its purgative power; and accordingly it may be employed with advantage, both in cases of obstinate costiveness, and in dropsical affections, where a considerable discharge is required from the system.

PULVIS SENNÆ COMPOSITUS. L.

Compound Powder of Senna.

Take of
Senna,
Crystals of tartar, of each two ounces;
Scammony, half an ounce;
Ginger, two drachms.
Triturate the scammony by itself, reduce the rest together into a powder, and then mix. (L.)

This powder is given as a cathartic, in the dose of two scruples, or a drachm. The spice is added, not only to divide, but to warm the medicine, and make it sit easier on the stomach. The scammony is used as a stimulus to the senna; the quantity of the latter necessary for a dose, when not assisted by some more powerful material, being too bulky to be conveniently taken in this form.

PULVIS SULPHATIS ALUMINÆ COMPOSITUS, olim, PULVIS STYPTICUS. *Ed.*

Compound Powder of Sulphat of Alumina, formerly *Styptic Powder.*

Take of
Sulphat of alumina, four parts;
Kino, one part.
Rub them together to a fine powder. (E.)

THIS powder is composed of two very powerful astringents, but which we believe are not combined with propriety. At least, it is certain that a solution of alum is decomposed by a solution of Kino.

PULVIS TRAGACANTHÆ COMPOSITUS. L.

Compound Powder of Tragacanth.

Take of
Tragacanth, powdered,
Gum arabic,
Starch, of each an ounce and a half;
Refined sugar, three ounces.
Rub them together into a powder. (L.)

THIS composition is a mild emollient; and hence becomes serviceable in hectic cases, tickling coughs, strangury, some kinds of alvine fluxes, and other disorders proceeding from a thin acrimonious state of the humours, or an abrasion of the mucus of the intestines: they soften, and give a greater degree of consistency to the former, and defend the latter from being irritated or excoriated by them. All the ingredients coincide in these general intentions. The dose is from half a drachm to two or three drachms, which may be frequently repeated.

PUNICA GRANATUM. *Cortex fructûs. Flores pleni,* Balaustia *dicti. Ed.* L. D.

Pomegranate tree. The outer rind of the fruit. The double flowers, called Balaustine.

Willd. g. 980. *sp.* 1. *Icosandria Monogynia.*—Nat. ord. *Pomaceæ.*

THE pomegranate is a low tree, or rather shrub, growing wild in Italy and other countries in the south of Europe; it is sometimes met with in our gardens; but the fruit, for which it is chiefly valued, rarely comes to perfection. This fruit has the general qualities of the other sweet summer fruits, allaying heat, quenching thirst, and gently loosening the belly. The rind is a strong astringent, striking a permanent blue with sulphat of iron, and as such is occasionally made use of. It has been lately given by Dr. Buchanan with success in the East Indies for the cure of tænia. Dr. Duncan also made some trials of it and of catechu in Great Britain, on the supposition that it was the astringent principle which acted chemically on the gelatinous body of the worm, and the result was promising; but the introduction of the oil of turpentine prevented him from prosecuting the experiment. The flowers are of an elegant red colour, in appearance resembling a dried red rose. Their taste is bitterish and astringent. They are recommended in diarrhœas, dysenteries, and other cases where astringent medicines are proper.

PYROLA UMBELLATA.

Ground-holly. Pippsiseva.

THIS is a very common North American plant, belonging to the same class and order as the uva ursi. The two plants are nearly allied to each other in botanical affinity, as well as in their medical properties.

It is considerably astringent, and was considered by Dr. Barton as highly worthy the notice of physicians. It has been used with advantage in the same cases in which uva ursi has been found beneficial. It has also been used with good effect in some cases of intermittents. In one case its diuretic operation was evident. The bruised leaves externally applied sometimes induce redness, vesication, and desquamation of the skin.*

PYRUS CYDONIA. L. *The Quince. The seeds.*

Semena. L.

Willd. g. 992. *sp.* 17. *Icosandria Pentagynia.*—Nat. ord. *Pomaceæ.*

THE quince is originally a native of Crete, but ripens its fruit perfectly in our climate.

Quinces have a very austere acid taste: taken in small quantity, they are supposed to restrain vomiting and alvine fluxes; and more liberally, to loosen the belly. The seeds abound with a mucilaginous substance of no particular taste, which they readily impart to watery liquors; an ounce will render three pints of water thick and ropy like the white of an egg. They will not however supply the place of gum arabic, because their mucilage spoils very quickly, and is precipitated by acids.

OFFICINAL PREPARATION.

Mucilago pyri cydoniæ, L. - - - *vide Mucilagines.*

* Barton's Collections, Part II. p. 2. Mitchell's Inaugural Essay, on Uva ursi, and Pyrola umbellata.

Q.

QUASSIA.

Willd. g. 849. *Decandria Monogynia.*—Nat. ord. *Gruinales.*

QUASSIA EXCELSA. *Sp.* 3. *Lignum. Ed.* L. D.

QUASSIA TREE. *Quassia, the wood, bark, and root.*

D.	*Kwassiehout.*	I.	*Legno di Quassia.*
DA.	*Quassebark.*	P.	*Pao de Quassia.*
F.	*Bois de Quassie.*	S.	*Leno de Quassia.*
G.	*Quassienholz.*	SW.	*Quassiætræd.*

THIS tree grows in Jamaica, and in the Caribæan islands. The quassia of the shops is the wood of its root, and not of the quassia amara, which is a very rare tree, but surpasses all others in bitterness.

This root is about the thickness of a man's arm: its wood is whitish, becoming yellowish by exposure the air. It has a thin, grey, fissured, brittle bark, which is deemed in Surinam more powerful than the wood. Quassia has no sensible odour, but is one of the most intense, durable, pure bitters known. Its infusion, decoction, and tincture, are almost equally bitter and yellowish, and are not blackened by chalybeates. The properties of the extract of quassia have been detailed by Dr. Thompson, under the title of the bitter principle.

Medical use.—It is a very pure and simple bitter, and may be given in all cases where bitters are proper. It has been exhibited in intermittent and bilious fevers, in stomachic complaints, in lienteria, in cachexy, dropsies, leucorrhœa, and gout. It is much used in Great Britain to give the bitterness to malt liquors, though it subjects those brewers who employ it to a very heavy penalty.

It can scarcely be reduced to a sufficiently fine powder to be given in substance, and is therefore generally given in the form of infusion, decoction, or extract.

QUASSIA SIMARUBA. *Sp.* 2. *Cortex, Lignum. Ed.* L. D.

Simarouba. Mountain or bitter damson. The bark and wood.

D.	*Roodenloop wortel.*	I.	*Simaruba.*
DA.	*Simaruba.*	P.	*Simaroba.*
F.	*Simarouba.*	S.	*Simaruba.*
G.	*Ruhrwurzel.*	SW.	*Simaruba.*

THIS tree grows in Guiana and in Jamaica. The simarouba of the shops is the bark of the root of this tree, and not of the quassia amara, as stated by the Dublin college. It is brought to us in pieces some feet long, and some inches broad, folded lengthwise. It is light, fibrous, very tough; of a pale yellow on the inside; darker coloured, rough, scaly, and warted on the outside; has little smell, and a bitter, not disagreeable taste. It gives out its bitterness both to alcohol and water.

Medical use.—It has been much celebrated in obstinate diarrhœa, dysentery, anorexia, indigestion, lienteria, and intermittent fevers; but it is doubtful that it is better than other bitters.

It is given in powder, in doses of half a drachm, or a whole drachm; but it is too bulky, and very difficultly pulverizable. It is best exhibited in decoction. Two drachms of the bark may be boiled in two pounds of water to one, and the decoction drunk in cupfuls in the course of the day.

QUERCUS.

Willd. g. 1692. *Smith, g.* 404. *Monoecia Polyandria.*—Nat. ord. *Amentaceæ.*

QUERCUS ROBUR. *Willd. sp.* 65. *Smith, sp.* 1. *Cortex. Ed.* D.

QUERCUS PEDUNCULATA. L. *Common British Oak. The bark.*

D.	*Eik.*	P.	*Roble, Carvalho.*
DA.	*Eeg.*	POL.	*Dab.*
F.	*Chene.*	R.	*Dab.*
G.	*Eiche.*	S.	*Roble, Carballo.*
I.	*Quercia.*	SW.	*Ek.*

THE oak grows wild in Britain. The superior excellence of its wood for ship-building has rendered its cultivation an object of national concern. Its saw-dust is an useful dye stuff, and its bark is the principal article used in tanning. M. Vauquelin has discovered a remarkable chemical difference between the bark and nut-galls, the latter precipitating tartrat of antimony and infusion of cinchona, which are not acted on by the former.

Medical use.—The bark is a strong astringent, and is recommended in hemorrhagies, alvine fluxes, and other preternatural or immoderate secretions. In these it is sometimes attended with good effects. But it is by no means capable of being employed as a substitute, in every instance, for Peruvian bark, as some have asserted; and indeed it is so difficultly reduced to a sufficiently fine powder, that it can scarcely be given internally in substance.

Dr. Rousseau, in a communication published in the Philadelphia Medical Museum, Vol. II. has mentioned the efficacy of the black oak bark in intermittents, and it would appear to be well worthy the attention of physicians.

The Spanish oak, (Quercus rubra montana) Dr. Barton has used in gangrene, and he thinks it equalled in power the best Peruvian bark.

Officinal Preparation.

Extractum querci, D. - - *vide Extracta.*

QUERCUS CERRIS. *Cyniphis nidus. Ed.*

Galla. L. Gallæ. *Cynipidum nidi.* D.

Oriental oak. The nest of the cynips quercifolii, or Gall-nuts.

D.	*Galnooten.*	P.	*Galhas, Bugalhos.*
DA.	*Galdæbler.*	POL.	*Galas.*
F.	*Galles, Noix de Galles.*	R.	*Tschernilnüe oreschki.*
G.	*Galläpfel.*	S.	*Agallas.*
I.	*Galle, Galluzze.*	SW.	*Galläpplen.*

Olivier has, in his travels in the Ottoman Empire, given us an accurate botanical description of the oak which produces the gall-nut, and which, he says, was till then unknown to botanists. He calls it *Quercus infectoria*, and characterizes it *foliis ovato oblongis, sinuato dentatis, glaberrimis, deciduis; fructibus sessilibus, longissimis.* It is scattered through all Asia Minor, from the Bosphorus to Syria, and from the shore of the Archipelago to the frontiers of Persia. It has a crooked stem, and seldom reaches the height of six feet. It oftener has the appearance of a shrub than of a little tree. The gall-nuts come at the shoots of the young boughs, and are produced by the puncture of *diplolepis gallæ tinctoriæ* to deposite an egg. They acquire from four to twelve lines in diameter, and are generally round and covered with tuberosities. They are in perfection when they have acquired their full size and weight, but before the insect has pierced them, after which they get a brighter colour, and lose some of their weight. The harvest takes place about the middle of *Messidor*. The galls first picked are laid apart, and are known under the name of *Yorli*, and in commerce are called *black* and *green* galls. Those gathered later are called *white* galls, and are very inferior in value. In commerce they occur of different sizes, smooth or knotty on the surface, of a whitish, reddish, or blackish colour, and generally penetrated with a small hole. Internally they consist of a spongy, but hard, more or less brown substance, and they have a very rough astringent taste. Good galls are of a blackish-grey, or yellow colour, heavy, and tuberculated on the surface. They are the most powerful astringents we possess; and since the discovery of the tanning principle by Mr. Seguin, have very much engaged the attention of chemists. Neumann got from 960 grains of coarsely powdered galls 840 watery extract, and afterwards only 4 alcoholic; and inversely, 760 alcoholic, and 80 watery. But the most minute analysis is that of Sir H. Davy, who found that 500 grains of good Aleppo galls gave, by lixiviating them until their soluble matters were taken up, and evaporating the solution slowly, 185 grains of solid matter, which, when examined by analysis, appeared to consist of,

Tannin,*	130
Mucilage, and matter rendered insoluble by evaporation,	12
Gallic acid,† and a little extractive matter,	31
Remainder, calcareous earth and saline matter,	12

From his experiments, Dr. Duncan is disposed to think that Sir H. Davy has under-rated the tannin of nut-galls; for by simple repeated infusions in hot water, the residuum of 500 grains in one experiment amounted only to 158, and in another only to 136 grains. The quantity of tannin, estimated in Sir H. Davy's way, amounted, in the first to 220 grains, and in the second to 256. The great difference in these results from Sir H. Davy's must be entirely ascribed to some differences in the galls themselves, or in the mode of operation. A saturated decoction of galls, on cooling, deposites a copious pale yellow precipitate, which seems to be purer tannin than what can be got by any other process; but it still requires and deserves a more minute examination. In Dr. Duncan's experiments, a very weak infusion of nut-galls was precipitated by sulphuric acid, lime-water, sub-carbonat of potass, acetat of lead, sulphat of copper, nitrat of silver, sulphat of iron, tartrat of antimony, nitrat of mercury, infusion of officinal cinchona, and solution of gelatin; it was not precipitated by nitrous acid, ammonia, sulphat of zinc, muriat of mercury, infusion of quassia, or infusion of saffron. To what principles these precipitates are owing remains still to be ascertained. Vauquelin justly observes, that the infusions of nut-galls and of cinchona agree in precipitating both gelatin and tartrat of antimony, but that they precipitate each other. Another fact, equally curious, occurred in Dr. Duncan's experiments: a mutually saturated mixture of the infusions of nut-galls and cinchona still precipitates gelatin; but these infusions, separately saturated by gelatin, do not act on each other. Hence it appears, that the action of these infusions on each other depends on principles contained in each, compatible with the presence of tannin, but re-acting on each other, and that gelatin precipitates these principles along with the tannin. Sir H. Davy has concluded that tannin

* *Tannin*, when completely dried, is a brittle substance, of a black colour, and vitreous fracture; it is soluble in alcohol; it is much more soluble in hot than in cold water. The solution has a dark brown colour, astringent taste, and peculiar smell; it is precipitated by acids, in the form of a viscid fluid, like pitch: it is also precipitated by carbonat of potass in yellow flakes; it forms an insoluble elastic precipitate with gelatin, and dark blue or black precipitates with iron.

† *Gallic acid* crystallizes in brilliant colourless plates, of an acid and somewhat austere taste, and of a peculiar odour when heated. It may be sublimed without alteration, although a strong heat decomposes it in part. It is not altered by exposure to the air, is soluble in 1 1-2 of water at 212°, and in 12 waters at 60°, and in four times its weight of alcohol. It has a strong affinity for metallic oxyds, especially iron. It precipitates gold, copper, and silver brown, mercury orange, iron black, bismuth yellow, and lead white.

Gallats have not been examined.

and gelatin unite in fixed proportions, viz. 46 of tannin with 54 gelatin: were this correct, it would very much facilitate the analysis of astringents, but unfortunately Dr. Duncan's experiments do not confirm it. A twelve hours' infusion of 500 grains of nut-galls in twelve ounces of water, precipitated successively with equal quantities of solution of gelatin, containing each twenty-four grains, gave precipitates weighing 98, 64, 48, and 36 grains: hence, if we suppose the whole gelatin used to be contained in each precipitate, these consisted of 24 grains of gelatin, and 74, 40, 24, and 12 grains of tannin; so that, from the weight of the precipitate alone, we cannot estimate the tannin. Dr. Bostock has drawn the same conclusions from a set of experiments which he made, without any knowledge of Dr. Duncan's. It has been generally asserted, that the precipitate of tannin and gelatin is insoluble in water, either cold or hot; but Dr. Duncan found that in boiling water it not only becomes soft and viscid, but a certain portion is dissolved, which separates again when the solution cools. He also remarks, that if the precipitate be dried without any heat, it has a yellowish-white appearance, opaque, and without lustre; but if exposed to a very moderate increase of temperature before it be dry, it seems to undergo a kind of fusion, and acquires transparency, a dark brown-red colour, and a resinous lustre; with a higher temperature, even when almost dry, it will become so fluid as to pass through filtering paper. Mr. Davy discovered that it is soluble in excess of gelatin. It is also extremely soluble in ammonia, forming a red solution.

Medical use.—An infusion or decoction of galls may be used with advantage as an astringent gargle; and an ointment of one part of finely powdered galls to eight of any simple ointment is applied with success in hæmorrhoidal affections.

R.

RANUNCULUS SCELERATUS.

Celery-leaved Crowfoot.

This is a very acrid plant; when bruised and laid upon any part of the body, it will in a few hours' time raise a blister. The Ranunculus bulbosus, (bulbous crowfoot or butter-cups) possesses the same properties. The former is a native of both Europe and America, the latter, which grows here very plentifully, Dr. Barton thinks is not a native.*

* Barton's Collections, Part I. p 23.

RHAMNUS CATHARTICUS. *Baccarum succus. Ed.* D. L.

Purging Buckthorn. The berry. The juice of the berries.

Willd. g. 405. *sp.* 1. *Smith, g.* 105. *sp.* 1. *Pentandria Monogynia.*— Nat. ord. *Dumosæ.*

This tree, or bush, is common in hedges: it flowers in June, and ripens its fruit in September or the beginning of October. In the markets, the fruit of some other trees, as the black berry-bearing alder, and the dogberry tree, have of late been frequently mixed with, or substituted for, those of buckthorn. This abuse may be discovered by opening the berries: those of buckthorn have almost always four seeds, the berries of the alder two, and those of the dogberry only one. Buckthorn berries, bruised on white paper, stain it of a green colour, which the others do not. Those who sell the juice to the apothecaries, are said to mix it with a large proportion of water.

Medical use.—Buckthorn berries have a faint disagreeable smell, and a nauseous bitter taste. They have long been in considerable esteem as cathartics: and celebrated in dropsies, rheumatisms, and even in the gout: though in these cases they have no advantage above other purgatives, but are more offensive, and operate more severely, than many which the shops are furnished with. They generally occasion gripes, sickness, dry the mouth and throat, and leave a thirst of long duration. The dose is about twenty of the fresh berries in substance, and twice or thrice this number in decoction; an ounce of the expressed juice, or a drachm of the dried berries.

Officinal Preparation.

Syrupus rhamni cathartici, E. L. - - *vide Syrupi.*

RHEUM.

Willd. g. 803. *sp.* 5. *Enneandria Monogynia.*—Nat. ord. *Oleraceæ.*

RHEUM PALMATUM. *Sp.* 3. *Radix. Ed.* L. D.

Palmated Rhubarb. The root.

Rheum Undulatum. D. *Sp.* 2. *Radix.*

D. *Rhabarber.*
DA. *Rabarber.*
F. *Rhubarbe.*
G. *Rhabarber.*
I. *Rabarbaro, Reobarbaro.*
P. *Ruibarbo.*
POL. *Reubarbarum, Rum tureckie.*
R. *Rewen.*
S. *Ruibarbo.*
SW. *Rabarber.*

Both of these species grow spontaneously in China, and endure the colds of our climate.

But it is not ascertained that the Chinese or Russian rhubarb is the dried root of this plant. Pallas thinks that it is obtained indicriminately from the rheum undulatum, palmatum, and compactum, more especially from the first; while Mr. Sievers, an apothecary who was sent by Catherine II. on purpose to obtain the true rhubarb plant, and travelled for several years in the countries contiguous to that whence the rhubarb is brought, is of opinion, that the botanical characters of the plant which furnishes it are still unknown, excepting that it is said not to grow to a great size, and to have round leaves, which are toothed on the edges with almost spinous points.

All the rhubarb of commerce is brought from the Chinese town Sini, or Selim, by the Bucharians. It grows on the neighbouring chain of lofty mountains which stretches to the lake Koko-Nor, between 35° and 40° north latitude. It is dug up by the poor peasants, cleaned from the earth, cut in pieces, strung with the bark on strings, and exposed to dry under cover in the shade for a whole year, before it is again cleaned and prepared for exportation.

There is a distinction made in commerce between the Russian and Chinese rhubarb, although they both come from the same country.

The Russian is dearer, and always good, as very great attention is paid both in purchasing and transporting it, by order of the government. In Kiachta, on the Russian frontier, it is received from the Bucharians by a Russian apothecary, who examines it. The bad is immediately burnt, and the good is freed from its bark, woody parts, and every impurity, in the most careful manner. It is then sent to Moscow and to Petersburgh, where it is again examined.

It is commonly in round pieces, of a reddish or whitish yellow colour, feels gritty between the teeth, and is often perforated with so large a hole, that many pieces have the appearance of a mere rind.

The Chinese or East-Indian rhubarb is brought by sea from Canton. It is heavier, harder, and more compact, than the other; seldom perforated with holes, and either in long pieces, or with two flat sides, as if they had been compressed. Dr. Lewis thinks that this is less aromatic, but stronger, than the Turkey; and that it has required less care in drying from having been lifted when the root was less watery.

The general characters of good rhubarb are, its having a whitish or clear yellow colour, being dry, solid, and compact, moderately heavy; brittle; when recently broken appearing marked with yellow or reddish veins, mixed with white; being easy pulverizable; forming a powder of a fine bright yellow, having the peculiar, nauseous, aromatic smell of rhubarb, and a sub-acrid, bitterish, somewhat astringent taste, and when chewed feeling gritty under the teeth, speedily colouring the saliva, and not appearing very mucilaginous. The size and form of the pieces are of little consequence; only we must break the large ones, to see that they are not decayed or rotten within; and we must also observe that they are not musty or worm-eaten. This is the more necessary, as damaged pieces are frequently so artfully dressed up, and coloured with powdered rhubarb, as to impose on the buyer.

The principal constituent of rhubarb is extractive matter, soluble both in alcohol and in water. By gentle decoction, it loses above one half its weight. Rhubarb also contains some volatile odorous matter, on which its peculiar nauseous smell and its activity as a purge, depend; for when dissipated, either by age or any preparation to which the rhubarb has been subjected, the powers of the medicine are almost destroyed. It also contains about one-sixth of its weight of oxalat of lime, and some tannin, which resides entirely in the dark-coloured veins, for on wetting the surface with a weak chalybeate solution, these alone are blackened, while the white veins do not change their colour. Neumann got from 480 grains 180 of alcoholic, and afterwards 170 watery extract; and inversely, 350 watery, and only 5 of alcoholic extract.

Various species of rhubarb, especially the palmatum, are cultivated in this country, and sometimes in very large quantities; so that there can be no doubt that the roots, the growth of this country, may be so prepared as to have the appearance, at least, of foreign rhubarb. The greatest difficulty seems to be the drying it properly. Its cultivation is easy. It is sown in spring, in a light soil, and transplanted next spring into a light soil, well trenched, and the plants set at a yard distance from each other each way. The third year some plants begin to flower, but the roots are not lifted till the autumn of the sixth year. They are first to be washed in a large quantity of water, and after the fibres and small roots are cut off, to be well brushed in fresh water, and cut into pieces of a proper size. The brown bark is then rasped off, and they are again thrown into fresh water for three or four hours, in which they give out a great quantity of gummy matter. They are then taken out, and laid upon twigs to drip till next morning, and it is chiefly in this time that they exude at every part a white transparent gummy matter, resembling jelly. They are lastly placed in a stove, heated to 120° or 140°, till they dry. Twenty-five pounds of the recent root gave only about eight pounds dry. It is not, however, yet fit for sale. All the wrinkles must be rasped and filed out, and the pieces thus dressed put in a barrel fixed on an axis, and rolled about in it for twenty minutes or half an hour, when they get covered by a fine powder, formed by their rubbing against each other. Prepared in this way, Beaumé assures us that it not only has the appearance of foreign rhubarb, but like it could also be immediately powdered. The chief peculiarity in his process is the steeping the roots, after they are cleaned, in water, by which means they are deprived of a great quantity of gummy matter; and without this precaution, even when apparently perfectly dry, the roots cannot be reduced into powder, but become pasty under the pestle, until it be two years old, and even then the powder is apt to concrete into lumps, and to get a dark-brown colour. Four ounces of French rhubarb yielded to Beaumé 1644 grains of extract, and the same quantity of foreign rhubarb 1500. British rhubarb, as it called, is cultivated in considerable quantities in the neighbourhood of Edinburgh, and sold at nearly the price of foreign rhubarb. It is easily reduced to a very fine powder, although it is merely washed and peeled before it be cut into proper pieces, and dried upon the top of a baker's oven. The leaf-stalks of rhubarb contain a pleasant acid juice, and are used for making tarts, which are very like those of quinces; and Olivier tells us that the Persians have long been in the habit of using the Rheum ribes in the same manner, preserved or raw.

Attempts have been successfully made to introduce the culture of this valuable drug into Britain, and it appears from authentic accounts, that sufficient quantities of it may be reared, and that the English root has proved to be fully equal to the best sort obtained from Turkey or China.

The cultivation of rhubarb in the United States is to be considered as an object of high importance. That our climate is perfectly congenial to its growth, has been clearly ascertained by successful experiments, which ought to encourage other attempts and more extensive plans. The palmated or officinal rhubarb may be raised from seed sown either in the spring or autumn. When the plants appear they require to be kept clear from weeds, and during the winter their roots should be covered with litter. The ensuing season they may be transplanted, or thinned, to the distance of four or five feet. The soil must be a light fine mould, deeply ploughed, and the plants should be frequently watered, though too much wet will injure the roots. The young plants require to be sheltered from the sun till they have obtained a good degree of strength. The seed stalks ought to be cut off on the withering of the radical leaves, and their roots covered.

The roots of rhubarb must not be taken up until six or seven years old, and it is supposed by some that they increase in medicinal properties if suffered to remain in the earth for seven, eight, ten, or even twelve years. Much care is requisite in curing and preserving the roots for use. They lose about four-fifths of their weight in drying, which process is accomplished in six months.

The roots may be taken up early in the spring, or in autumn, when the leaves are decayed. They are to be washed clean, and the small fibres and external rind being pared, or cut off, they should be divided into pieces about one ounce in weight. A hole should be perforated in the middle, and the roots suspended on pack-thread, in a common kitchen, to dry; care being taken that none of the pieces come in contact with each other so as to occasion mouldiness. The foot stalks of the leaves of the young plants impart an agreeable acidity, similar to that of gooseberries, and are frequently used in pies and tarts.

Medical use.—Rhubarb is a mild cathartic, which operates without violence or irritation, and may be given with safety even to pregnant women, and to children. In some people, however, it occasions severe griping. Besides its purgative quality, it is celebrated as an astringent, by which it strengthens the tone of the stomach and intestines, and proves useful in diarrhœa and disorders proceeding from laxity.

Rhubarb is exhibited,

1. In substance, in the form of powder. It operates more powerfully as a purgative in this form than in any other. The dose for an adult is about a scruple or upwards. On account of its great bulk, it is sometimes unpleasant to take, and its laxative effects are often

increased by the addition of neutral salts, or other more active purgatives. In smaller doses it often proves an excellent stomachic.

2. In infusion. Rhubarb yields more of its purgative property to water than to alcohol. The infusion is, however, considerably weaker than the powder, and requires double the dose to produce the same effect. It is well adapted for children, but must be always fresh prepared.

3. In tincture. On account of the stimulating nature of the menstruum, this preparation frequently cannot be exhibited in doses large enough to operate as a purgative. Its principal use is as a tonic and stomachic.

The virtues of rhubarb are destroyed by roasting, boiling, and in forming the extract.

Officinal Preparations.

Infusum rhei, E. - - - -	vide *Infusæ.*
Vinum rhei, E. L. - - - -	*Vina medicata.*
Tinctura rhei, E. L. - - -	*Tincturæ.*
composita, L. - -	*Idem.*
cum aloë, E. - -	*Idem.*
cum gentiana, E. - -	*Idem.*
Pilulæ rhei compositæ, E. - -	*Pilulæ.*

RHODODENDRON CHRYSANTHUM. *Folia. Ed.*

Yellow-flowered Rhododendron. The leaves.

Willd. g. 867. *sp.* 7.—*Decandria Monogynia.*—Nat. ord. *Bicornes.*

This small shrub grows in the coldest situations, and highest parts of the snow-covered mountains in East Siberia, and especially in Dauria. The leaves are oblong, rigid, reflected at the edges, rough on the upper surface, smooth, and paler on the lower. When dried, they have no smell, but a rough, astringent, and bitterish taste. They also contain a stimulant, narcotic principle; for they increase the heat of the body, excite thirst, and produce diaphoresis, or an increased discharge of the other secretions or excretions; and in a large dose, inebriation and delirium.

Medical use.—The Siberians use a decoction of it in rheumatism and gout. They put about two drachms of the dried shrub in an earthen pot, with about ten ounces of boiling water, keeping it near a boiling heat for a night, and this they take in the morning. Besides its other effects, it is said to produce a sensation of prickling or creeping in the pained parts; but in a few hours the pain and disagreeable symptoms are relieved, and two or three doses generally complete the cure. The use of liquids is not allowed during its operation, as this is apt to induce vomiting.

RHODODENDRON MAXIMUM.

Pennsylvania Mountain Laurel.

This plant, which is poisonous, is a species of the same genus as the Rhododendron, which has lately acquired much reputation in the cure of chronic rheumatism. The powder around the foot-stalks is errhine.*

RHUS TOXICODENDRON. *Folia. Ed.* L.

Poison Oak. The leaves.

Willd. g. 566. *sp.* 17. *Pentandria Trigynia.*—Nat. ord. *Dumosæ.*

This is a deciduous shrub of moderate growth, a native of North America. The leaves are alternate, and stand upon very long leaf-stalks. Each leaf consists of three leafits. It is said that its juice is so extremely acrid as to cause inflammation, and sometimes even sphacelation, in the parts touched with it.

Medical use.—It was first tried as a medicine by Dr. Alderson of Hull, in imitation of the experiments of M. Fresnoi with the rhus radicans. He gave it in four cases of paralysis, in doses of half a grain, or a grain, three times a day, and all his patients recovered, to a certain degree the use of their limbs. The first symptom of amendment was always an unpleasant feeling of prickling or twitching in the paralytic limbs. It has been given in larger doses, without experiencing the same success. It was not, however, inactive. In one case the patient discontinued its use on account of the disagreeable prickling it occasioned; and in general it operated as a gentle laxative, notwithstanding the torpid state of the bowels of such patients.

This family of plants deserves more attention than has yet been paid them. The excellent Inaugural Dissertation of Dr. Horsefield, on the Rhus Vernix, Rhus Radicans, and Rhus Glabrum, published in 1798, will amply repay the trouble of perusing it. See also Dr. Barton's Collections, Part I. and II.

RICINUS COMMUNIS. *Semen, et oleum fixum. Ed.* L. D.

Palma Christi. The seeds, and the fixed oil obtained from them. Castor Oil.

Willd. g. 1720. *sp.* 2. *Monoecia Monadelphia.*—Nat. ord. *Triccocæ.*

F. *Huile de Ricin.*
G. *Unæchtes Palmoel, Ricinus oel.*
I. *Olio di Ricino.*
P. *Oleo de Ricino.*
S. *Aceite de Ricino ó Palma Christi.*

This plant grows in both Indies, Africa, and the south of Europe.

* Barton's Collections, Part I. p. 18

It also grows luxuriantly in the southern states of America, where it is now becoming an article of export. It is of speedy growth, and in one year arrives at its full height, which seldom exceeds twenty feet. The capsules are prickly and triangular, and contain, under a thin, dry, grey, and black-marbled husk, a white oily kernel. The skin is extremely acrid; and one or two of the seeds swallowed entire operate as a drastic purgative or emetic.

The kernels yield almost a fourth part of their weight of a bland fixed oil, commonly called Castor oil. It is obtained from them either by expression or by decoction with water. The former method is practised in Europe, the latter in Jamaica. To increase the product, it is common to parch the seeds over the fire, before the oil is extracted from them; but the oil thus obtained is inferior to that prepared by cold expression or simple decoction, and is apt to become rancid.

Genuine castor oil is thick and viscid, of a whitish colour, insipid or sweetish to the taste, and without smell.

Medical use.—As a medicine, it is a gentle and useful purgative; it in general produces its effects without griping, and may be given with safety where acrid purgatives are improper, as in colic, calculus, gonorrhœa, &c.: some likewise use it as a purgative in worm cases. Half an ounce or an ounce commonly answers with an adult, and a drachm or two with an infant.

With many the aversion to oil is so great, that this purgative cannot be taken without great reluctance; and accordingly different modes of taking it have been proposed. Some prefer taking it swimming on a glass of water, of milk or peppermint water, or in the form of emulsion, with mucilage; or with the addition of a little rum.

ROSA.

Willd. g. 997. *Smith, g.* 232. *Icosandria Polygynia.*—Nat. ord. *Senticosæ.*

ROSA GALLICA VEL RUBRA. *Sp.* 16. *Petala. Ed.* L. D.

Red Rose. The petals.

THIS has not the fragrance of the succeeding species; but the beautiful colour of its petals, and their pleasant astringency, have rendered them officinal. It must, however, be remarked that their odour is increased by drying, while that of the damask and moss roses is almost destroyed.

OFFICINAL PREPARATIONS.

Syrupus rosæ gallicæ, E. - - - -	*vide Syrupi.*
Mel rosæ, L. D. - - - - - -	*Mella medicata.*
Infusum rosæ Gallicæ, E. L. D. - - -	*Infusa.*
Conservæ rosæ rubræ, E. L. D. - -	*Conservæ.*

ROSA CENTIFOLIA. *Sp.* 15. *Petala. Ed.* L. D.

Damask rose. The petals.

THE native country of this shrub is unknown, but the delightful fragrance of its flowers has rendered it the favourite ornament of every garden. In the former editions of Linnæus, the damask rose was considered as a variety only of the rosa centifolia; but Aiton, Du Roy, and Willdenow have arranged it as a distinct species. It is however highly probable, that the petals of all the varieties of the rosa centifolia, or Dutch hundred leaved rose, are employed indiscriminately with those of the real damask rose in the distillation of rose water.

OFFICINAL PREPARATIONS.

Syrupus rosæ centifoliæ, E. L. - - *vide Syrupi.*
Aqua rosæ centifoliæ, E. L. D. - - - *Aquæ destillatæ.*

ROSA CANINA. *Willd. sp.* 31. *Smith, sp.* 6. *Fructus recens. Ed.* L.

Common Dog rose. Wild Briar, or Hep-tree. The fruit called Heps.

THIS shrub is found in hedges throughout Britain. The pulp of the fruit, besides saccharine matter, contains citric acid, which gives it an acid taste. The seeds, and stiff hair with which they are surrounded, must be carefully removed from the pulp before it can be used.

OFFICINAL PREPARATION.

Conserva rosæ caninæ, E. L. - - - *vide Conservæ.*

ROSMARINUS OFFICINALIS. *Herba et flores. Ed.* L. D.

Rosemary. The herb and flowers.

Willd. g. 62. *sp.* 1. *Diandria Monogynia.*—Nat. ord. *Verticillatæ.*

ROSEMARY is a perennial shrub, which grows wild in the south of Europe, and is cultivated in our gardens. It has a fragrant smell, and a warm pungent bitterish taste, approaching to those of lavender: the leaves and tender tops are strongest; next to these the cup of the flower; the flowers themselves are considerably the weakest, but most pleasant.

Medical use.—Its virtues depend entirely on its essential oil, which seems to be combined with camphor, not only from its peculiar taste, but from its possessing chemical properties, which depend on the presence of camphor; and from its depositing crystals of camphor when long kept.

Officinal Preparations.

Oleum volatile rosmarini, E. L. D. - - *vide Olea volatilia.*
Spiritus rosmarini, E. L. - - - *Spiritus destillati.*

RUBRA TINCTORUM. *Radix. Ed.* L. D.

Madder. The root.

Willd. g. 187. *sp.* 1. *Triandria Monogynia.*—Nat. ord. *Stellatæ.*

D.	*Mee, Meekrap, Krap.*	P.	*Granca, Ruiva.*
DA.	*Krap.*	POL.	*Marzana.*
F.	*Garance.*	R.	*Mariona, Krap.*
G.	*Krapp, Færberröthe.*	S.	*Granza, Rubia.*
I.	*Robbi.*	SW.	*Krapp.*

Madder is perennial, and grows wild in some parts of Britain, but the dyers are principally supplied with it from Zealand, where it is cultivated in large quantities.

The roots consist of articulated fibres, about the thickness of a quill, which are red throughout, have a weak smell, and a bitterish astrigent taste. For the use of dyers, they are first peeled and dried, then bruised and packed in barrels. Madder possesses the remarkable property of tinging the urine, milk, and bones, of animals which are fed with it, of a red colour,

Medical use.—It is said to be useful in the atrophy of children, and some believe in its reputed powers as an emmenagogue.

It is given in substance in doses of half a drachm, several times a day, or in decoction.

RUMEX.

Willd. g. 699. *Smith, g.* 184. *Hexandria Trigynia.*—Nat. ord. *Oleraceæ.*

RUMEX AQUATICUS. *Willd. sp.* 18. *Smith, sp.* 8. *Radix.* D.

Great Water-dock. The root.

This is a perennial weed, growing in ditches and by the sides of rivers. It grows to the height of five feet, and flowers in July and August. The root is large, and is manifestly astringent. It evidently is the *Herba Britannica* of the ancients, so much celebrated for the cure of scurvy and cutaneous diseases. Even syphilis, probably some syphiloid affection, has been said to yield to an infusion of water-dock in wine and vinegar.

RUMEX ACETOSA. *Willd. sp.* 31. *Smith, sp.* 10. *Folia. Ed.* L.

Common sorrel. The leaves.

Sorrel is a perennial plant, which grows wild in fields and meadows throughout Britain, and flowers in June. The leaves have a pleasant acid taste, without any smell or particular flavour; their medical effects are, to cool, quench thirst, and promote the urinary discharge: a decoction of them in whey affords an useful and agreeable drink in febrile or inflammatory disorders. All these effects are to be ascribed entirely to the super-oxalat of potass which they contain.

RUMEX ACUTUS. *Narrow Dock.* } *The roots.*
RUMEX CRISPUS. *Curled Dock.* }

These grow about barn yards and in cultivated fields, flowering in July. The roots of both species are somewhat cathartic. The seeds are said to have been given with advantage in dysentery. The fresh roots bruised and made into an ointment or decoction cure the itch. Some instances have occurred among the country people, of ill conditioned ulcers, and hard tumours apparently of a cancerous nature, having been entirely removed by the application of the bruised roots of dock or a decoction of the same.

RUTA GRAVEOLENS. *Herba. Ed.* L. D.

Rue. The herb.

Willd. g. 927. *sp.* 1. *Decand. Monogyn.*—Nat. ord. *Multisiliquæ*:

This is a small shrubby plant, a native of the south of Europe, and cultivated in our gardens.

Rue has a strong ungrateful smell, and a bitterish penetrating taste: the leaves, when in full vigour, are extremely acrid, insomuch as to inflame and blister the skin, if much handled. Neumann got from 960 grains of the dried leaves 330 alcoholic extract, and afterwards 290 watery; and inversely, 540 watery and 40 alcoholic. Both primary extracts are bitter and acrid. Rue also contains a volatile oil, which congeals readily, and is obtained in greatest quantity by distilling the plant with the seeds half ripe.

Medical use.—With regard to their medical virtues, like other remedies, of which the active constituent is an essential oil, they are heating and stimulating, and hence sometimes are serviceable in spasmodic affections, and cases of obstructed secretions.

Officinal Preparations.

Oleum volatile rutæ, D. - - -	*vide Olea volatilia.*
Extractum rutæ graveolentis, E. L. D.	*Extracta.*
Pulvis myrrh. compositus, L. - -	*Pulveres.*

S.

SACCHARUM OFFICINARUM. E. L. D.

Willd. g. 122. *sp.* 4. *Triandria Digynia.*—Nat. ord. *Gramina.*

a. *Saccharum non purificatum. Ed.* L. *Saccharum rubrum.* D.
b. *Saccharum purificatum.* L. D. *Saccharum purissimum. Ed.*
c. *Sacchari rubri syrupus.* D.

Sugar-cane. Raw or brown Sugar. Double refined Sugar. Melasses.

D.	*Suiker.*	P.	*Assucar.*
DA.	*Suker.*	POL.	*Cukier.*
F.	*Sucre.*	R.	*Sachar.*
G.	*Zucker.*	S.	*Azucar.*
I.	*Zuccaro.*	SW.	*Socker.*

The sugar cane grows wild in both Indies, and forms the principal object of cultivation in the West Indies.

Sugar is a hard, but brittle substance, of a white colour, disposed to form semi-transparent crystallizations, of a sweet taste, and without smell. When heated sufficiently it melts, is decomposed, emits a peculiar smell (caromel), and becomes inflamed. Sugar at 40° is soluble in its own weight of water, and in still less at 212°. It is also soluble in about four parts of boiling alcohol. It combines with volatile oils, and renders them miscible with water. It also unites with potass and lime. It is decomposed by the concentrated sulphuric and nitric acids. According to Lavoisier's experiments, it consists of 71.76 oxygen, 17.89 carbon, and 10.35 hydrogen; or, according to the original calculation, of 64 oxygen, 28 charcoal; and 8 hydrogen.

Sugar is principally obtained from the plant, by boiling down its expressed juice, with the addition of a certain proportion of lime or potass, until the greater part is disposed to concrete into brownish or yellowish crystalline grains. The lime or potass is added to saturate some malic acid, whose presence impedes the crystallization. The *melasses*, or that portion of the inspissated juice which does not crystallize, is separated from the *raw sugar*, which is sent to Europe to be refined. This is performed by dissolving it in water, boiling the solution with lime water, clarifying it with blood or white of eggs, and straining it through woollen bags. The solution, after due evaporation, is permitted to cool to a certain degree, and then poured into conical forms of unglazed earthen ware, where it concretes into a mass of irregular crystals. The syrup which has not crystallized is then permitted to run off through a hole in the apex of the cone. The upper or broad end of the cone is then covered with moist clay, the water of which gradually penetrates into the sugar, and displaces a quantity of syrup, which would otherwise be retained in it, and discolour it. It is then carefully dried, and gets the name of *loaf* or *lump sugar*. When the solution and other steps of the process are repeated, the sugar is said to be *double refined*. Sugar is sometimes made to assume a more regular form of crystallization, by carrying the evaporation only a certain length, and then permitting the syrup to cool slowly. In this form it is called *Brown or White sugar candy*, according to the degree of its purity.

Raw sugar varies very much in quality. It should be dry, crystallized in large sparkling grains, of a whitish or clear yellow colour, without smell, and of a sweet taste, without any peculiar flavour.

Refined sugar should have a brilliant white colour, and a close compact *texture*. It should be very hard, but brittle, and break with sharp, semi-transparent, splintery fragments.

Medical use.—Sugar, from being a luxury, has now become one of the necessaries of life. In Europe sugar is almost solely used as a condiment. But it is also a very wholesome and powerful article of nourishment; for during crop time, the negroes in the West-Indies, notwithstanding their increased labours, always grow fat. It is in this way also that its internal employment is useful in some diseases, as in sea-scurvy; for sugar produces no particular effect as a medicine, except that the coarser and impure kinds are slightly purgative. Applied externally it acts as an escharotic in spongy and unhealthy granulations; and to abraded or inflamed surfaces it proves gently stimulant. In pharmacy it is principally employed to cover bad tastes, to give form, and to preserve more active substances. In using it for the last purpose, we must always remember, that if the proportion of sugar employed be too small, it will promote instead of retard, the fermentation of the articles it is intended to preserve.

OFFICINAL PREPARATIONS.

Syrupi omnes, &c. - - -	*vide Syrupi.*
Mistura moschata, L. - - -	*Mixturæ.*
Potio carbonatis calcis, E. L. D. -	*Idem.*

Melasses or treacle is a very impure syrup. It is thick, viscid, of a dark brown, almost black colour, and has a peculiar smell; and a sweet, somewhat empyreumatic taste. Treacle is applied to many domestic and economical purposes; and in hospital practice may supersede the use of sugar in many instances.

OFFICINAL PREPARATION.

Electuarium sennæ, D. - - *vide Electuaria.*

SAGAPENUM. *Gummi-resina. Ed.* L. D.

Sagapenum. A gum-resin.

THE plant which furnishes this substance is not ascertained, but is conjectured by Willdenow to be the Ferula Persica.

Sagapenum is a concrete juice brought from Alexandria, either in distinct tears, or agglutinated in large masses. It is outwardly of a yellowish colour; internally, somewhat paler, and clear like horn; it grows soft upon being handled, and sticks to the fingers; its taste is hot, nauseous, and bitterish, and its smell disagreeable and alliaceous.

Neumann got from 480 grains, 306 alcoholic, and 108 watery, extract, and inversely 170 watery, and 241 alcoholic, extract. The alcohol distilled from it was sensibly impregnated with its flavour, and along with the water a considerable portion of volatile oil arose. It is not fusible.

Medical use.—In medical virtues it holds a kind of middle place between assa fœtida and galbanum, and may be employed in the same manner, and under similar circumstances.

Officinal Preparation.

Pilulæ galbani compositæ, L. - - *vide Pilulæ.*

SAL AMMONIACUM. - *Vide Ammonia.*

SAL COMMUNIS. - *Vide Murias sodæ.*

SALIX.

Willd. g. 1756. *Smith, g.* 409. *Diæcia Diandria.*—Nat. ord. *Amentaceæ.*

SALIX CAPREA. *Willd. sp.* 101. *Smith, sp.* 40. *Cortex.* L. D.

Great round-leaved Sallow. The bark.

SALIX ALBA. *Willd. sp.* 33. *Smith, sp.* 45. D.

Common White Willow. The bark, and the bark of the root.

The species or varieties of the willow, which have been noticed by botanical writers, are very numerous; and it is probable that the bark of all of them possesses properties in many respects similar. In 1763, Mr. Stone, an English clergyman, presented a paper to the Royal Society, on the beneficial effects of the *salix alba*, or white willow, in intermittent fevers. The barks of these as well as of other indigenous species of willow, have been recommended as substitutes for cinchona. The white willow was first introduced into practice by Mr. Stone; and strong evidence in favour of the use of the broad-leaved, in debility, intermittents and foul ulcers, has been published by Messrs. James, White and Wilkinson; and Dr. Cullen, on this authority, and from the sensible qualities it possesses, recommends it, in his *Materia Medica*, as a substitute for the cinchona. Mr. Stone gathered the bark in summer, when it was full of sap; dried it by a gentle heat, and gave a drachm of it powdered every four hours, betwixt the fits. In a few obstinate cases he mixed it with one-fifth part of the cinchona. Some judicious physicians here, says Dr. Cutler, made trial of the bark of white willow, and recommend it as a valuable substitute for the Peruvian bark. They have used principally the bark of the root. These barks possess very considerable astringency and bitterness, but differ chemically from cinchona in containing no tannin. An ounce and a half of the dried bark should be first macerated six hours in two pounds of water, and then made to boil in it for ten or fifteen minutes. An ounce or two of this decoction may be given three or four times a-day, or oftener.

SALIX FRAGILIS. *Cortex.* D.

Crack-willow. The bark.

Wild. sp. 10. *Smith, sp.* 17. *Dioecia Diandria.*—Nat. ord. *Amentaceæ.*

This willow grows wild in England. The bark possesses a considerable degree of bitterness and astringency. Different species of willow have at different times been recommended as substitutes for the Peruvian bark: they are certainly powerful astringents, but in point of efficacy in the cure of disease, they are in no degree to be compared with the Peruvian bark, from which they differ in containing no cinchonin.

SALIX LATIFOLIA. *Broad-leaved Willow. The bark.*

This possesses greater medicinal properties than any of the other species of salix; and is now substituted by many British physicians for the Peruvian bark. Three British pamphlets upon this subject have been published within a few years; the last, by Dr. Wilkinson (1803) is replete with encomiums on the remedy in question. This species of salix may be distinguished by the shape of its leaves from all others, except the salix pentandria, or bay-leaved willow. But the leaves of the latter are smooth and shining, and of a deeper green; nor have they the downy appearance on the under surface, which is so remarkable in the *salix caprea* or *latifolia*. It is found in woods and hedges on hilly situations, and delights in cold, clayey, moist ground. The most proper time to gather the bark, is in May or June; it should be cut in small pieces, and dried in the shade. This bark is very astringent to the taste, and somewhat bitter, but it loses the latter quality when dry. Dr. Wilkinson directs one ounce and a half of the coarse powder of the bark to be infused in one quart of water for six hours; then to boil it over a gentle fire for a quarter of an hour, and strain for use: of this the ordinary dose is two or three large spoonfuls, three or four times a-day; but in the ague and fever, one or two ounces may be given every third hour, in the interval of the fit. The strong decoction of this bark resembles port wine in colour, for which, by several who have seen it in vials, it has been mistaken.

Dr. Wilkinson relates sixteen cases of disease, in which this bark was employed with decided advantage, and from which he does not hesitate to assign to it virtues greatly superior to those of the cinchona: in particular he relates a case of extreme emaciation from an ulcerated foot, which was perfectly cured, after having resisted the continued use of Peruvian bark, and the exertion of the physicians of two public charities. It is, doubtless, a remedy of considerable efficacy, and is strongly recommended on account of its cheapness, and the facility of procuring it. It appears to be useful in most cases where the cinchona is usually resorted to.

The attention of medical men should be directed to the inquiry, whether the *salix latifolia* may be found in the United States, as it promises to afford a valuable substitute for the *cinchona;* the price of which has become exorbitant, and its quality greatly impaired by base and fraudulent adulterations.

SALVIA OFFICINALIS. *Folia. Ed.* D.

Sage. The leaves.

Willd. g. 63. *sp.* 7. *Diandria Monogynia.*—Nat. ord. *Verticillatæ.*

Sage is a perennial plant, a native of the south of Europe, and cultivated in our gardens. There are several varieties of it, differing in size, or in the colour of its flower, but their properties are the same. They have a peculiar aromatic smell, and a warm aromatic taste, with some degree of bitterness and astringency.

Medical use.—In its effects sage agrees with other aromatics. It is stimulant, carminative, and tonic. In cold phlegmatic habits, it excites appetite, and proves serviceable in debilities of the nervous system. The best preparation for these purposes is an infusion of the dry leaves, drunk as tea; or a tincture, or extract, made with rectified spirit, taken in proper doses; these contain the whole virtues of the sage; the distilled water and essential oil, only its warmth and aromatic quality, without any of its roughness or bitterness. Aqueous infusions of the leaves, with the addition of a little lemon-juice, prove an useful diluting drink in febrile disorders, being sufficiently agreeable to the palate.

SAMBUCUS NIGRA. *Flores, Baccæ, Cortex. Ed.* L. D.

Common Elder. The inner bark, flowers, and berries.

Willd. g. 569. *sp.* 3. *Smith, g.* 157. *sp.* 2. *Pentandria Trigynia.*—Nat. ord. *Dumosæ.*

This tree is frequent in hedges; it flowers in May, and ripens its fruit in September. The berries contain malic acid, and have a sweetish, not unpleasant, taste; nevertheless, eaten in substance, they offend the stomach. For the market they are gathered indiscriminately from the Sambucus nigra and ebulus, a very venial fraud, as their effects are exactly the same. They are, however, easily distinguished, by the latter, when bruised, staining the fingers of a red colour, and the former of the colour of a withered leaf.

Medical use.—The expressed juice, inspissated to the consistence of a rob, proves an useful aperient medicine; it opens obstructions of the viscera, promotes the natural evacuations, and, if continued for a length of time, does considerable service in various chronical disorders. The inner green bark of its trunk is gently cathartic. An infusion of it in wine, or the expressed juice, in the dose of half an ounce or an ounce, is said to purge moderately, and in small doses to prove an efficacious deobstruent, capable of promoting all the fluid secretions. The young leaf-buds are strongly purgative, and act with so much violence as to be deservedly accounted unsafe. The flowers are very different in quality: these have an agreeable aromatic flavour, which they yield in distillation with water, and impart by infusion to vinous and spiritous liquors.

Officinal Preparations.

Succus spissatus sambuci nig. E. L. *vide Succi spissati.*
Unguentum sambuci, L. D. - - *Unguenta.*

SANTALUM RUBRUM. - *Vide Pterocarpus.*

SANGUIS DRACONIS. - *Vide Pterocarpus.*

SANGUINARIA CANADENSIS. *Blood Root. Puccoon.*

The seeds and root.

This is a common plant in the United States, and is called also red root, Indian paint, turmeric. The leaves are roundish, and deeply indented; stems naked, supporting single flowers; blossoms white. It grows in rich woodland, and flowers in April. When the fresh root is broken, a juice issues in large drops resembling blood. The Indians used it for painting themselves, and highly esteemed it for its medicinal virtues. It is emetic and cathartic, but must be given with caution. An infusion of the root in rum or brandy, makes a good bitter. If it be planted in rich shady borders, it flourishes well in gardens: and the large leaves and blossoms make an agreeable appearance soon after the frost is out of the ground.

[*Cutler's account of indigenous vegetables.*]

From an Inaugural Dissertation on *Sanguinaria*, by Dr. Downy (Philadelphia, 1803), the following useful information is obtained. "The root is from one fourth to half an inch in diameter, from three to four inches long, sending forth numerous stringy fibres, two or three inches long: a coloured liquor is thrown out when the root is broken. The stalk is six or eight inches long, and of the thickness of a quill. The leaves are cordate and lobate.

"There is but one leaf to a stalk; on each lobe, one large fibre, of a light yellow colour, may be seen running from the stalk, and many smaller ones branching from it in all directions. The powdered root, in doses of fifteen or twenty grains, is powerfully emetic. Eight grains is a mild dose, and is but little inferior to ipecacuan. It contains a large proportion of gum, some resin, and extractive matter. The first and last are the most active parts.

"The leaves and seeds of the plant are powerful and diffusible stimuli; promote sweat, and are given in Maryland with that view to horses, to promote the shedding of their coats. A tincture of the root is used to prevent the intermittent fever; and a decoction of the roots to cure the dysentery. In one case, it operated powerfully upon the uterus, and produced abortion; hence it might be useful in female obstructions."

The seeds are said, by professor Barton (collection for Materia Medica) to possess nearly the same quality of those of stramonium, viz. they induce fever, delirium, dilated pupil, &c. A deleterious property resides also in the leaves. The root has been used in gonorrhœa, for the bites of serpents, and in bilious diseases; and the juice is employed to destroy warts. In some parts of New England, a spirituous tincture of the root is used as a tonic bitter. It is expectorant, and is apparently allied in properties to rattle-snake root.

The medical properties of *Sanguinaria* have been investigated by numerous trials in the hands of Aaron Dexter, M. D. professor of chemistry and Materia Medica, university at Cambridge. The experimental tests of this gentleman, corroborated by those of other respectable physicians, afford the most satisfactory evidence, that it possesses very active powers, and that in doses of one grain of the powdered root, or ten drops of a saturated tincture, it proves efficacious as a stimulant and diaphoretic. But in large doses, it excites nausea and vomiting, and if incautiously administered, it is of dangerous tendency.

It is said to be efficacious in removing jaundice, and is believed to be a chief ingredient in the quack medicine known by the name of Rawson's bitters.

Dr. Israel Allen, of Sterling, and others, have had recourse to this medicine as a substitute for digitalis, in coughs and pneumonic complaints; and on some occasions it is said to have proved equally efficacious, and less debilitating than foxglove, when exhibited with the same precautions.

The dose of the saturated tincture of the root is from thirty to eighty drops twice in the day, increasing or decreasing the number as particular circumstances may require.

SAPO. *Sapo ex oleo olivarum et soda confectus. Ed.*

SAPO. L. SAPO DURUS HISPANICUS. D.

Hard Soap, composed of Soda and Olive Oil.

D.	*Zeep.*	P.	*Sabao.*
DA.	*Sæbe.*	POL.	*Mydlo.*
F.	*Savon.*	R.	*Mülo.*
G.	*Seife.*	S.	*Jabon.*
I.	*Sapone.*	SW.	*Tval, Grüne Sapa.*

SOAPS are combinations of the fluid or concrete fixed oils with alkalies, earths, or metallic oxyds. The alkaline soaps have an unpleasant taste and peculiar smell, form a milky solution with water, and a transparent one with alcohol, and are powerfully detergent. White soap is made of soda and olive oil or tallow. Brown soap contains also resin. Soft soap consists of potass and whale oil: the white spots in it are from the addition of a little tallow. The volatile liniment of the pharmacopœias is a soap of ammonia and olive oil. The alkaline soaps are decomposed by all the earthy salts. The alkali of the soap combines with the acid of the salts, and an earthy soap is formed from the union of the earth and oil. The earthy soaps are insoluble in water. The alkaline soaps are decomposed in the same way by the metallic salts. The metallic soaps are also insoluble in water: many of them are soluble in oil, and some of them in alcohol.

Soap is of two kinds, hard and soft, hard when it is made with soda, and soft when made with potass. The latter is a strong, but coarse soap, and in medicine is only used externally as a detergent and cataplasm. The officinal species of the former is composed of olive oil and soda. It is only prepared in the countries which produce the oil. For medicinal use we prefer the Spanish.

It should be white and hard, dissolve entirely in water and in alcohol, forming with the former a milky, and with the latter a transparent solution: the solutions should froth freely on agitation. It should not be variegated in its colour, feel greasy or moist, or be covered with a saline efflorescence; and the solutions should not have a rancid smell or taste. Some of the foreign dispensatories are so very particular about the nature of the soap used in medicine, as to direct it to be prepared by the apothecary, by simply triturating, without the assistance of heat, Provence oil, with half its weight of a solution of soda, of the specific gravity of 1.375, until they unite.

Soap is decomposed by all the acids, earths, and earthy and metalline salts. The acids combine with the alkali, and separate the oil. The earths form an insoluble earthy soap with the oil, and separate the alkali; while with the salts there is a mutual decomposition, their acid combines with the alkali, and earthy or metalline soaps are formed.

Medical use.—The detergent property of soap, or the power it possesses of rendering oily and resinous substances miscible with water, has given rise to very erroneous notions of its medical virtues. It was supposed to render such substances more readily soluble in the juices of the stomach, and in the fluids of the body, and to be well fitted for dissolving such oily or unctuous matters as it may meet with in the body, attenuating viscid juices, opening obstructions of the viscera, and deterging all the vessels it passes through. It has likewise been supposed a powerful menstruum for the urinary calculus; and a solution of soap in lime-water, has been considered as one of the strongest dissolvents that can be taken with safety into the stomach; for the virtue of this composition has been thought considerably greater than the aggregate of the dissolving powers of the soap and lime-water when unmixed.

How erroneous these ideas are, appears evidently, when we recollect the very easy decomposition of soap, which renders it perfectly impossible that it should enter the circulating system, or indeed come into contact with the fluids even of the mouth, without being decomposed As to the solution of soap in lime-water, we may observe, that it is only a clumsy way of exhibiting a solution of soda; for the soap is decomposed, an insoluble soap of lime is formed, and the soda remains in solution. The internal use of soap should therefore be confined, in our opinion, to the giving form to other substances which are not decomposed by it, and to decompose metallic poisons when they have been taken into the stomach. For this last purpose, a tea cupful of a solution of soap, in four times its weight of water, may be drunk every three or four minutes, until a sufficient quantity be taken.

Applied externally, it is a very powerful detergent, and combines the stimulating properties of the alkali with the lubricating nature of the oil. In this way it often proves a powerful discutient, and a useful application to sprains and bruises.

Officinal Preparations.

Tinctura saponis, E. - -	*vide Tincturæ.*
saponis cum opio, E. -	*Idem.*
Linimentum saponis, L. D. -	*Idem.*
Spiritus ammoniæ suc. L. D. -	*Tincturæ volatiles.*
Pilulæ aloeticæ, E. - - -	*Pilulæ.*
aloes cum assa fœtida, E. -	*Idem.*
scillit. L. D. - - -	*Idem.*
stibii compositæ, D. - -	*Idem.*
Ceratum saponis, L. D. - -	*Unguenta.*
Emplastrum saponis, E. L. D. -	*Idem.*

SARSAPARILLA. - - - *Vide Smilax.*

SASSAFRAS. - - *Vide Laurus Sassafras.*

SCAMMONIUM. - - *Vide Convolvulus.*

SCILLA MARITIMA. *Radix. Ed.* L. D.

Squill. The root.

Willd. g. 640. *sp.* 1. *Hexandria Monogynia.*—Nat. ord. *Liliaceæ.*

D.	*Zeeajuin, Squille.*	P	*Cebola alvarraa.*
DA.	*Skille, Strandlögrod.*	POL.	*Cobula zamorska.*
F.	*Scille, Oignon marin.*	R.	*Luk morskii.*
G.	*Meerzwiebel.*	S.	*Cebolla alburrana.*
I.	*Scilla, Cipolla marina.*	SW.	*Skilla, Hafslö.*

The squill is a perennial bulbous-rooted plant, which grows wild on the sandy shores of Spain, Portugal, north of Africa, and the Levant.

The root is about the size of the fist, pear-shaped, with the apex upwards, and consists of fleshy scales, attenuated at both edges, surrounded by other scales, which are arid, shining, and so thin that the root at first sight seems to be tunicated. The recent roots are full of a white viscid juice, have scarcely any smell, but a very bitter, nauseous, and extremely acrid, taste. Rubbed on the skin, it inflames and blisters.

It is more commonly met with in the shops, in the form of the dried scales, which should be brittle, semi-pellucid, smooth, but marked with lines, and when chewed, should feel tenacious, and taste very bitter, without manifest acrimony.

The active constituent of the squill is the acrid principle; and, therefore, it becomes almost inert by too much drying, or by being kept too long in the form of powder. It also contains bitter extractive, much mucilage, albumen, and starch.

Medical use.—Given internally in large doses, it produces purging and vomiting, sometimes even strangury, bloody urine, inflammation and erosion of the stomach. In smaller doses it proves an useful expectorant and diuretic, and it is said to lessen the frequency of the pulse.

Squill is sometimes given as a general stimulant in typhus, especially to cattle. But it is much more frequently exhibited as an expectorant where the lungs are loaded with viscid matter, and as a diuretic in dropsical cases, for which purpose it is commonly conjoined with calomel.

The dose of dried squill is one or two grains three or four times a-day; and the most commodious form for the taking of squills, unless when designed as an emetic, is that of a bolus, or pill: liquid forms are to most people too offensive, though these may be rendered less disagreeable both to the palate and stomach by the addition of aromatic distilled waters.

Officinal Preparations.

Acetum scillæ, L. D. - - -	*vide Aceta medicata.*
Conserva scillæ, L. - - - -	*Conservæ.*
Mel scillæ, L. D. - - - -	*Mella Medicata.*
Oxymel scillæ, L. - - - -	*Idem.*
compositum, - - -	*Idem.*
Pilulæ scillæ, E. L. D. - - - -	*Pilulæ.*
Scilla maritima exsiccata, E. L. D. -	
Syrupus scillæ maritimæ, E. - - -	*Syrupi.*
Tinctura scillæ, L. D. - - -	*Tincturæ.*

SCILLA MARITIMA EXSICCATA. *Ed.*

Dried Sea Squill.

Cut the root of the sea-squill, after having removed its external coat, transversely into thin slices, and dry it by a gentle heat. The sign of its being properly dried is, that although rendered friable, it retains its bitterness and acrimony.

By this method the squill dries much sooner than when its several coats are only separated; the internal part being here laid bare, which, in each of the entire coats, is covered with a thin skin, which impedes the exhalation of the moisture. The root loses in this process four fifths of its original weight; the parts which exhale with a moderate heat appear to be merely watery: hence six grains of the dry root are equivalent to half a drachm of it when fresh; a circumstance to be particularly regarded in the exhibition of this medicine. But if too great heat has been employed to dry it, it becomes almost inert, and it also loses by long keeping in the state of powder.

Dried squills furnish us with a medicine, sometimes advantageously employed as an emetic, often as an expectorant, but still more frequently as a powerful diuretic.

SCROPHULARIA NODOSA. *Herba.* D.

Knotty-rooted Figwort. The herb.

Willd. g. 1152, *sp.* 2. *Smith, g.* 285, *sp.* 1. *Didynamia Angiospermia.* Nat. ord. *Personatæ.*

This is a perennial plant, growing in woods, and under hedges. It flowers in July. The roots are grey and knotty, and have a nauseous smell, and a sweet but somewhat acrid taste, both of which they partly lose by drying.

SCUTELLARIA LATERIFLORA.

Blue Scull-cap. Hooded Willow Herb. The plant.

THE scutellaria is perennial, of which there are numerous species indigenous to the United States. The plant is found in great abundance on the banks of rivers and the borders of ponds; flowering in July or August. The stem is square, branched, and attains the height of from one to three feet. The leaves are opposite, narrow-pointed, on long foot-stalks. The racemes are axillary and lateral, bearing small violet coloured blossoms, intermixed with small leaves. The calyx is hooded, or helmet-formed, from whence originated the generic name of Scull-cap or Scutellaria. It is now introduced here on account of its recently reputed efficacy as an antidote against the effects of *canine madness*. Should this plant ultimately prove a successful remedy for a disease so truly deplorable in its nature, and destructive in its consequences, no encomiums can surpass its merit even if recorded in letters of gold. The remedy was for many years a secret, in the possession of a family by the name of Lewis, in West Chester county, and in 1809 it was promulgated by Mr. R. Bowne, of New York, accompanied with strong evidence in favour of its antidotal powers. To the publication of Mr. B. [Med. Repos. Hexade 3. Vol. 2. No. 3.] was annexed an accurate engraving of this species of scutellaria, yet in his description he erroneously attached to it a specific name belonging to a different species, the *Scutellaria Galericulata*. This last species is to be distinguished by its axillary flowers in pairs, on pedicles from the alæ of the leaves, and pendulous.

With regard to the anti-rabid virtues of scutellaria, it is to be observed, that subsequent to its promulgation, it has been investigated and tested by practical experiment, so far as opportunity and the nature of the subject permitted. A mass of evidence in favour of its efficacy may be found in a production entitled, "Observations on Hydrophobia," lately published by Dr. Thacher. As, however, it is still doubtful, and yet desirable to have the fact clearly ascertained how far this plant is entitled to the character of a specific preventative of hydrophobia, every humane person must consider himself warranted in resorting to the use of it on any occasion which may offer, either of alleviating the misery and distress of mankind, or of arresting the devastation among the brute creation.

This remedy is to be given in the form of strong infusion of the leaves every morning, fasting, and to be continued for several weeks. For cattle it may be mixed with their food or drink.

SECALE CORNUTUM. *Ergot, or Spurred Rye.*

RYE is subject to a disease, particularly when a hot summer succeeds a rainy spring; the spurious substance thus produced is in France called ergot, from its resemblance to a cock's spur, but in England it is termed *horned rye*, spur, or *hornseed*. In Cullen's Materia Medica it is termed secale cornutum. Bread made of this kind of rye has a nauseous acrid taste, and produces numerous fatal diseases, as spasm, extreme debility, and mortification of the extremities. At various periods subsequent to the year 1596, the most alarming and destructive consequences were occasioned among the poor in France and England, by the use of bread made of such damaged grain. Horned rye is said to have been equally fatal to brutes and fowls, when fed with it by way of experiment.

Rye is affected with the disease in this country similar to that in Europe, particularly summer rye, in low, wet situations. The singular production called ergot, is found projecting from among the leaves of the spike, or ear; it is a long crooked excrescence, resembling the spur of a cock, pointed at its extremities, of a dark brown colour externally, and white within. Some spikes are occupied wholly by spurs, while others have two or three only, interspersed with genuine seeds of rye.

The medicinal properties of this extraordinary substance were first announced to the public by Dr. John Stearns, of Saratoga county, in a letter to Dr. Akerly, of New York, in which the article is extolled for its powers, *ad partum accelerandum.* It is now satisfactorily ascertained, that ergot is capable of exerting a specific action on the uterus, and of augmenting the powers of this organ during the efforts of parturition. Hence, in lingering and laborious cases it is found to be an invaluable medicine, speedily inducing forcible pains, and greatly expediting delivery. For obvious reasons, however, it is proper to caution against employing this powerful parturient in cases of preternatural presentation. In the form of powder, it is given from five to ten or fifteen grains; but it has sometimes been found more active in the form of decoction, half a drachm of the powder being gently boiled in half a pint of water; one third may be given every twenty minutes, until proper pains shall have commenced. A large dose of decoction, or of pulvis *ad partum accelerandum* will excite nausea and vomiting. No example of ergot having induced deleterious effects, has come to our knowlege; but there is much reason to suppose that it is capable of producing abortion at any stage of pregnancy.

We have now the satisfaction of deriving instruction on this subject from the experience of some practitioners of eminence in our own metropolis. A writer in the New England Medical Journal, No. I. Vol. I, asserts that it has not appeared to relax the rigidity of the muscular fibres, "but it has almost uniformly increased the efforts of the uterus to expel the fœtus." And also, that occasions have occurred, authorizing a caution of the highest importance in practice. The powerful and continued efforts of the uterus, from the effects of ergot, prevent the retreat of the child's head after being advanced, and that the unceasing pressure has in some instances occasioned the death of the child. Let this circumstance, therefore, have its due effect, and induce the utmost precaution in the administration of this powerful article. In one case of amenorrhœa, Dr. Beckman administered one drachm of ergot in decoction; bearing down pains immediately ensued, and the suppression was the next day removed. It has been successfully employed, on similar occasions, by other practitioners. However extraordinary it may appear, the assertion is from the most creditable source, that ergot has often proved one of the most efficacious remedies in menorrhagia in all its stages; and moreover, it restrains in a remarkable manner the *profusio uterina* following the separation of the placenta in parturition.

In two instances ergot is stated to have been administered in considerable quantities during the early stage of pregnancy. In one case, about four drachms were taken within a few days; the consequence was regular pressing down pains, resembling the severest throes of parturition; and these recurred with every repetition of the medicine, yet on examination, the os uteri was not much dilated. In neither case was the natural term of gestation interrupted by the operation of the medicine.

The fact has long been known among our farmers, that rye itself possesses a quality of inducing abortion in females of the animal tribe, and they carefully withold that grain from such, during their periods of gestation.*

SESAMUM ORIENTALE.

Oily Grain. Benne. The Leaves and Seeds.

This originally an African plant has become well known by the name of *benne* in South Carolina and Georgia, or the Vangloe of the West Indies. It is an annual plant, rising with an herbaceous four cornered stalk, two feet high, sending out a few short side branches; the leaves are oblong, oval, a little hairy, and stand opposite. The flowers terminate the stalk in loose spikes; they are small, of a dirty white colour, shaped somewhat like those of foxglove. After the flowers are past, germen turns to an oval acute pointed capsula, with four cells filled with oval compressed seeds, which ripen in autumn. Of late years the seeds have been introduced into the states of Georgia and South Carolina, by the African negroes, where the plant succeeds extremely well; and they boil a handful of the seeds with their allowance of Indian corn, which forms a nourishing food. But the excellency of these seeds, consists in their yielding a larger proportion of oil than any other vegetable with which we are acquainted. One hundred weight of seed will produce ninety pounds of oil of an equal and even preferable quality to Florence oil. It will keep good many years without contracting any rancid smell or taste, and when the warm taste of the seed, discovered in the oil when first drawn, is worn off, it becomes quite mild, and is found to be a pleasant and agreeable substitute for all the purposes of salad oil. The benne oil in some parts of the southern states is esteemed as a gentle laxative, in those cases where the more nauseous castor oil is usually employed. It also burns well in lamps. The leaves of this plant by infusion or decoction are found to afford an excellent mucilage, well adapted to all the intentions of that class of remedies, and in 1803, was used with

* See Prescott's Dissertation on the Nat. Hist. of the Secale Cornutum, &c. and a review of the same in the Eclectic Repertory, Vol. 4, No. 2.

the most marked good effect, in an epidemic dysentery in South Carolina. Considering, therefore, the great utility and importance of the benne plant, its cultivation by our patriotic planters cannot be too strongly recommended.

SILENE VIRGINICA.

Ground Pink.

This species of silene or catch-fly, is abundant in many parts of the United States. Some of the Indians say it is a poisonous plant. In decoction, the root has been found a very efficacious anthelmintic.*

SINAPIS.

Willd. g. 1246. *Smith, g.* 312. *Tetradynamia Siliquosa.*—Nat. ord. *Siliquosæ.*

D.	*Mosterd.*	P.	*Mostarda.*
DA.	*Senep.*	POL.	*Gorrozyka.*
F.	*Graine de Moutarde.*	R.	*Gortschiza.*
G.	*Senfsaat.*	S.	*Mostaza.*
I.	*Mostarda, Senapa.*	SW.	*Senap.*

SINAPIS ALBA. *Willd. sp.* 4. *Smith, sp.* 2. *Semen. Ed.* D.

White Mustard. The seeds.

SINAPIS NIGRA. *Willd. sp.* 5. *Smith, sp.* 3. *Semen.* L.

Common Mustard. The seeds.

These plants are both annual, both grow wild in England, and possess similar virtues.

They produce small round compressed seeds, which have an acrid bitterish taste, and a pungent smell when reduced to powder. The common mustard has blackish seeds, and is more pungent than the white.

They impart their taste and smell in perfection to aqueous liquors, whilst rectified spirit extracts extremely little of either: the whole of the pungency arises with water in distillation. Committed to the press, they yield a considerable quantity of a soft insipid oil, perfectly void of acrimony: the cake left after the expression, is more pungent than the mustard itself.

Medical use.—Mustard-seed is swallowed entire, to the quantity of a table spoonful or more, to stimulate the stomach in some cases of dyspepsia, and to excite the peristaltic motion of the intestines, especially when they are torpid, as in paralysis. The powder made into a paste with water, is commonly used as a condiment with animal food;

* Barton's Collections, Part I. p. 39.

infused in water, it proves emetic when taken in considerable doses, and in smaller ones, acts as a diuretic and aperient; but it is more frequently applied externally as a topical stimulus, made into a paste or sinapism with vinegar and bread-crumb. A weak infusion of mustard seed has been employed with success to check vomiting.

Officinal Preparations.

Oleum sinapis, L. D.	- - - -	*vide Olea fixa.*
Cataplasma sinapis, L. D.	- - - -	*Cataplasmata.*
Emplastrum meloës vesic. compositum, E.	-	*Unguenta.*

SISYBRIUM NASTURTIUM. *Herba. Ed.*

Common Water-Cresses. The recent herb.

Willd. g. 1238. *sp.* 1. *Smith, g.* 306. *sp.* 1. *Tetradynamia Siliquosa.*—Nat. ord. *Siliquosæ.*

This plant is perennial, and grows wild in clear springs and rivulets throughout Britain. Its leaves remain green all the year, but are in greatest perfection in the spring. They have a quick pungent smell (when rubbed betwixt the fingers,) and an acrid taste, similar to that of scurvy-grass, but weaker. By drying or boiling, it loses its sensible qualities entirely.

Medical use.—It acts as a gentle stimulant and diuretic: for these purposes, the expressed juice, which contains the peculiar taste and pungency of the herb, may be taken in doses of an ounce or two, and continued for a considerable time.

SIUM NODIFLORUM. *Herba.* D.

Procumbent Water Parsnip. The herb.

Willd. g. 544. *sp.* 4. *Smith, g.* 139. *sp.* 3. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

This plant is perennial, and grows wild in rivers and ditches in England. It was formerly alleged to be not only a diuretic, but also an emmenagogue and lithontriptic. With these intentions, however, it is not now employed. Dr. Withering mentions, that a young lady of six years old was cured of an obstinate cutaneous disease by taking three large spoonfuls of the juice twice a-day; and he adds, that he has given repeatedly to adults three or four ounces every morning, in similar complaints. In such doses it neither affects the head, stomach, nor bowels. Children take it readily when mixed with milk.

SMILAX SARSAPARILLA. *Radix. Ed.* L. D.

Sarsaparilla. The root.

Willd. g. 1800. *sp.* 9. *Diœcia Hexandria.*—Nat. ord. *Sarmentaceæ.*

This root is brought from the Spanish West Indies. It consists of a great number of long strings hanging from one head: the long roots, the only part made use of, are of a blackish colour on the outside, and white within, about the thickness of a goose-quill, or thicker, flexible, composed of a very small woody heart, surrounded with fibres running their whole length, which renders them extremely apt to split. They have a glutinous, bitterish, not ungrateful taste, and no smell. Inferior kinds of this root are also sold. They are in general thicker, of a paler colour on the outside, and less white within, with a much thicker woody heart. Neumann got from 960 grains, 360 watery, and 10 alcoholic, extract, and inversely 240 alcoholic, and 120 watery.

Medical use.—It was first brought into Europe by the Spaniards, about the year 1563, with the character of being a specific for the cure of the lues venerea, a disease which made its appearance a little before that time, and likewise of several obstinate chronic disorders. It is, however, a very inert mucilaginous substance; and the diaphoresis, which it is sometimes supposed to produce, is entirely owing to the warm and diluent regimen employed at the same time. More recently, however, it has come into favour for the cure of many cutaneous affections, and especially of syphiloid diseases; and if upon just grounds, it will explain why it should have been so strongly recommended in syphilis, and why it should have failed.

Officinal Preparation.

Decoctum sarsaparillæ, E. L. D. - - *vide Decocta.*

SODA.—*SODA.*

D.	*Souda.*	P.	*Solda, Barilha.*
DA.	*Soda.*	R.	*Solianka.*
F.	*Soude, Barille.*	S.	*Sosa, Soda, Barrilla.*
G.	*Soda, Barrilla.*	SW.	*Souda, Soda.*
I.	*Soda, Barriglia.*		

Sodium, the base of soda, resembles in its appearance silver, has great lustre, and is a conductor of electricity. It fuses at 200° Fahrenheit. It is not volatilized by the heat which melts plate glass. Its specific gravity is 0.9348, water being 1. It absorbs oxygen slowly from the atmosphere, and at a high temperature burns with bright sparks. It decomposes water with effervescence, and is inflamed by nitrous acid.

Protoxyd of sodium, scarcely known; of a dark grey colour.

Soda, of a grey colour, and vitreous fracture, a non-conductor of electricity.

Hydrat of soda, formerly considered as pure soda, contains 22 *per cent.* of water, which cannot be separated by heat, of a greyish white colour, urinous taste, and burning causticity, acting with considerable violence on animal matter. Water, in a certain proportion, when thrown upon it, is absorbed and solidified, with the disengagement of caloric, and a lixivial smell. A larger quantity dissolves it. From the atmosphere it absorbs moisture and carbonic acid, becoming less caustic. In the fire it melts like an oily substance; boils, and is converted into vapour, but is incombustible. It is crystallizable into transparent prismatic crystals. It changes vegetable blues to green; unites with all the acids, oils, sulphur, sulphureted hydrogen, phosphorus, many metallic oxyds, and the earths. It forms the basis of rock-salt, and sea-salt; is obtained from the ashes of marine plants, and exists in some minerals.

Chloryd of sodium (muriat of soda) consists of one proportion of sodium and two of chlorine. It is a non-conductor of electricity. It fuses in a strong red heat, and volatilizes in a white heat. It crystallizes in cubes. It is decomposed by potassium, which attracts its chlorine.

Sodium readily forms sulphurets and phosphurets which are less inflammable than those of potassium.

Potassium and sodium combine readily in various proportions. A small quantity of potassium renders sodium brittle and very soft. A small quantity of sodium renders potassium fluid at a very common temperature, and reduces its specific gravity considerably.

CARBONAS SODÆ IMPURUS. *Ed. Impure Carbonat of Soda.*

SUBCARBONAS SODÆ IMPURUS. L.

BARILLA. D. *Barilla. Fixed mineral Alkali.*

SODA is a very common mineral production. It is the basis of sea salt; and combined with carbonic acid, it is found on the surface of the earth in Egypt, Syria, Barbary, Hungary, &c. and is obtained by the incineration of marine vegetables, especially the salsola soda and kali, the salicornia herbacea, &c. The Spaniards even cultivate these in salt marshes for the sake of the soda. After being cut down, they are dried like hay. A deep pit is then prepared, and a bundle or two of the dried vegetables set on fire are thrown into it. When well kindled, other bundles are thrown in until the pit is filled. When the incineration is completed, the soda is found in the bottom, caked into a solid mass, which is worked like a stony substance. When good, it is firm, hard, heavy, dry, sonorous, spongy, and internally of a blue colour mixed with white spots, does not deliquesce, emits no unpleasant smell on solution, and does not leave a large proportion of insoluble matter. Incinerated soda is mixed with potass, muriat of soda, and other saline matters; mineral soda with clay and other earthy substances. The Egyptian soda was reckoned the best; then the Spanish (Barilla); afterwards the Carthaginian; and that prepared from different species of fuci (kelp), is the worst.

But all these carbonated sodas are inferior in purity to those now manufactured in Britain, by decomposing the sulphat of soda.

That commonly used, is obtained by the bleachers as a residuum in their method of preparing oxygenized muriatic acid, by decomposing muriat of soda with sulphuric acid and the black oxyd of manganese.

The sulphat of soda is decomposed,

1. By carbonat of potass. Mr. Accum has described the manipulations of this mode. A boiling concentrated solution of about 560 pounds of American potashes is ladled into a boiling solution of 500 pounds of sulphat of soda, agitated together, and the whole quickly heated to ebullition. It is then drawn off into leaden cisterns, lined with thick sheet-lead, and allowed to cool in a temperature which should not exceed 55°.

   The fluid is then drawn off, and the mass of salt washed with cold water, to free it from impurities, and again put into the boiler with clean water. This second solution is also evaporated at a low heat, as long as any pellicles of sulphat of potass form on its surface, and fall to the bottom of the fluid. The fire is then withdrawn, and the fluid ladled out into the cistern to crystallize. Unless the fluid be allowed to cool pretty low before it is removed to crystallize, the salt obtained will contain sulphat of potass.
2. By acetat of lime. The acetous acid for this purpose is obtained by distillation from wood, during its conversion into charcoal.
3. By litharge or sub-acetat of lead. Very pure carbonat of soda is prepared by this process in the vicinity of Edinburgh.
4. By decomposing the sulphuric acid by charcoal. About 500 cwt. of sulphat of soda, and 100 cwt. of charcoal are ground together, and the mixture exposed in a reverberatory furnace until it becomes pasty. It is then transferred into large casks, and lixiviated. The ley is afterwards evaporated and crystallized. By this or a similar process, very pure carbonat of soda is manufactured in the west of Scotland.

On the continent, muriat of soda is sometimes decomposed by potass, and sometimes by lime.

Carbonat of soda is an article of the greatest importance in many manufactures.

Medical use.—In medicine, it possesses similar virtues with the carbonat of potass; and from its crystallizability and efflorescence when exposed to the air, it is preferable to it, because its dose may be more accurately ascertained, and it may be given either in the form of powder, or made up into pills.

Officinal Preparation.

Carbonas sodæ, E. L. D.

CARBONAS SODÆ; olim, SAL ALKALINUS FIXUS FOSILIS PURIFICATUS. *Ed.* D.

Carbonat of Soda, formerly *Purified Fixed Fossil Alkaline Salt.*

SODÆ SUB-CARBONAS. L. *Sub-carbonat of Soda.*

Take of

Impure carbonat of soda, any quantity.

Bruise it; then boil in water till all the salt be dissolved. Strain the solution through paper, and evaporate it in an iron vessel, so that after it has cooled, the salt may crystallize. (E.)

THESE directions are principally intended for the purification of the Spanish barilla, which is a fused mass, consisting indeed principally of carbonat of soda, but also containing charcoal, earths, and other salts. From the two first causes of impurity it is easily separated by solution and filtration, and the salts may be separated by taking advantage of their different solubility in cold and in hot water. Frequently the soda does not crystallize freely, from not being saturated with carbonic acid, which is the reason why the London college order the solution to be exposed to the atmosphere for eight days, that it may absorb carbonic acid, before they attempt the crystallization of the salts. But the preparation of carbonat of soda, by the decomposition of sulphat of soda, has now become a manufacture, and is carried to such perfection, that its further purification is almost unnecessary for the purposes of the apothecary.

The primitive form is an octohedron, with a rhombic base of 60° and 120°, the planes of which meet at the summit at 104, and at the base at 76°.

OFFICINAL PREPARATIONS.

Aqua super-carbonatis sodæ, E.
Phosphas sodæ, E.
Tartris potassæ et sodæ, E. L. D.
Carbonas ferri præcip. E. - - - - - *vide Ferrum.*

SODÆ SUB-CARBONAS EXSICCATA. L.

Dried Sub-carbonat of Soda.

CARBONAS SODÆ SICCATUM. D. *Dried Carbonat of Soda.*

Liquefy, over the fire, crystals of carbonat of soda, in a silver crucible, and then, increasing the heat, stir the liquefied salt, until, by the consumption of the water, it become dry. Reduce it to fine powder, and keep it in close vessels. (D.)

SUB-CARBONAT of soda, deprived of its water of crystallization, is a very excellent remedy, for which we are indebted to Dr. Beddoes: he desires it to be prepared by simply exposing the pounded crystals before the fire: which appears to be preferable to the process directed by the Dublin college, in which much of the carbonic acid may be expelled. By simple efflorescence, crystallized carbonat of soda loses more than half is weight, and falls down into a fine permanent powder. Whenever soda is prescribed in the form of pills, the effloresced carbonat is to be used, as, when made of the crystallized salt, they crack, and fall to pieces by the action of the air upon them.

Medical use.—Dr. Beddoes first recommended the powder of effloresced soda, in calculous complaints, as a substitute for the super-carbonated alkaline waters, when these produced giddiness, or were too expensive; but its use has since been extended much farther; and it is found to be, not only on excellent antacid, but seems almost to possess specific virtues in affections of the urinary organs. One or two scruples may be given, in the course of the day, in the form of powder, or in pills, made up with soap and some aromatics.

SODÆ CARBONAS. L. *Carbonat of Soda.*

Take of
- Subcarbonat of soda, one pound;
- Subcarbonat of ammonia, three ounces;
- Distilled water, a pint.

Add the ammonia to the subcarbonat of soda dissolved in the water; then apply a heat 180°, in a sand bath, for three hours, until all the ammonia be expelled. Lastly, set it aside to crystallize.

In the same manner evaporate the residuary liquor, and set it aside again to crystallize.

This salt bears the same relation to the subcarbonat of soda that the carbonat of potass does to its subcarbonat. Klaproth first described it, and says it consists of 39 carbonic acid, 38 soda, and 23 water. It is found native in hard striated masses in the province of Sukena in Africa, and is called *Trona.*

Mr. Phillips objects on calculation to the quantity of carbonat of ammonia employed, as unnecessarily too large; for in subcarbonat of soda, the alkali is to the acid as three to two, and in the carbonat they are equal, and in 100 parts of crystals of subcarbonat are 35 of salt, consisting of 21 soda and 14 acid, requiring therefore 7 additional acid to neutralize it. Now, as 100 carbonat of ammonia contains 50 acid, it follows, that 14 will furnish the necessary acid, and that 25, the quantity ordered by the college, is excessive.

AQUA SUPER-CARBONATIS SODÆ. *Ed.*

Solution of Super-Carbonat of Soda.

This is prepared from ten pounds of water, and two ounces of carbonat of soda, in the same manner as the water of super-carbonat of potass.

By supersaturating soda with carbonic acid, it is rendered more agreeable to the palate, and may be taken in larger quantities, without affecting the stomach. This is now in common use as a cooling beverage, under the title of soda-water; and it may not be unnecessary to mention, that its place cannot be at all supplied by what is sold as soda powder, which is not a supercarbonat of soda, but merely a mixture of salts, which effervesces on being dissolved. Indeed, one moment's reflection must show the impossibility of reducing to a solid form, a salt which cannot exist in solution, except under very great pressure.

PHOSPHAS SODÆ. *Ed.*

Phosphat of Soda.

Take of
Bones burnt to whiteness, and powdered, ten pounds;
Sulphuric acid, six pounds;
Water, nine pounds.

Mix the powder with the sulphuric acid in an earthen vessel; then add the water, and mix again. Then place the vessel in a vapour bath, and digest for three days; after which dilute the mass with nine pounds more of boiling water, and strain the liquor through a strong linen cloth, pouring over it boiling water, in small quantities at a time, until the whole acid be washed out. Set by the strained liquor, that the impurities may subside, decant the clear solution, and evaporate it to nine pounds. To this liquor, poured from the impurities, add carbonat of soda, dissolved in warm water, until the effervescence cease. Filter the neutralized liquor, and set it aside to crystallize. To the liquor that remains after the crystals are taken out, add a little carbonat of soda, if necessary, so as to saturate exactly the phosphoric acid, and dispose the liquor, by evaporation, to form crystals. Lastly, the crystals are to be kept in a well-closed vessel. (E.)

The first part of this process consists in destroying the gelatine of the bones by the action of heat. When burnt to perfect whiteness, they retain their form, but because friable, and consist of phosphat of lime, mixed with a very little carbonat of lime and carbonat of soda. In performing this part of the process, we must take care not to heat the bones to a bright red, as by it they undergo a kind of semi-fusion, and give out a phosphoric light. The complete combustion of the charcoal is facilitated by the free contact of the air; we must therefore bring every part in succession to the surface, and break the larger pieces.

In the second part of the process, the phosphat of lime in decomposed by the sulphuric acid. This decomposition is however only partial. The sulphuric acid combines with part of the lime, and forms insoluble sulphat of lime. The phosphoric acid separated from that portion of lime, immediately combines with the rest of the phosphat of lime, and forms super-phosphat of lime, which is not further decomposable by sulphuric acid.

The super-phosphat of lime, thus formed, is soluble in water: but as the sulphat of lime, with which it is mixed, concretes into a very solid mass, it is in some measure defended from the action of water. On this account the whole mass is directed to be digested for three days in vapour, by which means it is thoroughly penetrated and prepared for solution in the boiling water, which is afterwards poured on it. It is probably to render the subsequent solution easier, that Thenard directs the bone-ashes to be made into a thin paste (*bouille*) with water, before the sulphuric acid is added to them.

Having thus got a solution of super-phosphat of lime, it is next decomposed by carbonat of soda, dissolved in water. This decomposition, likewise is only partial, as it deprives the super-phosphat of lime of its excess of acid only, and reduces it to the state of phosphat. The phosphat of lime, being insoluble, is easily separated by filtration, and the phosphat of soda remains in solution. According to Thenard, the nicest point in the whole process is the determination of the proper quantity of carbonat of soda to be added. As the phosphat of soda does not crystallize freely unless there be a slight excess of base, he directs that a little more carbonat of soda be added than what is merely sufficient to saturate the excess of acid in the super-phosphat of lime, but not to continue the addition until it cease to produce any precipitate. We must also take care not to carry the evaporation of a solution of phosphat of soda so far as to form a pellicle, for it then concretes into an irregular mass, and does not form beautiful crystals. After each crystallization, we must examine the liquor which remains, and if it be acid, or merely neutral, add to it a little of the solution of carbonat of soda. In this way Thenard got from 2100 parts of bone-ashes, 700 of sulphuric acid, and 667 of carbonat of soda, 885 of phosphat of soda. According to Fourcroy, phosphat of lime consists of 0.41 acid and 0.59 lime, and super-phosphat of lime, of 0.54 acid and 0.46 lime; phosphat of lime, treated with sulphuric acid, is only deprived of 0.24 lime, and changed into 0.76 of super-phosphat, consisting of 0.59 phosphat of lime, and 0.17 phosphoric acid, and it is only with this portion of acid that we are able to combine soda. Fourcroy is also of opinion that phosphat of lime requires only 0.4 of its weight of sulphuric acid to decompose it, whereas 0.6 are employed by the Edinburgh college, and others use even 0.7. This is not only, therefore, a waste of acid, but renders the product impure, by being mixed with sulphat of soda, which is sometimes actually the case in the phosphat of soda of commerce. Besides, as bone-ashes are of very little value, it is better that a portion of them should escape undecomposed than that an excess of acid should be added to them.

Mr. Funcke, of Linz, has discovered a still more economical and expeditious method. It consists in saturating the excess of lime in calcined bones with diluted sulphuric acid, and then dissolving the remaining phosphat of lime in nitric acid. To this solution he adds an equal quantity of sulphat of soda, and then recovers the nitric acid by distillation. The phosphat of soda is then separated from the sulphat of lime, by the affusion of water and crystallization.

Phosphat of soda crystallizes in rhomboidal prisms, terminated by three-sided pyramids. Its taste resembles that of common salt. At

60° it is soluble in four parts of water, and at 212° in two. It effloresces in the air. By heat it undergoes the watery fusion, and at last melts into a white mass. It consists according to Thenard, of 15 phosphoric acid, 19 soda, and 66 water of crystallization. It is decomposed by most of the salts having an earthy base.

Medical use.—Phosphat of soda was introduced into the practice of physic by the ingenious Dr. Pearson of London. It possesses the same medical qualities as sulphat of soda, and the tartrat of potass and soda, being an excellent purge in the quantity of an ounce or ten drachms; and has the peculiar advantage over these two salts of being much less nauseous than they are. Its taste is extremely similar to that of common salt; and when given in a bason of water-gruel, or veal-broth made without salt, it is scarcely perceptible by the palate, and consequently is well adapted for patients whose stomachs are delicate, and who have an antipathy against the other salts. The only objection to its general use is the very great difference between its price and that of sulphat of soda, a difference which might certainly be diminished.

MURIAS SODÆ. *Ed. Muriat of Soda.*

SAL MURIATICUS. L. SAL COMMUNIS. D. *Common Sea-Salt.*

D.	*Zout.*	P.	*Sal.*
DA.	*Salt.*	POL.	*Sol.*
F.	*Sel.*	R.	*Sol.*
G.	*Salz.*	S.	*Sal.*
I.	*Sale.*	SW.	*Salt.*

THIS is the most common of all the neutral salts. It is not only found in immense masses, on and under the earth's surface, and contained in great quantities in many salt springs, but it is the cause of the saltness of the sea.

Native muriat of soda presents two varieties, the lamellar and fibrous. It is found in Poland, Hungary, Spain, England, &c. When not perfectly pure, it is purified by solution and crystallization.

Salt springs occur in many parts of the world. The quantity of muriat of soda contained in these varies, from an inconsiderable quantity, even up to one third.

Sea-water also varies much in strength. It is said to contain most salt in warm climates, and at great depths.

Muriat of soda, as obtained from these natural solutions of it by evaporation and crystallization, is seldom pure, but commonly mixed with earthy muriats, which being deliquescent salts, dispose it to attract moisture from the atmosphere. It may, however, be purified by precipitating the earths by means of carbonat of soda, or by washing the crystallized salt with a saturated solution of muriat of soda, heated to ebullition. In this state it is not capable of dissolving any more muriat of soda, but will dissolve a considerable quantity of the earthy muriats.

Muriat of soda has a pure salt taste, is soluble in 2.8 times its weight of water at 60°, and in 2.76 at 212°. It is not soluble in alcohol. By the action of heat it first decrepitates, then melts, and lastly, sublimes without decomposition. The primitive form of its crystals is cubic, and they are permanent in the atmosphere. According to Kirwan, they consist of 38.88 muriatic acid, 53. soda, and 8.12 water. It is decomposed by the sulphuric and nitric acids, by potass and baryta, by secondary salts containing these, and by metalline salts, whose base forms an insoluble compound with muriatic acid. It is also gradually decomposed by lime, iron, and litharge.

Medical use.—Muriat of soda is one of the most important articles in the arts, and in domestic economy. As a medicine, it is useful in some cases of dyspepsia; and in large doses it is said to check vomiting of blood. It is a common ingredient in stimulating clysters, and is sometimes applied externally as a fomentation to bruises, or in the form of bath, as a gentle stimulus to the whole surface of the body.

Officinal Preparations.

Murias sodæ exsiccatus, E. D.
Acidum muriaticum, E. L. D.
Murias antimonii, E. L. D. - - - *vide Antimonium.*
Sub-murias hydrargyri præcipitatus, E. L. D. *Hydrargyrum.*

MURIAS SODÆ EXSICCATUS. *Ed.* D. *Dried Muriat of Soda.*

Murias Sodæ Siccatum. D. *Dried Muriat of Soda.*

Take of
Muriat of soda, any quantity.
Roast it over the fire in an iron vessel, loosely covered, until it cease to decrepitate, agitating it from time to time. (E. D.)

By this process the muriat of soda is reduced into the state in which it is employed for the distillation of muriatic acid. It not only deprives it entirely of its water of crystallization, which, from being variable in quantity, would otherwise render the acid obtained unequal in strength, but also destroys some colouring matter it contains; for if we prepare muriatic acid from crystallized muriat of soda, we obtain a coloured muriatic acid, while the dried muriat furnishes a perfectly colourless one.

Officinal Preparations.

Acidum muriaticum E. L. D.
Murias hydrargyri, E. L. D. - - *vide Hydrargyrum.*

SULPHAS SODÆ; olim, Sal Glauberi. *Ed.* L. D.

Sulphat of Soda; formerly *Glauber's Salt.*

Dissolve the acidulous salt which remains after the distillation of muriatic acid, in water; and having mixed chalk with it to remove the superfluous acid, set it aside until the sediment subsides, then evaporate the liquor decanted from them, and strain through paper, so that it may crystallize. (E.)

The observations made respecting the different methods followed by the colleges, for extracting sulphat of potass from the residuum of the distillation of nitrous acid, apply in the present instance, except that the Edinburgh college do not preserve the superabundant acid when present, by saturating it with carbonat of soda, but get rid of it by saturating it with carbonat of lime, with which it forms an insoluble sulphat of lime. In fact, the price of sulphat of soda is so very small, that it would be no economy to use carbonat of soda to saturate the superabundant acid.

By far the greatest part of the sulphat of soda is obtained from manufacturers, as a result of processes performed for the sake of other substances, as in the preparation of muriat of ammonia, oxygenized muriatic acid, &c. It may be economically obtained by making into a paste with a sufficient quantity of water, eight parts of burnt gypsum, five of clay, and five of muriat of soda. This mixture is burnt in a kiln or oven, then ground to powder, diffused in a sufficient quantity of water, and after being strained, is evaporated and crystallized.

Sulphat of soda crystallizes in six-sided prisms, terminated by dihedral summits. The crystals are often irregular, and their sides are usually channeled. Their taste is at first salt, and afterwards disagreeably bitter. They are soluble in 2.67 parts of water at 60°, and in 0.8 at 212°. In the air they effloresce. They undergo the watery fusion, and in a red heat melt. They consist of 23.52 sulphuric acid, 18.48 soda, and 58 water,* when dried at 700°, of 56 acid and 44 soda. It is decomposed by baryta and potass, and salts containing these bases, and by the salts of silver, mercury, and lead.

Medical use.—Taken from half an ounce, to an ounce, or more, it proves a mild and useful purgative; and in smaller doses, largely diluted, a serviceable aperient and diuretic. It is commonly given in solution, but it may also be given in powder, after it has effloresced. In this form the dose must be reduced to one half.

* This immense quantity of water of crystallization may be well dispensed with on various occasions, as for the army or navy. By efflorescence, the salt is converted into a fine dry powder of half its original bulk and weight, and no way injured in its medical properties. It is also by this means prevented from injuring the adjoining medicines, or any instruments of surgery.

TARTRIS POTASSÆ ET SODÆ. *Ed.*

Tartrite of Potass and Soda, formerly *Rochelle Salt.*

Soda Tartarizata. L. | Tartarus Sodæ et Kali.

Tartarized Soda. | *Tartrat of Soda and Kali.*

Take of
Carbonat of soda, twenty ounces;
Crystals of tartar, powdered, two pounds;
Distilled water, boiling ten pints.

Dissolve the natron in the water, and gradually add the crystals of tartar: filter the liquor through paper; evaporate, and set it aside to crystallize. (L. D.)

The tartaric acid in several instances is capable of entering into combination at the same time with two bases. In the present example, the superabundant acid of the super-tartrat of potass is neutralized with soda, and in place of a mixture of tartrat of potass and tartrat of soda, each possessing their own properties, there results a triple salt, having peculiar properties.

The tartrat of potass and soda forms large and very regular crystals, in the form of prisms with eight sides nearly equal, which are often divided longitudinally, almost through their axis. It has a bitter taste. It is soluble in about five parts of water, and effloresces in the air. It is decomposed by the strong acids, which combine with the soda, and separate super-tartrat of potass, and by baryta and lime. By heat its acid is destroyed. It consists of 54 tartrat of potass, and 46 tartrat of soda. Eighteen parts of subcarbonat of soda, will neutralize 24 of super-tartrat of potass.

Medical use.—It was introduced into medical practice by M. Seignette, an apothecary at Rochelle, whose name it long bore. It is still frequently employed; and though less agreeable than the phosphat of soda, it is much more so than the sulphat of soda. It is less purgative than these, and must be given in larger doses.

SOLANUM DULCAMARA. Dulcamara. *Stipites.* D. L.

Woody Nightshade. Bitter-sweet. The twigs.

Willd. g. 383. *sp.* 15. *Smith, g.* 100. *sp.* 1. *Pentandria Monogynia.*— Nat. ord. *Solanaceæ.*

This climbing plant grows wild in moist hedges, has woody brittle stalks, and climbs on the bushes. The taste of the twigs and roots, as the name of the plant expresses, is both bitter and sweet; the bitterness being first perceived, and the sweetness afterwards. They have a nauseous smell when fresh.

Medical use.—The dulcamara was formerly much esteemed as a powerful medicine. It is in general said to increase all the secretions and excretions, to excite the heart and arteries, and, in large doses, to produce nausea, vomiting, and convulsions; but its effects seem to differ according to the nature of the soil on which it grows, being most efficacious in warm climates, and on dry soils. It has been recommended in cutaneous affections, especially lepra and in syphiloid diseases, in rheumatic and cachectic swellings, in ill-conditioned ulcers, scrofula, indurations from milk, leucorrhœa, jaundice, and obstructed menstruation. It has principally been used in decoction: two or three ounces of that of the London Pharmacopœia may be given thrice a-day, and gradually augmented, till a pint be consumed daily. A stronger decoction may be used externally as a lotion. In the form of extract, from 5 to 10 grains may be given for a dose.

SOLIDAGO VIRGA AUREA. Virga Aurea.

Flores. Folia. D.

Golden rod. The flowers and leaves.

Willd. g. 1483. *sp.* 35. *Smith, g.* 368. *sp.* 1. *Syngenesia Superflua.*— Nat. ord. *Compositæ radiatæ.*

This plant is perennial, and is found wild on heaths and in woods, producing spikes of yellow flowers in August. The leaves have a moderately astringent bitter taste; and hence prove serviceable in debility and laxity of the viscera, and disorders proceeding from that cause.

SOPHORA TINCTORIA. *Linn.* Podalyria Tinctoria. *Mich.*

Wild Indigo. Indigo Weed. The root and plant.

This vegetable is indigenous, and supposed to be exclusively American. In Dr. Cutler's catalogue it is called *Indigo fera*, and it is sometimes known by the name of *broom*, but more commonly *Indigo weed*. It is perennial, growing in great abundance in almost every barren pasture and in woods. The stalk rises to two feet or more, sending off numerous branches. The leaves are small, ternate, inversely heart shaped, and sessile. In July and August all its branches display butterfly shaped, golden coloured blossoms, which render the plant very conspicuous. The seed vessels are inflated, containing numerous seeds. The root is ligneous, rough, and irregular in shape, of a dark brown colour externally, and sending off many long slender branches. Its taste is unpleasant, subacrid, and nauseous, very similar to that of ipecacuan. The particular medical properties of indigo weed are yet to be ascertained; that it possesses great activity is unquestionably true; those who in the spring season have made the young shoots a substitute for asparagus experienced its drastic evacuating powers. In the hands of some physicians it is found to operate in a large dose, with much severity as an emetic and cathartic. But a weak decoction of the root has frequently been given with the effect only of a mild laxative. A decoction of the bark of the root has, it is said, been made known by an empiric experienced in its use, as a remedy in scarlatina anginosa, and its employment has been extended in a few instances to typhus or putrid fever with such good effect as to encourage farther trials. An experienced physician considers it as an excellent antiseptic and febrifuge, preferring it in some fevers to Peruvian bark. As an external application, its antiseptic qualities ought to be more extensively known. In the form of fomentation or cataplasm, it has proved eminently beneficial when applied to phagedenic and gangrenous ulcers, especially if the decoction be administered internally at the same time.

A liniment prepared by simmering the *cortical part* of the root in cream, has been found an efficacious application to sore nipples and ulcerated breasts. A violet or pale blue colour has been prepared from the leaves and small branches of this plant, and used as a substitute for indigo. The leaves turn black when dried.

SPARTIUM SCOPARIUM. *Summitates. Semen. Ed.* D. L.

Common Broom. The tops and seeds.

Willd. g. 1332. *sp.* 19. *Smith, g.* 321. *sp.* 1. *Diadelphia Decandria.*—Nat. ord. *Papilionaceæ.*

This is a very common shrub on dry pastures.

The leaves have a very bitter taste, and when given in decoctions prove considerably diuretic. The seeds have similar properties.

Officinal Preparation.

Extractum genistæ, L. - - - - *vide Extracta.*

SPERMACETI. - - - - *Vide Physeter.*

SPIGELIA MARILANDICA. *Radix. Ed.* L. D.

Carolina Pink. Indian Pink-Snake root. The root.

Willd. g. 308. *sp.* 2. *Pentandria Monogynia.*—Nat. ord. *Stellatæ.*

This plant is perennial, and grows wild in North America, from Maryland to East Florida. The roots are celebrated as an anthelmintic, particularly for the expulsion of lumbrici from the alimentary canal. Some order it in doses of ten or fifteen grains; and allege it is apt to occasion nervous affections if given in large doses; while others order it in drachm doses, alleging that the bad effects mentioned more readily happen from small doses, as the large one often purge or puke; some prefer the form of infusion. An emetic is generally premised; and its purgative effect assisted by some suitable addition. Infused in wine, it has been found useful in intermitting fevers. This plant in some parts of Carolina is known by the name of Snake-root. It is the Unsteetla of the Cherokee Indians. Every part is possessed of the anthelmintic property, though the roots are most active. It exerts a narcotic and a laxative effect. By the former, it appears to destroy the worms, and by the latter it speedily expels them. It often affords relief and effects a cure, in cases where no worms are discharged; and it is supposed by Dr. Barton, that it will be found highly useful in some febrile diseases of children unaccompanied by worms, especially in the insidious remittent which so frequently lays the foundation of dropsy of the brain.* By some, the disagreeable effects arising from its administration, are attributed to a parasitic plant, which winds itself around the stalk; and which is said to be a species of Glycine.

Experiments show its safety in much larger doses than are usually given; from one to two drachms may be safely administered to an adult; and it is highly probable that its good effects are disputed by some, merely from the small doses in which it has been recommended.

SPIRÆA TRIFOLIATA.

Indian Physic. Ipecacuanha, &c.

THIS shrub grows plentifully in the United States, and is one of the few active plants of the class icosandria. The root, the part employed, consists, like that of the officinal ipecacuanha, of a bark, and woody part. The active power seems to reside exclusively in the bark. It is a safe and efficacious emetic in doses of about 30 grains. It also seems to possess a tonic power, and has accordingly been thought peculiarly beneficial in intermittent fever. It is sometimes very injudiciously employed by the country people, insomuch that they are obliged to apply for medical aid to remove the debility induced by the large doses of the root which they employ. Another species, it is said, grows in Kentucky, which is still more valuable, as an emetic, than the one under notice.†

SPIRITUS DESTILLATI.

DISTILLED SPIRITS.

THE flavour and virtues of distilled waters are owing, as has been observed, to their being impregnated with a portion of the essential oil of the subject from which they are drawn. Alcohol, considered as a vehicle for these oils, has this advantage above water, that it keeps all the oil that rises with it perfectly dissolved into an uniform limpid liquor.

Nevertheless, many substances, which, on being distilled with water, impart to it their virtues in great perfection; if treated in the same manner with alcohol, scarcely give over to it any smell or taste.

* Barton's Collections, Part I. p. 37. 59.

† Barton's Collections, Part I. p. 26. Part II. p. 39.

The cause of this difference is, that alcohol is not susceptible of so great a degree of heat as water. It is obvious therefore, that substances may be volatile enough to rise with the heat of boiling water, but not with that of boiling alcohol.

Thus, if cinnamon, for instance, be committed to distillation with a mixture of alcohol and water, or with a pure proof spirit, which is no other than a mixture of about equal parts of the two; the alcohol will rise first clear, colourless, and transparent, and almost without any taste of the spice; but as soon as the more ponderous watery fluid begins to arise, the oil comes freely over with it, so as to render the liquor highly odorous, sapid, and of a milky hue.

The proof spirits usually met with in the shops are accompanied with a degree of ill flavour; which, though concealed by means of certain additions, plainly discovers itself in distillation. This nauseous flavour does not begin to arise till after the purer spirituous part has come over; which is the very time that the virtues of the ingredients begin also to arise most plentifully; and hence the liquor receives an ungrateful taint. To this cause principally is owing the general complaint, that the cordials of the apothecary are less agreeable than those of the same kind, prepared by the distiller; the latter being extremely curious in rectifying or purifying the spirits (when designed for what he calls fine goods) from all unpleasant flavour.

SPIRITUS CARI CARUI. *Ed.*

SPIRITUS CARUI. L. D. *Spirit of Caraway.*

Take of
Caraway seeds, bruised, half a pound;
Diluted alcohol, nine pounds.

Macerate two days in a close vessel; then pour on as much water as will prevent empyreuma, and draw off by distillation nine pounds. (E.)

IN the same manner is prepared the same quantity of spirit from

	SPIRITUS
Cinnamon, one pound. - - -	*Lauri Cinnamomi.* E. *Cinnamomi.* L. D.
Peppermint, one pound and a half.	*Menthæ Piperitæ.* E. *Piperitidis.* L.
Spearmint, one pound and a half.	*Menthæ sativæ.* L.
Pennyroyal, dried, a pound ahalf.	*Pulegii.* L.
Nutmeg, well bruised, two ounces.	*Myristicæ moschatæ.* E. *Nucis moschatæ.* L. D.
Pimento, half a pound. - - -	*Myrti Pimentæ.* E. *Pimento.* L. D.
Rosemary tops, fresh, two pounds.	*Rosmarini.* L.
Aniseed, bruised, half a pound.	*Anisi.* L.

SPIRITUS LAVANDULÆ SPICÆ. *Ed.*

SPIRITUS LAVANDULÆ. L. D. *Spirit of Lavender.*

Take of
  Flowering spikes of lavender, fresh gathered, two pounds;
  Alcohol, eight pounds.
Draw off by the heat of boiling water, seven pounds. (E)

OFFICINAL PREPARATIONS.

Spiritus lavendulæ comp. E. L. D.	*vide Tincturæ.*
Linimentum camph. comp. L. D. -	*Tincturæ volatiles.*

By these directions, and in the same quantities, are prepared,

SPIRITUS RORISMARINI OFFICINALIS. *Ed.*

SPIRITUS RORISMARINI. L. *Spirit of Rosemary.*

FROM two pounds of the flowering tops.

OFFICINAL PREPARATION.

Linimentum saponis comp. L. - - *vide Tincturæ.*

IT is unnecessary to make particular observations on each of these simple spirits, as their virtues are the same with those of the substances from which they are extracted, united to the stimulus of the alcohol. The alcohol in the spirits of lavender and rosemary, is almost pure; in the others it is diluted with about an equal weight of water.

SPIRITUS ANISI COMPOSITUS. L.

Compound Spirit of Aniseed.

Take of
  Aniseed,
  Angelica seed, of each, bruised, half a pound;
  Proof spirit, one gallon;
  Water, sufficient to prevent empyreuma.
Draw off one gallon by distillation. (L.)

THIS compound spirit, like the simple ones, is an agreeable cordial; indeed too agreeable, for by some they are so often resorted to, on the slightest sensation of flatulence in the stomach, that their use is attended with all the pernicious consequences of dram-drinking.

SPIRITUS JUNIPERI COMPOSITUS. *Ed.* L. D.

Compound Spirit of Juniper.

Take of
Juniper berries, well bruised, one pound;
Caraway seeds,
Sweet fennel seeds, each one ounce and a half;
Proof spirit, one gallon;
Water, sufficient to prevent empyreuma.
Macerate one day, and draw off one gallon. (L.)

The good and bad effects of this spirit exactly coincide with those of gin.

SPIRITUS ARMORACIÆ COMPOSITUS. L.

Spiritus Raphani Compositus. D.

Compound Spirit of Horse-Radish.

Take of
Fresh horse-radish root,
Dried outer rind of Seville oranges, each two pounds;
Fresh herb of garden scurvy-grass, four pounds;
Bruised nutmegs, one ounce;
Proof spirit, two gallons;
Water sufficient to prevent empyreuma.
Draw off two gallons. (D.)

Although this process may furnish an agreeable compound spirit, yet it is much to be doubted whether it possesses those anti-scorbutic powers for which it was once celebrated.

ALCOHOL AMMONIATUM FŒTIDUM. *Ed.*

Spiritus Ammoniæ Foetidus. L. D. *Fetid Spirit of Ammonia.*

Take of
Ammoniated alcohol, eight ounces,
Assa fœtida, half an ounce.
Digest in a close vessel twelve hours; then distil off, with the heat of boiling water, eight ounces. (E.)

This spirit, which is easily prepared, is designed as an anti-hysteric, and is undoubtedly a very elegant one. Volatile spirits, impregnated for these purposes with different fetids, have been usually kept in the shops; the ingredient here chosen, is the best calculated of any for general use, and equivalent in virtue to them all. The spirit is pale when newly distilled, but acquires a considerable tinge by keeping.

ALCOHOL AMMONIATUM AROMATICUM. *Ed.*

Aromatic Ammoniated Alcohol.

SPIRITUS AMMONIÆ AROMATICUS. D. L.

Aromatic Spirit of Ammonia.

Take of
Spirit of ammonia, two pints;
Essential oil of lemon two drachms;
Nutmegs, bruised; half an ounce.
Digest in a close vessel, for three days, with occasional agitation, and draw off a pint and a half. (D.)

MEDICINES of this kind might be prepared extemporaneously, by dropping any proper volatile oil into ammoniated alcohol, which will readily dissolve the oil, if the ammonia in the solvent be caustic; for, if it be carbonated, such as it was when prepared according to the former directions of the London college, it does not dissolve the oils here ordered, and is therefore totally unfit for this preparation.

Mr. Phillips says, that the oils as imported are commonly adulterated with fixed oil, which renders the aromatic spirit coloured and turbid, and that it is therefore the usual practice of chemists to distil the mixture of oils and spirit.

Medical use.—Ammonia, thus united with aromatics, is not only more agreeable in flavour, but likewise more acceptable to the stomach, and less acrimonious, than when uncombined. The dose is from five to six drops to sixty or more.

SPIRITUS AMMONIÆ SUCCINATUS. L.

Succinated Spirit of Ammonia.

Take of
Mastiche, three drachms;
Rectified spirit, nine fluidrachms;
Oil of lavender, fourteen minims;
Oil of amber, four minims;
Solution of ammonia, ten fluidounces.
Macerate the mastiche in the alcohol, until it be dissolved. Pour off the clear tincture; then add the other ingredients, and mix them by shaking.

THIS preparation is intended as a substitute for Eau de Luce, which was formerly imported entirely from Paris. It is now, we believe, prepared also by the chemists and druggists in London; but without some peculiar manipulation, which is kept secret, the above formula does not succeed in giving the liquor that permanent milky opacity, which is deemed essential to good Eau de Luce; for it becomes more or less transparent by keeping. This fancied perfection is, however, in a medical point of view, immaterial; and, whether it be milky or transparent, it is an excellent analeptic remedy, and may be used in the same circumstances, and in the same doses, as the spirit of ammonia itself.

SPONGIA OFFICINALIS. *Ed.* L. D. *Sponge.*

Cl. *Zoophyta.* Ord. *Spongia.*

Sponge is principally found in the Mediterranean and Red seas. It was long supposed to be a vegetable production, but it is now universally allowed to belong to that remarkable class of animals called Zoophytes, which are negatively characterized by Cuvier, as having no vertebræ, no sanguiferous vessels, no spinal marrow, and no articulated limbs. The sponges belong to that division of the zoophytes, which are attached to a solid trunk, and are particularized by their base being spongy, friable, or fibrous.

Sponge is a soft, light, very porous and compressible substance, absorbing by capillary attraction a large proportion of any fluid in which it is immersed.

Medical use.—From these properties, it is an useful substance in the practice of surgery. When applied to ulcers which are accompanied with a copious discharge, it absorbs the thinner and more acrid fluid, and leaves the ulcers covered with the thicker and blander matter. It is also useful in suppressing hæmorrhagies, when properly applied by compression, by favouring the coagulation of the blood at the mouths of the vessels. It also forms a convenient tent for dilating wounds and fistulous ulcers, especially when prepared by immersing it in melted wax, and keeping it compressed until it cools. On the melting of the wax by the heat of the part to which it is applied, it gradually expands, and affords an uniform and gently dilating pressure.

Burnt sponge is nothing else than charcoal mixed with a little muriat of soda and phosphat of lime. Its use has been again lately much celebrated in the cure of Bronchocele.

If sponge be cut in small pieces, fried, or dipped in honey, or salt butter, and given to rats, it distends their bowels, and effectually destroys those animals.

PULVIS SPONGIÆ USTÆ. D. Spongiæ Ustio. L.

Powder of Burnt Sponge. The Burning of Sponge.

Cut the sponge in pieces, and bruise it, so as to free it from small stones; burn it in a close iron vessel, until it becomes black and friable; afterwards reduce it to a very fine powder. (L. D.)

This medicine has been in use for a considerable time, and employed against scrofulous disorders and cutaneous foulnesses, in doses of a scruple and upwards. Its virtues probably depend on the presence of a little alkali. It also contains charcoal; and its use may be entirely superseded by these substances, which may be obtained in other manners, at a much cheaper rate.

PULVIS QUERCUS MARINÆ. *Dub.*

Powder of Yellow Bladder Wrack.

Take of

Yellow bladder wrack, in fruit, any quantity.

Dry and clean it; then expose it to the fire in an iron pot or crucible, covered with a perforated lid, until, after the escape of the vapours, the mass becomes of a dull red. Reduce the carbonaceous mass which remains to very fine powder, and keep it in close vessels.

This charcoal was formerly known under the name of *Æthiops Vegetabilis*. It is analogous to the preceding article.

STALAGMITIS CAMBOGIOIDES. *Ed.* L. D.

Gummi-resina. The Gum-Resin called Gamboge.

Willd. g. 1888. *sp.* 1. *Polygamia Monœcia.*—Nat. ord. *Tricoccæ.*

D.	*Gutte Gom, Gutta gamba, Gitte gom.*	I.	*Gommagutta.*
F.	*Gomme gutte.*	P.	*Goma rom, Goma guta, Gutta gamba.*
G.	*Gummigutt.*	R.	*Gummi gut.*
POL.	*Gummi gotta.*	S.	*Gommaguta, Guta gamba.*

The tree which furnishes the gamboge is of middling size, and grows wild in the kingdom of Siam and in Ceylon. In Siam the gum-resin is obtained in drops by breaking the leaves and young shoots; hence probably its name Gummi-guttæ; but in Ceylon it is extracted from the wood of the tree in the form of a juice, which soon becomes solid. Gamboge, or at least a very similar substance, is also got in the same way from different species of Garcinia, especially the Gambogia, (the Gambogia Gutta of Lin.) *Willd. g.* 938, *sp.* 3. *Dodecandria Monogynia*, and from different species of Hypericum, especially the Bacciferum. It is brought from the East Indies in large cakes or rolls. The best sort has a deep yellow or orange colour, shining fracture, and is free from impurities. It has no smell, and very little taste, unless kept in the mouth for some time, when it impresses a slight sense of acrimony. Neumann got from 16 ounces, 14 of alcoholic extract, and one of watery; and inversely, 13 of watery, and two of alcoholic. He also found it almost entirely soluble in water, impregnated with a moderate proportion of fixed alkaline salt. According to Dr. Duncan's experiments, which confirm these observations, the watery solution is opaque and yellow. With alcohol it forms a transparent solution of a bright golden colour; and the residuum is totally soluble in water. The alcoholic solution is decomposed by water, becoming yellow and opaque; but the precipitate remains long suspended, and cannot be separated by common filtering paper. Ammoniated alcohol dissolves gamboge with similar phenomena. Gamboge is readily soluble in solution of potass, acquiring a bright red colour the moment it is thrown into it, and forming a dark-coloured solution, which is not decomposed by water; but the addition of any acid immediately produces a copious yellow precipitate, very soluble in excess of acid. Gamboge is also very soluble, but with decomposition, in acids. The acid solution is decomposed by water. Bracconot says it consists of one-fifth of gum, and four-fifths of an acidiferous resin, from which he extracted, by analysis, 22.5 dry muriatic acid,? 35 charcoal, 42 gases. This requires to be repeated.

Medical use.—Gamboge evacuates powerfully both upwards and downwards; some condemn it as acting with too great violence, and occasioning dangerous hypercatharsis; while others are of a contrary opinion. Geoffroy seems particularly fond of this medicine, and informs us, that he has frequently given from two to four grains, without its proving at all emetic; that from four to eight grains both vomit and purge without violence; that its operation is soon over; and that if given in a liquid form, and sufficiently diluted, it does not need any corrector; that in the form of a bolus or pill, it is most apt to prove emetic, but very rarely has this effect if joined along with *Calomel.* He nevertheless cautions against its use where the patients cannot easily bear vomiting.

It has been used in dropsy with cream of tartar or jalap, or both, to quicken their operation. It is also recommended by some to the extent of fifteen grains, with an equal quantity of vegetable alkali, in cases of the tape-worm. This dose is ordered in the morning; and if the worm is not expelled in two or three hours, it is repeated even to the third time with safety and efficacy. It is asserted, that it has been given to this extent even in delicate habits.

It is an ingredient, and probably the active one, in most of the nostrums for expelling tæniæ.

STANNUM.—*TIN.*

STANNUM. L. E. D.

Limatura et pulvis.

D.	*Tin.*	P.	*Estanho.*
DA.	*Tin.*	POL.	*Cyna.*
F.	*Etain.*	R.	*Olowo.*
G.	*Zinn.*	S.	*Estagno, Peltre.*
I.	*Stagno.*	SW.	*Tenn.*

Tin is pure brilliant, white, sapid, and odorous; specific gravity 7.291 to 7.500, soft, flexible, and emitting a crackling noise when bent; fusing at 442° Fahrenheit; oxydizes slowly in the air; is converted, when fused, into a grey oxyd; when red hot it burns vividly. Its sulphuret and phosphuret are lamellated and brittle; it forms alloys with arsenic, bismuth, antimony, mercury, and zinc; it is oxydized by many acids, and combines with the muriatic, fluoric, boracic, and carbonic acids. Its oxyd is grey or white, unites readily with sulphur, and renders glasses opaque.

It is found,

1. Sulphureted, and combined with copper. Tin-pyrites.
2. Oxydized.
   a. Combined with oxyd of iron and silica. Common tin-stone.
   b. Combined with oxyd of iron and a little arsenic. Fibrous tin-stone.

The best tin is found in Cornwall, or is brought from the East-Indies. Its purity is estimated by its small specific gravity, and by the crackling noise it makes when bent.

It is now only used as an anthelmintic, especially in cases of tæniæ, and probably acts mechanically.

STANNI PULVIS. D.

Powder of Tin.

Take of
Tin, any quantity;
Melt it in an iron mortar; reduce it to powder, by agitation, and pass it when cold through a hair sieve.

The College of Edinburgh do not give this preparation, inserting *Limatura et Pulvis Stanni* in their list of the materia medica.

Medical use.—It is often employed as a remedy against worms, particularly the flat kinds, which too often elude the force of other medicines. The general dose is from a scruple to a drachm; some confine it to a few grains. But Dr. Alston assures us, in the Edinburgh Essays, that its success chiefly depends on its being given in much larger quantities. He directs an ounce of the powder on an empty stomach, mixed with four ounces of melasses; next day, half an ounce; and the day following, half an ounce more; after which, a cathartic is administered. He says the worms are usually voided during the operation of the purge, but that pains of the stomach occasioned by them are removed almost immediately upon taking the first dose of the tin. This practice is sometimes successful in the expulsion of tæniæ, but by no means so frequently as Dr. Alston's observations would lead us to hope.

Blaine's powder, which certainly succeeds sometimes in curing the distemper in dogs, seems to be a sulphureted oxyd of tin.

STATICE LIMONIUM. *Marsh Rosemary. Lavender Thrift.*

Sea Lavender. The root.

This is well known in the New England states. It is indigenous and perennial, growing on the sea shore, in salt marshes; and the fissures or clefts of rocks near the sea coast: it is in flower from July to September. The stem is naked, branched, and about a foot high. The radical leaves are long, pointed, and grow on foot stalks. The flowers are blue, and grow on long spikes on the tops of the branches. The roots of this plant are powerfully astringent. A decoction of them is given and used as a gargle with success in cankers and ulcerated sore throats. We learn from an authentic source, that the late Dr. Hews, of Providence, held the root of this plant in high estimation in cases of aphthous states of fever accompanying dysentery, ulcerous sore throats, or *scarlatina anginosa*. He valued it as the greatest antiseptic he was acquainted with, and said he could administer it in cases where the bark was inadmissible.

Dr. William Baylies, of Dighton, in a communication to the Massachusetts Medical Society, makes favourable mention of this root from his experience in the ulcerated sore throat, as it appeared in that town in 1785 and 1786. This judicious physician observes, "Among the many medicines in high estimation with the common people, and used by them without the advice of the physicians, I know of none worth the least consideration, excepting the marsh-rosemary, or, as it is commonly called, marsh root. This in a large dose operates as a vomit; in a smaller, proves a powerful expectorant; and from its sensible qualities, one would suppose it to possess considerable antiseptic powers. I am well assured it was the basis of a medicine used by a physician in Providence, with very great success in this complaint. It is undoubtedly of great efficacy, and deserves a more thorough investigation."

STIBIUM. - - - *Vide Antimonium.*

STRAMONIUM. - - *Vide Datura.*

STYRAX.

Willd. g. 874. *Decandria Monogynia.*—Nat. ord. *Bicornes.*

STYRAX OFFICINALE. *Sp.* 1. *Balsamum. Ed.* L. D.

Storax. A Balsam.

D.	*Styrax, Storax.*	P.	*Estoraque, Storaque.*
DA.	*Storax.*	POL.	*Styrax.*
F.	*Styrax, Storax.*	R.	*Stirax.*
G.	*Storax.*	S.	*Estoraque.*
I.	*Storace.*	SW.	*Storax.*

This tree grows in the Levant, and in Italy and France. The storax flows from wounds made in the bark, in countries where the heat is sufficient, for neither in France nor in Italy does it furnish any.

It is either in small distinct tears, of a whitish or reddish colour, or in large masses composed of such, or in masses of an uniform texture and yellowish red or brownish colour; though sometimes likewise interspersed with a few whitish grains.

The *common storax* of the shops is in large masses, considerably lighter and less compact than the foregoing; it appears on examination to be composed of a fine resinous juice, mixed with a quantity of saw-dust.

Storax has an agreeable smell, and an aromatic taste. Neumann got from 480 grains, 360 alcoholic, and 30 of watery extract, and inversely 120 watery, and 240 alcoholic. In distillation it yielded benzoic acid. It is, therefore, a balsam or natural combination of resin with benzoic acid.

Officinal Preparations.

Styrax purificata, L. D.
Tinctura benzoes comp. E. L. - *vide Tincturæ.*

STYRAX PURIFICATA. L. D. *Purified Storax.*

Dissolve the storax in rectified spirit of wine, and strain the solution; afterwards reduce it to a proper thickness with a gentle heat. (L. D.)

Storax is a balsam or combination of resin and benzoic acid, both of which are soluble in alcohol, and neither of them volatile in the heat necessary for evaporating alcohol. The process for purifying it is therefore not liable to any chemical objections.

STYRAX BENZOIN. *Sp.* 3. *Balsamum. Ed.* L. D.

Benzoin, a Balsam.

This species grows in Sumatra, and, like the former, also furnishes a balsam on being wounded. It is brought from the East Indies only; in large masses composed of white and light brown pieces, or yellowish specks, breaking very easily betwixt the hands; such as is whitish, and free from impurities, is most esteemed.

In its properties it differs from storax, only in containing a larger proportion of benzoic acid. Neumann found that it was totally soluble in alcohol, forming a blood-red tincture, and that water extracted no gummy matter, but a notable proportion of benzoic acid. By sublimation he got two ounces of impure acid from sixteen of benzoin. Lime and the alkaline carbonats dissolve the acid without attacking the resin, and are accordingly employed in the processes of Scheele, Göttling, and Gren, for obtaining the benzoic acid. Dr. Duncan found that the solution of potass dissolves benzoin very rapidly, forming a dark coloured solution, mixed with fine crystals of benzoat of potass. This alkaline solution is not decomposed by water, but forms with acids a rose-coloured coagulum, easily soluble in excess of acid. Boiling nitrous acid also attacks benzoin with great violence, the solution becomes turbid and lets fall a copious precipitate on cooling, which, according to Mr. Brande, is benzoic acid. It is also decomposed by water, and by alkaline solutions.

Officinal Preparations.

Acidum benzoicum, E. L D.
Tinctura benzoes composita, E. L. - *vide Tincturæ.*

ACIDUM BENZOICUM. *Ed.* D. L. *Benzoic Acid.*

Flores Benzoes. *Flowers of Benzoin.*

Take of
Benzoin, twenty-four ounces;
Carbonat of soda, eight ounces;
Water, sixteen pounds.

Triturate the benzoin with the carbonat, then boil in the water for half an hour, with constant agitation, and strain. Repeat the decoction, with other six pounds of water, and strain. Mix these decoctions, and evaporate, until two pounds remain. Filter anew, and drop into the fluid, as long as it produces any precipitation.
Diluted sulphuric acid.

Dissolve the precipitated benzoic acid in boiling water, strain the boiling solution through linen, and set it aside to crystallize. Wash the crystals with cold water, dry and preserve them.

Benzoic acid crystallizes in compressed prisms of a pungent taste and aromatic smell. It is fusible, and evaporates by heat, for the most part, without change. When brought in contact with flame, it catches fire, and leaves no residuum. It is permanent in the air. It is very sparingly soluble in cold water; but at 212° it dissolves in about 24 waters. It is also soluble in hot acetous acid. It is soluble, without change, in alcohol, in concentrated sulphuric and nitric acids, and is separated from them by water.

Benzoats are little known, but generally form feather-shaped crystals, and are soluble in water.

The distinguishing character of balsams is their containing benzoic acid, which may be separated from the resin, their other principal constituent, either by simple solution in water, sublimation, or by combining it with a salifiable base. The Dublin college directs it to be done in the second way. But, even with the greatest care, it is almost impossible to manage the heat so as not to decompose part of the resin, and thus give rise to the formation of an empyreumatic oil, which contaminates the product. Nor can it be freed completely from the empyreumatic oil by bibulous paper.

The other method of separating benzoic acid from resin, was first practised by Scheele, who employed lime water; Göttling afterwards used carbonat of potass; and, lastly, Gren used carbonat of soda, which has been adopted by the Berlin college, and now by that of Edinburgh. Mr. Brande, and he has been followed by the London college, prefers Scheele's process, as the lime dissolves less of the resin of the benzoin than the alkalies do. In experiments which he made for the purpose of ascertaining the comparative value of the different processes, he obtained from one pound of benzoin,

	Grains.
By sublimation, - - - -	960
— Scheele's process, - - -	899
— Gren's and Göttling's process, - -	810
— boiling benzoin in water, - -	490

As the crystallized acid, on account of its lightness and elasticity, is not easily reduced to powder, for most purposes it will be more convenient to keep it in the state of a precipitate.

It may also be extracted from Storax, and all the other balsams, particularly those of Tolu or Peru; and from the urine of children, and of herbivorous animals.

The benzoic acid has an agreeable taste and a fragrant smell, especially when heated. It is soluble in alcohol, and in boiling water, but very sparingly in cold water, although it may be suspended in it, by means of sugar, so as to form an elegant balsamic syrup.

Officinal Preparations.

Tinctura opii camphor. L. D. - *vide Tincturæ.*
ammoniata, E. - - *Tincturæ volatiles.*

BORAX. SUB-BORAS SODÆ. Boras Sodæ. *Ed.* L. D.

Borax. Sub-borat of soda.—Borat of Soda.

D.	*Boras.*	P.	*Borax.*
DA.	*Borax.*	POL.	*Boraks.*
F.	*Borax.*	R.	*Bura, Borakss.*
G.	*Borax.*	S.	*Borrax.*
I.	*Borrace.*	SW.	*Borax.*

Borax is found only in Thibet and Persia. It exists in the water of some wells and lakes, and is extracted from them by evaporation. In its impure state it is called tincal, and is brought from the East-Indies in great masses, composed of a few large crystals, but chiefly of smaller ones, partly white and partly green, joined together as it were by a greasy yellow substance, intermixed with sand, small stones, and other impurities. By repeated solutions, filtrations, and crystallizations, it shoots into hexangular prisms of which two sides are broader than the others, terminated by triangular pyramids, of a white colour, a styptic and alkaline taste, colouring vegetable blues green, soluble in eighteen parts of water at 60°, and in six at 212°, slightly efflorescing in the air, and when heated, swelling, and, with the loss of nearly half its weight, forming a porous friable mass, which, in a greater heat, melts into a transparent glass soluble in water. Besides the acids and alkalies which have a greater affinity for its acid or base than these have for each other, it is decomposed by sulphats, muriats, nitrats, phosphats, and fluats, of all the earths and of ammonia. It consists of 39 boracic acid, 17 soda, and 44 water.

Boracic acid exists in the form of small, shining, laminated crystals. Specific gravity is 1.479. It is fixed and vitrifiable in the fire. It is soluble in fifty parts of boiling water. It is also soluble in alcohol, to which it imparts the property of burning with a yellow flame. It oxydizes only iron and zinc.

Borats are vitrifiable; and their concentrated solutions afford when heated with the strong sulphuric acid, brilliant, lamellated crystals.

Medical use.—The medical virtues of borax have not been sufficiently ascertained by experience: it is supposed to be, in doses of half a drachm or two scruples, diuretic, emmenagogue, and a promoter of delivery. Mr. Bisset, in an essay on the medical constitution of Great Britian, recommends a solution of this salt in water, as the most powerful dissolvent yet known, of aphthous crusts in the mouth and fauces of children. And for the same purpose also, a small quantity of it is often applied in the form of powder mixed up with sugar. There are strong reasons to believe, that the virtues of borax are much greater than they are in general supposed to be; and that it may be more extensively used with advantage.

SUCCINUM. *Ed.* L. D. *Amber.*

D.	*Barnsteen.*	P.	*Ambar, Ambre, Alambre.*
DA.	*Bernsteen, Rav.*	POL.	*Bursztyn.*
F.	*Ambre jaune, Succin.*	R.	*Jantar.*
G.	*Bernstein.*	S.	*Ambar.*
I.	*Ambra gialla, o ghiacciata.*	SW.	*Bernsten, Raf.*

This is a solid, brittle, bituminous, substance, dug out of the earth, or found upon the sea-shores; the largest quantities are met with along the coasts of Polish Prussia and Pomerania. It is of a white yellow, or brown colour, sometimes opaque, and sometimes very clear and transparent.

It emits an agreeable smell when heated or rubbed. By friction it becomes electric; and when heated it softens, swells, and then melts and burns with a greenish or bluish flame, leaving a coaly residuum. By distillation it affords a little acetous acid, an essential oil, and a peculiar acid, named from it the Succinic. It is not acted upon by water, or diluted acids. It is imperfectly dissolved in alcohol and ether. Hoffmann dissolved it in oil of almonds in Papin's digester, and in a boiling solution of potass. Dr. Thompson lately discovered that it was soluble in the cold, even in a very weak solution of the sub-carbonat of potass. Heyer ascertained that it was soluble with decomposition in nitrous acid. In attempting to form succinic acid by the action of nitrous acid on amber, Dr. Duncan made the same observation. The acid when heated to ebullition acts violently, copious red fumes are emitted, and the amber is first as if melted, and then dissolved. On cooling, part of the amber separates. The acid solution is decomposed by water, and by alkaline solutions. Amber is rendered soluble in the fixed and volatile oils by melting or roasting it, or by the addition of a little camphor.

It is only kept for the empyreumatic oil and acid obtained from it.

Officinal Preparations.

Acidum et oleum succini, E. L. D.
Succinum præparatum, L. - *vide Carbonas calcis præparatus.*

OLEUM SUCCINI ET ACIDUM SUCCINI. *Ed.* D. L.

Oil of Amber and Succinic Acid.

Take of

Amber reduced to powder, and of pure sand, equal parts.

Mix them, and put them into a glass retort, of which the mixture may fill one half: then adapt a large receiver, and distil in a sand bath, with a fire gradually increased. At first, a watery liquor will come over, with some yellow oil; then a yellow oil, with an acid salt; and lastly, a reddish and dark coloured oil.

Pour the liquor out of the receiver, and separate the oil from the water. Press the salt collected from the neck of the retort and sides of the receiver between folds of blotting paper, to free it from the oil adhering to it; then purify it by solution in warm water and crystallization. (E.)

We are not acquainted with any experiments which determine whether the succinic acid exists as such in the amber, or whether it be a product of the decomposition of the amber by the action of heat, for in the process employed for obtaining succinic acid the amber is completely decomposed.

The sand is added to prevent the amber from running together into masses, and impeding the distillation; but as it renders the residuum unfit for the use of the varnisher, it is not advisable. According to Göttling, this distillation should be performed in a tubulated iron or earthen-ware retort, exposed to the immediate action of the fire, for he says, that, in a sand bath we cannot regulate the heat sufficiently, and that a glass retort is incapable of supporting the necessary temperature.

Besides the succinic acid collected from the neck of the retort, and sides of the receiver, the oil washes down a portion of it into the receiver, and the watery liquor which comes over is saturated with it. But the whole of it may be obtained by agitating the oil with some boiling water, which will dissolve the acid. This solution is then to be added to the acid liquor, and the acid they contain is easily obtained by evaporation and crystallization. The acid may afterwards be purified by solution in boiling water and crystallization, according to the direction of the colleges.

But even after repeated solutions and crystallizations, a portion of empyreumatic oil still adheres to the acid, and renders it impure. Other methods of purifying it have been therefore attempted. Demachy saturated it with lime, separated the lime by sulphuric acid, and sublimed the succinic acid: Richter saturated succinic acid with potass, decomposed the salt formed with acetat of lead, and disengaged the succinic acid from the lead by means of diluted sulphuric acid: lastly, Morveau asserts that he obtained it in a state of perfect purity, by treating it with nitrous acid. It is often adulterated with muriat of ammonia, sulphuric acid, sulphat of potass, sugar, &c. When pure it is entirely volatile, gives out no ammoniacal fumes when triturated with potass, is not precipitated by solutions of baryta, and is soluble in alcohol.

Succinic acid, although retained in our pharmacopœias, is never used in medicine.

Succinic acid crystallizes in transparent white triangular prisms; may be melted and sublimed, but suffers partial decomposition; more soluble in hot than in cold water; soluble in hot alcohol.

Succinats little known.

SUCCI.—*JUICES.*

SUCCI EXPRESSI. *Expressed Juices.*

The juices of succulent plants are obtained by expression. They are of a very compound nature, consisting of the sap, the secreted fluids, and fecula, mixed together. When first procured, they are very high coloured, turbid, and loaded with parenchymatous matter. They may be separated by rest, filtration, heat, and clarification. Rest may be employed when the juice is very fluid, does not contain volatile matter, and is not susceptible of alteration. It is, however, employed with advantage with sub-acid juices, as that of lemons. By rest they undergo a kind of slight fermentation, and all their mucilaginous, and other viscid parts, separate. Filtration is perhaps the most perfect, but it is tedious, and applicable only to very fluid juices. In many instances it may be facilitated by the addition of water. The action of heat is more expeditious, and is employed for juices which are very alterable, or which contain volatile matters. It is performed by introducing the juice into a matrass, and immersing it in boiling water for some minutes. The feculæ are coagulated, and easily separated by filtration. Clarification by white of egg can only be used for very viscid mucilaginous juices, which contain nothing volatile. The white of two eggs may be allowed to each pint of juice. They are beat to a fine froth, the juice gradually mixed with them, and the whole brought to ebullition. The albumen coagulating envelops all the parenchymatous and feculent matters, and the juice now passes the filter readily. By this process juices are rendered sufficiently fine;

but the heat employed deepens their colour, and manifestly alters them, so that it is not merely a defecating, but a decomposing, process. When depurated, juices are yellow or red, but never green.

The fluids thus extracted from succulent fruits, whether acid or sweet, from most of the acrid herbs, as scurvy-grass and water-cresses, from the acid herbs, as sorrel and wood-sorrel, from the aperient lactescent plants, as dandelion and hawkweed, and from sundry other vegetables, contain great part of the peculiar taste and virtues of the respective subjects. The juices, on the other hand, extracted from most of the aromatic herbs, have scarcely any thing of the flavour of the plants, and seem to differ little from decoctions of them made in water boiled till the volatile odorous parts have been dissipated. Many of the odoriferous flowers, as the lily, violet, hyacinth, not only impart nothing of their fragrance to their juice, but have it totally destroyed by the previous bruising. From want of sufficient attention to these particulars, practitioners have been frequently deceived in the effects of preparations of this class: juice of mint has been often prescribed as a stomachic, though it wants those qualities by which mint itself and its other preparations operate.

There are equal differences in regard to their preserving those virtues, and this independently of the volatility of the active matter, or its disposition to exhale. Even the volatile virtue of scurvy-grass may, by the above method, be preserved almost entire in its juice for a considerable time; while the active parts of the juice of the wild cucumber quickly separate and settle to the bottom, leaving the fluid part inert. Juices of arum root, iris root, bryony root, and other vegetables, in like manner allow their medicinal parts to settle at the bottom.

If juices are intended to be kept for any length of time, about one fortieth part of their weight of good spirit of wine may be added, and the whole suffered to stand as before; a fresh sediment will now be deposited, from which the liquor is to be poured off, strained again, and put into small bottles which have been washed with spirit and dried. A little oil is to be poured on the surface, so as very nearly to fill the bottles, and the mouths closed with leather, paper, or stopped with straw, as the flasks are in which Florence oil is brought to us: this serves to keep out dust, and suffers the air to escape, which in process of time arises from all vegetable liquors, and which would otherwise endanger the bursting of the glasses; or, being imbibed afresh, render their contents vapid and foul. The bottles are to be kept on the bottom of a good cellar or vault, placed up to the necks in sand. By this method some juices may be preserved for a year or two; and others for a much longer time, though, whatever care be taken, they are found to answer better when fresh; and from the difficulty of preserving them, they have of late been very much laid aside, especially since we have been provided with more convenient and useful remedies. The following is the only composition of the kind retained in the British Pharmacopœias.

SUCCUS COCHLEARIÆ OFFICINALIS COMPOSITUS.

Vulgo, Succi ad Scorbuticos. *Ed.*

Succus Cochleariæ Compositus. L. *Compound Juice of Scurvy-Grass.*

Take of
Juice of scurvy-grass,
Water-cresses, expressed from fresh gathered herbs,
Seville oranges, of each two pounds;
Spirit of nutmegs, half a pound.

Mix them, and let them stand till the feces have subsided, then pour off the clear liquor. (E.)

This composition is of considerable use for the purposes expressed in the title: the orange juice is an excellent assistent to the scurvy-grass and other acrid antiscorbutics; which, when thus mixed, have been found from experience to produce much better effects than when employed by themselves. They may be taken in doses from an ounce or two to a quarter of a pint, two or three times a-day: they generally increase the urinary secretion, and sometimes induce a laxative habit.

SUCCI SPISSATI. *Inspissated Juices.*

This is a very convenient form for the exhibition of those substances which are sufficiently succulent to afford a juice by expression, and whose virtues do not reside in any very volatile matter. By inspissation, the bulk of the requisite dose is very much diminished; they are reduced to a form convenient for making up into pills; and they are much less apt to spoil than the simple expressed juices. The mode of their preparation is not yet, however, reduced to fixed principles. Some direct the juices to be inspissated as soon as they are expressed; others allow them previously to undergo a slight degree of fermentation; some defecate them before they proceed to inspissate them, and lastly, Baumé prepares his elaterium by inspissating the defecated juice of the wild cucumber, while our colleges give the same name to the matter which subsides from it. The nature of the soil, of the season, and many other circumstances, must materially alter the quantity or nature of the product. In moist years Baumé got from thirty pounds of elder berries, four or five pounds of inspissated juice, and in dry years only two, or two and a half. From hemlock he got in October, 1769, 7.5 per cent. of inspissated juice, and in May of the same year, only 3.7; on the contrary, in August, 1768, 4 per cent. and in May 1770, 6.5; but in general the product in the autumn months was greatest.

SUCCUS SPISSATUS ACONITI NAPELLI. *Ed.*

Inspissated Juice of Wolfsbane.

Bruise the fresh leaves of wolfsbane; and including them in a hempen bag, compress them strongly till they yield their juice, which is to be evaporated in flat vessels heated with boiling water, saturated with muriat of soda, and immediately reduced to the consistence of thick honey.

After the mass has become cold, let it be put up in glazed earthen vessels, and moistened with alcohol. (E.)

In the same manner are prepared from their leaves,

Succi Spissati	*The Inspissated Juices of*
Atropæ Belladonnæ,	*Deadly Nightshade.*
Conii maculati,	*Hemlock.*
Daturæ strammonii,	*Thorn apple.*
Hyosciami nigri,	*Henbane.*
Lactucæ virosæ,	*Poisonous Lettuce.*

SUCCUS SPISSATUS SAMBUCI NIGRI; vulgo, Rob Sambuci. *Ed.*

Inspissated Juice of Elder-berries, commonly called *Elder Rob.*

Succus Baccæ Sambuci Spissatus. L. *Inspissated Juice of Elder Berry.*

Succus Spissatus Sambuci. D.

Take of

Juice of ripe elder-berries, five pounds;

Double refined sugar, one pound.

Evaporate with a gentle heat to the consistence of pretty thick honey. (E.)

In the same manner inspissate the juice of *Black Currant*, *Lemon*, *Hemlock*, *when about to flower.*

These inspissated juices contain the virtues of the respective vegetables, in a very concentrated state. Those of the elder, black-currant, and lemon, are acidulous, cooling, and laxative, and may be used in considerable quantities, while those of the wolfsbane, hemlock, deadly nightshade, henbane, and poisonous lettuce, are highly narcotic and deleterious, and must be given only in very small doses.

FECULA.

SUCCUS SPISSATUS MOMORDICÆ ELATERII. *Ed.*

Inspissated Juice of the Wild Cucumber.

Extractum Elaterii. L. Elaterium. D. *Elaterium.*

Slice ripe wild cucumbers, and pass the juice, very lightly expressed, through a very fine hair sieve, into a glass vessel, then boil a little, and set it by some hours until the thicker part has subsided.

Pour off the thinner part swimming at the top, and separate the rest by filtering. Cover the thicker part, which remains after filtration, with a linen cloth, and dry it with a gentle heat. (E.)

THIS is not properly an inspissated juice, but a deposition from the expressed juice. Such depositions have long been called Fecula, and the denomination has been confirmed in modern times. Its application, however, appears to us to be too extended; for fecula is applied both to mild and nutritious substances, such as starch, and to drastic substances, such as that of which we are now treating. Besides, if it possessed exactly the same chemical properties as starch, it would be converted into a gelatinous mass by the boiling directed by the Edinburgh college, and would not separate; whereas, the boiling is intended to promote the separation.

The filtration above directed, for draining off such part of the watery fluid as cannot be separated by decantation, is not the common filtration through paper, for this does not succeed here: the grosser parts of the juice, falling to the bottom, form a viscid cake upon the paper, which the liquid cannot pass through. The separation is to be attempted in another manner, by draining the fluid from the top. This is effected by placing one end of some moistened strips of woollen cloth, skeins of cotton, or the like, in the juice, and laying the other end over the edge of the vessel, so as to hang down lower than the surface of the liquor, by this management the separation succeeds in perfection.

Medical use.—Elaterium is a very violent hydragogue cathartic. In general, previous to its operation, it excites considerable sickness at the stomach, and not unfrequently it produces severe vomiting. Hence it is seldom employed till other remedies have been tried in vain. But in some instances of ascites it will produce a complete evacuation of water, where other cathartics have had no effect. Two or three grains are in general a sufficient dose. And perhaps the best mode of exhibing it is by giving it only to the extent of half a grain at a time, and repeating that dose every hour till it begins to operate.

PULPARUM EXTRACTIO. *Ed.* D. L.

The Extraction of Pulps.

Boil unripe pulpy fruits, and ripe ones if they be dry, in a small quantity of water until they become soft; then press out the pulp through a hair sieve, and afterwards boil it down to the consistence of honey in an earthen vessel, over a gentle fire; taking care to keep stirring the matter continually. (E.)

(The pulp of cassia fistularis is in like manner to be boiled out from the bruised pod, and reduced afterwards to a proper consistence by evaporating the water.

The pulps of fruits that are both ripe and fresh, are to be pressed out through the sieve, without any previous boiling.) (E.)

WHEN these fruits are not sufficiently juicy to afford a pulp by simple expression, the decoction ordered by the Edinburgh and Dublin colleges is much more certain, and in every respect preferable to exposing them to a moist air, which is not only often inefficacious, but is apt to render them spoiled and mouldy. On the other hand, the precaution used by the London college, of finishing the evaporation in a water bath, is highly proper, as otherwise they are extremely apt to become empyreumatic.

The pulps expressed from recent substances without coction, are less mucilaginous, are more apt to allow their fluid parts to separate when left at rest, than when they have been previously boiled: and very succulent vegetables, such as apples, pears, and lily roots, may be roasted in hot ashes instead of being boiled.

SULPHAS.—*SULPHAT.*

Sulphat is a generic term for the combination of sulphuric acid with the alkalies, earths, and metallic oxyds. Their generic characters have been already noticed. Like the other genera, they may be divided into three families.

Family 1. Alkaline sulphats.—These form no precipitate with alkaline carbonats.

Family 2. Earthy sulphats.—These are either insoluble in water, or, if soluble, form a white precipitate with alkaline carbonats.

Family 3. Metalline sulphats.—These form precipitates, which are often coloured, with alkaline carbonats in general, with prussiat of potass and iron, and with gallic acid.

Officinal Preparations.

Sulphas Aluminæ.

Barytæ. - - - -	*vide Baryta.*
Cupri. - - - - -	*Cuprum.*
Ferri. - - - - -	*Ferrum.*
Magnesiæ. - - - -	*Magnesia.*
Potassæ. - - - -	*Potassa.*
Sodæ. - - - - -	*Soda.*
Zinci. - - - -	*Zincum.*

SUPER-SULPHAS ALUMINÆ et POTASSÆ.

Sulphas Aluminæ. *Ed.* Alumen, L. D.

Super-sulphat of Alumina and Potass. Alum.

D.	*Aluin.*	P.	*Pedra hume.*
DA.	*Alun, Aluun, Allun.*	POL.	*Halun.*
F.	*Alun, Alum.*	R.	*Kwasszü.*
G.	*Alaun.*	S.	*Alumbre.*
I.	*Allume.*	SW.	*Alun.*

Alum is obtained principally from schistose clays, which contain iron pyrites, by roasting, exposure, lixiviation, the addition of a proportion of potass ley, evaporation, and crystallization.

The roasting destroys the bituminous matters these clays commonly contain, the exposure to the air acidifies the sulphur of the pyrites, and the addition of alkali is absolutely necessary for the constitution of alum, which is a triple salt, with excess of acid, consisting of sulphuric acid, alumina, and potass, or ammonia, or a mixture of both. The properties of alum do not seem to be affected by the nature of the alkali. To save the trouble of evaporation, Mr. Curadau has given another method of manufacturing this substance. He takes 100 parts of clay, and 5 parts of muriat of soda, dissolved in as much water as is necessary to form the whole into a paste, which is made into cakes, and baked for two hours in a reverberatory furnace. The mass is then reduced to powder, and put into a good cask; a quarter of its weight of sulphuric acid is then added to it at several times, stirring it well each time. After the vapours of the muriatic acid are disengaged, an equal quantity of water with the acid is added. The mixture then becomes hot, swells, and emits very abundant vapours. When the heat is somewhat moderated, more water must be added until there is about eight or ten times as much as of the acid. The liquor is then drawn off into leaden vessels, and an equal quantity of water poured upon the residuum, which is also drawn off and added to the former To these is lastly added a solution containing as much potass as is equal to a fourth part, or sulphat of potass equal to one half the weight of the acid. As the liquor cools, it affords crystallized alum, equal in weight to three times the acid, and which may be further purified by re-dissolving it in the smallest possible quantity of boiling water, and allowing it to crystallize.

Alum crystallizes in regular octohedrons, whose sides are equilateral triangles. It has a sweetish but very astringent taste. It is soluble in 15 times its weight of water at 60°, and three fourths of its weight at 212°. It reddens vegetable blues. It effloresces slightly in the air. By the action of heat it first undergoes the watery fusion, then loses its water of crystallization, and lastly great part of its acid. It is decomposed by baryta, potass, soda, strontia, and all salts of which these are the bases; by the nitrat, muriat, phosphat, carbonat, borat, and fluat of ammonia; by the nitrat, muriat, phosphat, and carbonat of magnesia; and by the nitrat, muriat, and carbonat of lime. It is also decomposed by the gallic acid, by colouring matters, and by many animal and vegetable substances.

It commonly consists, according to Vauquelin, of 49 sulphat of alumina, 7 sulphat of potass, and 44 water.

Medical use.—Alum is a powerful astringent: it is reckoned particularly serviceable for restraining hemorrhagies, and immoderate secretions from the blood; but less proper in intestinal fluxes. In violent hemorrhagies, it may be given in doses of fifteen or twenty grains, and repeated every hour or half hour till the bleeding abates: in other cases, smaller doses are more advisable; large ones being apt to nauseate the stomach, and occasion violent constipations of the bowels. It is used also externally, in astringent and repellent lotions and collyria. Burnt alum taken internally has been highly extolled in cases of colic. In such instances, when taken to the extent of a scruple for a dose, it has been said gently to move the belly, and give very great relief from the severe pain.

Officinal Preparations.

Alumen purificatum, L.	
Sulphas aluminis exsiccatus, E. L. D.	
Solut. sulphat. cupri composita, E. - -	*vide Cuprum.*
Aqua aluminis composita, L. - - - -	*Zincum.*
Pulvis sulph. aluminis compositus, E. - -	*Pulveres.*
Cataplasma aluminis, L. D. - - - -	*Cataplasmata.*

ALUMINIS PURIFICATIO. L.

Purification of Alum.

Take of
Alum, one pound;
Chalk, one drachm;
Distilled water, one pint.
Boil them a little, strain, and set the liquor aside to crystallize. (L.)

This process is scarcely necessary; for the alum of commerce is sufficiently pure for every purpose; and we apprehend that the addition of the chalk is unchemical, as its only effect will be to decompose part of the alum, without contributing to the purity of the rest.

SULPHAS ALUMINÆ EXSICCATUS. *Ed.*

Dried Sulphat of Alumina.

Alumen Ustum. L. D. *Burnt Alum.*

Melt alum in an earthen or iron vessel, and keep it over the fire until it cease to boil. (E.)

Mr. Chaptal found that by exsiccation in red heat, alum of his own manufacture lost 0.67; Roman alum 0.50; English alum 0.47; and Levant alum only 0.40. These differences arise principally from different proportions of water of crystallization, but also from an excess of alumina, which the last contains.

According to Kirwan, crystallized alum consists of 17.66 acid, 12. alumina, and 70.24 water, and alum desiccated at 700° of 36.25 acid, and 63.75 basis, by which it would appear that at that heat it loses not only all its water, but also more than half its acid.

Dried alum is only applied externally as a gentle escharotic to fungous ulcers.

SULPHUR.—*BRIMSTONE.*

D.	*Zwavel, Zolfer.*	P.	*Enxofre.*
DA.	*Svovel.*	POL.	*Siarka.*
F.	*Soufre.*	R.	*Sjera.*
G.	*Schwefel.*	S.	*Azufre.*
I.	*Zolfo, Solfo.*	SW.	*Svafvel.*

Sulphur is a crystallizable solid, of a yellow colour; little sensible taste; peculiar smell when rubbed or heated; specific gravity 1.99; brittle; electric; fusible at 226°; burning with a pale blue flame at 302°; and with a bright white flame at 570°; and capable of combining with different proportions of oxygen. It is found pure in the vicinity of volcanoes, and exists in many minerals, and in animal substances. *Officinal.*

Oxyd of sulphur is said by Dr. Thomson to be of a dark violet colour, and an austere taste, fracture fibrous, specific gravity 2.325; consistence tough. It contains nearly 7 *per cent.* of oxygen. It is formed on the surface of melted sulphur. Dr. Irvine and Sir H. Davy think this substance contains no oxygen, and differs only in arrangement of particles.

Sulphurous acid gas is colourless, incapable of maintaining combustion, and deleterious when inspired. It has a strong suffocating odour; 100 cubic inches weigh about 68 grains; its specific gravity to hydrogen is 30 to 1. It whitens many animal and vegetable substances. Water at 54° rapidly absorbs 30 times its bulk of this gas, and when saturated, acquires the specific gravity of 1.0513. It is again expelled from the water by heat, but not by freezing. When water is present it is converted by oxygen gas into sulphuric acid. It is decomposed by hydrogen, carbon, and sulphureted hydrogen gas, when assisted by heat. It oxydizes iron, zinc, and manganese. It consists of equal weights of sulphur and oxygen.

Hydrosulphuric acid is also composed of sulphur and oxygen. It is a dense liquid; specific gravity 1.85; slightly viscid; transparent and colourless; without smell; of a strong acid taste. It freezes at —36°, and boils at 590°. It has a strong attraction for water, absorbing it rapidly from the atmosphere, and producing considerable heat when mixed with it. It is decomposnd by most inflammable substances. It does not oxydize gold, platinum, tungsten, or titanium. It decomposes the alkaline and earthy sulphurets, and reduces all organic substances to charcoal. In medicine it is a powerful refrigerant and antiseptic. It consists of 30 sulphur, 45 oxygen, and 17 of water. What was called Glacial sulphuric acid, consists, according to Sir H. Davy, of 4 volumes of sulphurous acid gas, and 3 of nitrous acid gas, probably in two or three proportions, with a single proportion of water. *Officinal.*

Chloride of sulphur was first formed by Dr. Thomson, who called it *Sulphureted muriatic acid.* It is a fluid, appearing red by reflected, and yellowish-green by transmitted light. Sp. 1.6. It smokes in the air, has the smell of sea-weed, and affects the eyes like peat smoke. It does not redden perfectly dry litmus paper, but is decomposed by water. It consists, according to Davy, of one proportion of sulphur, and two of chlorine.

Sulphureted hydrogen gas consists of one sulphur, and two hydrogen; 100 inches weigh 36 or 37 grains, or its specific gravity to hydrogen is 16. It has the odour of rotten eggs; is not respirable; burns with oxygen gas without exploding, and deposites sulphur; an equal volume is absorbed by water, and is the mode in which sulphur exists in mineral waters; reddens vegetable blues; and in its affinities, and the crystallizability of its compounds, it resembles the acids.—*Officinal.* Hydrosulphuret of ammonia.

Sulphurets are solid opaque bodies, of considerable specific gravity; decomposable by heat, water, and the acids.

a. The alkaline and earthy sulphurets have a red or brownish-red colour, and by solution in water are immediately converted into hydrosulphurets. *Officinal.* Sulphuret of potass.

b. The metallic sulphurets have neither taste nor smell, are often possessed of metallic brilliancy, and are conductors of electricity. *Officinal.* The sulphurets of antimony, of mercury, of iron.

Hydro-sulphurets are soluble in water, and crystallizable, decomposed by the atmosphere and acids.

Procarburet of sulphur is a reddish or greenish-brown lamellated solid, having many of the properties of sulphur.

Percarburet of sulphur is a transparent colourless liquid, of a fetid smell and acrid taste; sp. gr. 1.263. It boils at 115 F. but evaporates rapidly at 60, when in contact with the air producing intense cold. It is exceedingly inflammable.

SULPHUR SUBLIMATUM. *Ed.* L. D.

Sublimed Sulphur.

In the neighbourhood of volcanoes it is sometimes found perfectly pure and crystallized; but all the sulphur of commerce is extracted from pyrites by sublimation. It is usually brought to us in large irregular masses, which are afterwards melted and cast into cylindrical rolls, with the addition of some coarse resin, flour, or the like; whence the paler colour of the rolls.

Sulphur should be chosen of a bright yellow colour, should be very inflammable, and should burn with a bright pure blue flame. Sublimed sulphur is never prepared by the apothecary. It has the form of a very fine powder, having a beautiful yellow colour. It often is contaminated with a little sulphuric acid, formed during the process, from which it is easily freed by washing.

Medical use.—Pure sulphur loosens the belly, and promotes insensible perspiration: it seems to pass through the whole habit, and manifestly transpires through the pores of the skin, as appears from the sulphureous smell of persons who have taken it, and from silver being stained in their pockets of a blackish colour, which is the known effect of sulphureous fumes. It is a celebrated remedy against cutaneous diseases, both given internally, and externally applied. It has likewise been recommended in coughs, asthmas, and other disorders of the breast and lungs; and particularly in catarrhs of the chronic kind. But it is probable, that the benefit derived from it in these cases, is principally, if not entirely, to be attributed to its operation as a gentle laxative. And with this intention it is frequently used with great advantage in hemorrhoidal affections, and many other diseases in which it is proper to keep the belly gently open.

OFFICINAL PREPARATIONS.

Sulphur sublim. lotum, E. L. D.	
Sulphas potassæ cum sulph. E. -	*vide Potassa.*
Sulphuretum potassæ, E. L. D. - -	*Idem.*
Hydro-sulph. ammoniæ. - - -	*Ammonia.*
Sulphas hydrargyri nigri, E. L. D. -	*Hydrargyrum.*
Hydrargyrum sulphuratum rubrum, L. D.	*Idem.*
Oleum sulphuratum, E. L. } Petroleum sulphuratum, L. } - -	*Olea præparata.*
Unguentum sulphuris, E. L. D. -	*Unguenta.*

SULPHUR SUBLIMATUM LOTUM. *Ed.* D.

Washed Sublimed Sulphur.

FLORES SULPHURIS LOTI. L. *Washed Flowers of Sulphur.*

Take of
Sublimed sulphur, one pound;
Water, four pounds.

Boil the sulphur for a little in the water, then pour off this water, and wash away all the acid by affusions of cold water; and lastly, dry the sulphur. (E. L.)

As it is impossible to sublime sulphur in vessels perfectly void of air, a small portion of it is always acidified and converted into sulphurous or sulphuric acid. The presence of acid in sulphur, is always to be considered as an impurity, and must be removed by careful ablution. When thoroughly washed, sublimed sulphur is not acted upon by the atmosphere; there is therefore no particular reason for preserving it from the action of the air; for if, on keeping, it become moist, it is because the sulphuric acid has not been entirely washed away.

OFFICINAL PREPARATION.

Trochisci sulphuris, L. - - - - *vide Trochisci.*

SULPHUR PRÆCIPITATUM. L. D.

Precipitated Sulphur.

Take of
Sulphureted kali, six ounces;
Distilled water, one pound and a half;
Diluted vitriolic acid, as much is sufficient.

Boil the sulphureted kali in the distilled water until it be dissolved. Filter the liquor through paper, to which add the diluted vitriolic acid. Wash the precipitated powder by repeated affusions of water till it become insipid. (L.)

INSTEAD of dissolving sulphuret of potass in water, we may gradually add sublimed sulphur to a boiling solution of potass, until it be saturated. When the sulphureted potass is thrown into water, it is entirely dissolved, but not without decomposition, for it is converted into sulphat of potass, hydrogureted sulphuret of potass, and sulphureted hydroguret of potass. The two last compounds are again decomposed on the addition of any acid. The acid combines with the potass, sulphureted hydrogen flies off in the form of gas, while sulphur is precipitated. It is of little consequence what acid is employed to precipitate the sulphur. The London college order the sulphuric; while the Dublin college use nitrous acid, probably because the nitrat of potass formed, is more easily washed away than sulphat of potass.

Precipitated sulphur does not differ from well-washed sublimed sulphur, except in being much dearer. Its paler colour is owing to its more minute division, or according to Dr. Thomson, to the presence of a little water; but from either circumstance it derives no superiority to compensate for the disagreeableness of its preparation.

ACIDUM SULPHURICUM. *Ed.*

ACIDUM VITRIOLICUM. OLEUM VITRIOLI. L. D.

Sulphuric acid, Vitriolic acid, Oil of vitriol.

THE London and Edinburgh colleges direct, that in the shops, its specific gravity should be to that of water as 1850 to 1000; the Dublin college as 1845 to 1000. This want of uniformity is to be regretted.

Sulphuric acid is composed of sulphur and oxygen. It may be obtained in a crystallized or glacial form, but generally exists as a dense liquid; specific gravity 1.85; slightly viscid; transparent and colourless; without smell; of a strong acid taste. At 36° it freezes; it boils at 590°. It has a strong attraction for water, absorbing it rapidly from the atmosphere, and producing considerable heat when mixed with it. It is decomposed by most inflammable substances. It does not oxydize gold, platinum, tungsten, or titanium. It decomposes the alkaline and earthy sulphurets, and reduces all organic substances to charcoal. In medicine it is a powerful refrigerant and antiseptic. It contains 56 sulphur, and 44 oxygen.

The *sulphats* form sulphurets, when heated to redness with charcoal; and furnish copious precipitates with solutions of baryta.

Sulphurous acid gas is colourless, incapable of maintaining combustion, and deleterious when respired. It has a strong suffocating odour; its specific gravity is 0.00246, or 0.00251. Water at 54° rapidly absorbs one-fourth of its weight of this gas, and when saturated, acquires the specific gravity of 1.040. It is again expelled from it by heat, but not by freezing. It is also absorbed by sulphuric acid, to which it imparts the property of crystallizing, forming what is called glacial sulphuric acid; oils and ether. When water is present, it is converted by oxygen gas into sulphuric acid. It is decomposed by hydrogen, carbon, and sulphureted hydrogen gas, when assisted by heat. It oxydizes iron, zinc, and manganese. It consists of 85 sulphur, and 15 oxygen.

The *sulphites*, by the action of heat, furnish sulphur, and become sulphats. They are also converted into sulphats, with effervescence, and exhalation of sulphurous vapours, by the sulphuric, nitric, muriatic, and other acids, and gradually, by exposure to the atmosphere when dry, and very quickly when dissolved.

As sulphuric acid is prepared by the trading chemist, it is inserted among the materia medica. It is obtained in two ways, by distilling off the acid from sulphat of iron, previously deprived of its water of crystallization by heat, or by burning sulphur in large leaden chambers, with an eighth part of nitrat of potass to supply, as is very inaccurately supposed, the necessary oxygen. In the first way the strongest acid is obtained, but it is apt to contain iron or copper. By the second process it generally contains lead, which is easily detected by mixing a portion of the acid with three parts of distilled water, and if the acid be impure, a deposition will be formed. It may be rendered perfectly pure by distillation, filling a retort half full of the common acid, and distilling in a sand-bath, gradually heated as long as any acid comes over. The receiver should not be luted on.

Sulphuric acid powerfully decomposes dead animal matter. It becomes diluted with water formed by the union of the hydrogen and oxygen; another portion of the hydrogen combines with the azote to form ammonia, and the carbon is separated in the state of charcoal. The affinities which regulate this action are so powerful, that it produces the same effects on the living solids, and therefore it acts upon them as a corrosive. But to its employment with this view, its fluidity is an objection, as it cannot be easily managed.

Medical use.—When sufficiently diluted, it is an excellent tonic, checking fermentation, exciting appetite, promoting digestion, and quenching thirst, and it is therefore used with success in morbid acidity, weakness, and relaxation of the stomach. As an astringent, it is used in hemorrhagies; and from its refrigerant and antiseptic properties, it is a valuable medicine in many febrile diseases, especially those called putrid. If taken in any considerable quantity, or for some time, it seems to pass off undecomposed by the kidneys or skin; and it is perhaps by its stimulant action on the latter, that it is advantageously employed internally in psora, and other cutaneous affections. The best mode of prescribing it, is to order the quantity of acid to be used, and to direct it to be mixed with as much water as will render it palatable, to which some syrup or mucilage may be added. To prevent it from attacking the teeth, it may be conveniently sucked through a quill, and the mouth should be carefully washed after each dose.

Externally it is used as a gargle, particularly in putrid sore throats, and in aphthous mouths, and as a wash in cutaneous eruptions, and ill-conditioned ulcers. Made into an ointment with sixteen times its weight of axunge it has been used to cure psora.

Officinal Preparations.

Acidum sulphuricum dilutum, E. L. D.
aromaticum, E. - *vide Tincturæ Ætheræ.*

It is also used in the preparation of

Acidum nitrosum, E. L. D. - - -	*vide Nitras potassæ.*
muriaticum, E. L. D. - - -	*Murias sodæ.*
Aqua super-carbonatis potassæ, E. - -	*Potassa.*
Sulphas potassæ, E. - - - - -	*Idem.*
Phosphas sodæ, E. - - - - -	*Soda.*
Murias antimonii, E. L. D. - - -	*Antimonium.*
Sulphas ferri, E. L. D. - - - -	*Ferrum.*
Murias hydrargyri, E. L. D. - - -	*Hydrargyrum.*
Sub-sulphas hydrargyri flavus, E. L. D. -	*Idem.*
Æther sulphuricus, E. L. D. - - -	*Alcohol.*

ACIDUM SULPHURICUM DILUTUM. *Ed.*

Diluted Sulphuric Acid.

Acidum Vitriolicum Dilutum. L. D. *Diluted or weak Vitriolic Acid.*

Take of
Sulphuric acid, one part;
Water, seven parts.
Mix them. (E.)

The most simple form in which sulphuric acid can be advantageously employed internally, is that in which it is merely diluted with water: and it is highly proper that there should be some fixed standard in which the acid in this state should be kept. It is, however, much to be regretted, that the colleges have not adopted the same standard with respect to strength: for in the Edinburgh and Dublin colleges, the strong acid constitutes an eighth; and in the London, only a ninth of the mixture. The former proportion seems preferable, as it gives exactly a drachm of acid to the ounce; but the dilution by means of distilled water is preferable to spring water; which, even in its purest state, is not free from impregnations affecting the acid. Even when distilled water is used, there is often a small quantity of a white precipitate, arising from lead dissolved in the acid.

Sulphuric acid has a very strong attraction for water; and their bulk when combined is less than that of the water and acid separately. At the same time, there is a very considerable increase of temperature produced, which is apt to crack glass vessels, unless the combination be very cautiously made; and for the same reason, the acid must be poured into the water, not the water into the acid.

SUPER-TARTRIS POTASSÆ. *Ed.*

TARTARI CRYSTALLI. L. *Super-tartrat of Potass.*

TARTARI CRYSTALLI et CREMOR DICTUM. D.

Crystals of Tartar and Cream of Tartar.

It has already been stated (see Tartris Potassæ) that the tartaric acid combines with potass in two proportions; the one forming a neutral, the other an acidulous salt. The last is here noticed; and as the tartaric acid so greatly predominates in it, it will be proper to introduce its general properties.

Tartaric acid varies in the forms of its crystals; its specific gravity is 1.5962; it is permanent in the air; it is decomposed by heat; it dissolves readily in water, and the solution is not decomposed by exposure, unless very dilute; it may be changed by nitric acid into oxalic acid. According to Fourcroy it consists of 70.5 oxygen, 19.0 carbon, and 10.5 hydrogen.

Tartrats, by a red heat, are converted into carbonats. The earthy tartrats are scarcely soluble in water: the alkaline tartrats are soluble; but when combined with excess of acid, they become much less soluble. The tartaric acid is capable of combining at the same time with two bases. When tartrats are digested in sulphuric acid, the tartaric acid is separated, and is recognised by forming a gritty precipitate with a solution of potass.

SUPER-TARTRIS POTASSÆ IMPURUS. *Ed.*

Impure Super-tartrat of Potass.

TARTARUM. L. D. *Tartar.*

D.	*Wynsteen.*	P.	*Tartaro.*
DA.	*Vinsteen.*	POL.	*Waystin.*
F.	*Tartre.*	R.	*Winnii kamen.*
G.	*Weinstein.*	S.	*Tartaro.*
I.	*Tartaro.*	SW.	*Vinsten.*

TARTAR exists in verjuice and in must, and is deposited on the sides of the casks by repose, from which it is scraped some time before the next vintage, to prepare the casks to receive the new wine. The deepest coloured and coarsest wines generally give most tartar; and it gets the name of white or red tartar according to its colour.

It is purified by dissolving it in boiling water, and separating the earthy part by filtrating the boiling solution. On cooling the solution it deposits irregular crystals, containing the oily and colouring matters, which are separated by boiling the mass with a white clay. At Venice it is purified by dissolving it in water, and clarifying it with whites of eggs and ashes. The tartar thus purified, when crystallized, or in powder, is called Cream of Tartar.

Its crystals are small and irregular, and do not melt in the mouth but feel gritty under the teeth. It has an acrid harsh taste. It is soluble in sixty times its weight of water at 60°, and in thirty at 212°. It is decomposed, and its acid is destroyed, by heat. It contains 23 parts of potass, according to Bergmann, and 33, according to Thenard.

Medical use.—The virtues of tartar are those of a mild, cooling, aperient, laxative medicine. It is much used in dropsy; and some allege that it has good effects as a deobstruent, in dropsy from scirrhus. Taken from half an ounce to an ounce, it proves a gentle, though effectual purgative. Given in smaller doses, and in solution, it often acts as a powerful diuretic.

Officinal Preparations.

Tartris potassæ, E. L. D. - - - - -	*vide* *Potassa.*
et sodæ, E. L. D. - - -	*Soda.*
antimonii, E. L. D. - - - -	*Antimonium.*
Ferrum tartarisatum, L. - - - - - -	*Ferrum.*
Infusum sennæ tartarisatum, L. - - -	*Infusa.*
Pulvis jalap. compositus, E. - - - -	*Pulveres.*
scammonii compositus, E. - - -	*Idem.*
sennæ compositus, E. - - - -	*Idem.*

SWIETENIA.

Willd. g. 843. *Decandria Monogynia.*—Nat. ord. *Trihilatæ.*

SWIETENIA MAHAGONI. *Sp.* 1. *Cortex. Ed.*

Mahogany tree. The bark.

D.	*Mahognyhout.*	G.	*Mahagonienholz.*
DA.	*Mahagoni.*	I.	*Legno mogano.*
F.	*Bois d'Acajou, Bois de Mahagony.*	S.	*Caoba, Caobana.*
		SW.	*Mahagony.*

This majestic tree grows principally in Jamaica and in Spanish America. Its useful wood is universally known. Its bark is brown, rough and scaly; on the branches grey and smoother. Its taste is very astringent, and bitterer than that of Peruvian bark. Its smell weak and aromatic. In its properties and action on the living body, it coincides with Peruvian bark, and may be substituted for it in many situations.

SWIETENIA FEBRIFUGA. *Sp.* 2. *Cortex. Ed.* D.

Febrifuge Swietenia. The bark.

This species, which in many respects resembles the former, is a native of the East Indies. Its bark is red, brittle, and compact, and covered with a rough grey cuticle. In its properties it agrees with the mahogany bark, and forms a very valuable substitute for Peruvian bark in the East Indies, where this last is so dear and scarce, and the diseases in which it is indicated so common. It is, however, merely an astringent bitter, and contains no cinchonin. Dr. Roxburgh sent from India a quantity of the extract of this bark, which could not be distinguished from the kino of the shops.

SYRUPI.—*SYRUPS. L. D.*

In making syrups, where we have not directed either the weight of the sugar, or the manner in which it should be dissolved, this is to be the rule:

Take of
 Double refined sugar, twenty-nine ounces;
 Any kind of liquor, one pint and a half.

Dissolve the sugar in the liquor, in a water bath; mix and boil down to one pound, then set it aside for twenty-four hours; take off the scum, and pour off the syrup from the feces if there be any. (L.D.)

Syrups are solutions of sugar in any watery fluid, whether simple or medicated. Simple syrup is nutritious and demulcent. When made of fine sugar, it is transparent and colourless. If necessary, it is easily clarified, by beating to a froth the white of an egg with three or four ounces of water, mixing it with the syrup, and boiling the mixture for a few seconds, until the albumen coagulates, and enveloping all heterogeneous matters, it forms a scum, which may be easily taken off, or separated by filtration. When instead of simple water, any other fluid is used for dissolving the sugar, the syrup is then medicated. Medicated syrups are prepared, either with expressed juices, infusions, decoctions, or saline fluids. The object of forming these into syrups, is either to render them agreeable to the palate, or to preserve them from fermentation. In the latter case, the quantity of sugar added becomes a matter of great importance; for, if too much be employed, the sugar will separate by crystallization, and if too little, instead of preventing fermentation, it will accelerate it. About two parts of sugar to one of fluid are the proportions directed by the British colleges with this view. But, as in some instances, a larger quantity of fluid is added, and afterwards reduced to the proper quantity by decoction, it will not be superfluous to point out some circumstances, which show the evaporation to have been carried far enough. These are the tendency to form a pellicle on its surface, when a drop of it is allowed to cool, the receding of the last portion of each drop, when poured out drop by drop, after it is cold, and, what is most to be relied on, its specific gravity when boiling hot, being about 1.385, or 1.3, when cold. The syrup which remains, after all the crystallizable sugar has been separated from it, has been much, and probable justly, recommended by some for the preparation of medicated syrups and electuaries, although its pharmaceutical superiority is actually owing to its impurity.

SYRUPUS SIMPLEX, SIVE COMMUNIS. *Ed.* L.

Simple or Common Syrup.

Take of
Double refined sugar, fifteen parts;
Water, eight parts.
Let the sugar be dissolved by a gentle heat, and boiled a little, so as to form a syrup. (E.)

This preparation is a plain liquid sweet, void of flavour or colour; and is more convenient in extemporaneous prescription than sugar undissolved.

SYRUPUS ACIDI ACETOSI. *Ed.*

Syrup of Acetous Acid.

Take of
Acetous acid, two pounds and a half;
Double refined sugar, three pounds and a half.
Boil them so as to form a syrup. (E.)

This is to be considered as simple syrup merely acidulated, and is by no means unpleasant. It is often employed in mucilaginous mixtures, and the like: and, on account of its cheapness, it is often preferred to syrup of lemons.

SYRUPUS ALLII. D.

Syrup of Garlic.

Take of
Garlic, sliced, one pound;
Double refined sugar, four pounds;
Boiling water, two pounds.
Macerate the garlic in the water in a close vessel for twelve hours, and add the sugar to the strained liquor. (D.)

This is a very disagreeable syrup; but when we wish to extract the virtues of garlic by a watery menstruum, it is the best means we can employ.

SYRUPUS ALTHÆÆ OFFICINALIS. *Ed.* L.

Syrup of Marshmallow.

Take of
Fresh marshmallow roots, sliced, one pound;
Water, ten pounds;
Double refined sugar, four pounds.
Boil the water with the roots to the consumption of one half, and strain the liquor, strongly expressing it. Suffer the strained liquor to rest till the feces have subsided; and to the depurated liquor add the sugar; then boil so as to make a syrup. (E.)

This is merely a mucilaginous syrup, and is chiefly used in nephritic cases, for sweetening emollient decoctions, and the like.

SYRUPUS AMOMI ZINGIBERIS. *Ed.*

Syrupus Zingiberis. L. *Syrup of Ginger.*

Take of
- Beat ginger, three ounces;
- Boiling water, four pounds;
- Double refined sugar, seven pounds and a half.

Macerate the ginger in the water in a close vessel, for twenty-four hours; then to the liquor strained add the beat sugar so as to make a syrup. (E.)

This is an agreeable and moderately aromatic syrup, impregnated with the flavour and virtues of the ginger.

Officinal Preparations.

Electuarium catechu, D.	- - -	*vide Electuaria.*
opiatum, E.	- - - -	*Idem.*
Pilulæ aloës, L.	- - - - -	*Pilulæ.*
scillæ, L. D.	- - - - - -	*Idem.*

SYRUPUS CITRI AURANTII. *Ed.*

Syrupus Corticis Aurantii. L. D. *Syrup of Orange-Peel.*

Take of
- The fresh outer rind of Seville oranges, six ounces;
- Boiling water, three pounds;
- Double refined sugar, four pounds.

Macerate the rind in the water for twelve hours; then add to the filtered liquor the sugar, in powder, and apply a gentle heat, so as to form a syrup. (E.)

In making this syrup, it is particularly necessary that the sugar be previously powdered, and dissolved in the infusion with as gentle a heat as possible, to prevent the exhalation of the volatile parts of the peel. With these cautions, the syrup proves a very elegant and agreeable one, possessing a great share of the fine flavour of the orange-peel.

Officinal Preparations.

Electuarium aromaticum, E. D.	- -	*vide Electuaria.*
catechu comp. D.	- - -	*Idem.*
scammonii, D.	- - -	*Idem.*

SYRUPUS CITRI MEDICI; olim, SYRUPUS LIMONUM. *Ed.*

SYRUPUS LIMONIS. D. *Syrup of Lemons.*

SYRUPUS LIMONUM. L. *Lemon Syrup.*

Take of
Juice of Lemons, suffered to stand till the feces have subsided, and afterward strained, three parts;
Double refined sugar, five parts.
Dissolve the sugar in the juice, so as to make a syrup. (E.)

SYRUPUS MORI. L.

Syrup of Mulberry.

Take of
Mulberry juice strained, one pint;
Refined sugar, two pounds.
Dissolve the sugar in the mulberry juice, as directed for syrup.

In the same way are prepared,

SYRUPUS	*Syrup of*
SUCCI RUBI IDÆI. L.	*Raspberry-juice.*
RIBIS NIGRI. L.	*Black Currant-juice.*

ALL these are very pleasant cooling syrups; and with this intention they are occasionally used in draughts and juleps, for quenching thirst, abating heat, &c. in bilious or inflammatory distempers. They are sometimes likewise employed in gargarisms for inflammations of the mouth and tonsils.

SYRUPUS ACIDI ACETOSI. *Ed.*

Syrup of Acetous Acid.

Take of
Acetous acid, two pounds and a half;
Refined sugar, three pounds and a half.
Boil them, so as to form a syrup.

THIS is to be considered as simple syrup merely acidulated, and is by no means unpleasant. It is employed in mucilaginous mixtures, and the like; and, on account of its cheapness, it is often preferred to syrup of lemons.

SYRUPUS COLCHICI AUTUMNALIS. *Ed.*

Syrup of Colchicum.

Take of
Colchicum root, fresh and succulent, cut into small pieces, one ounce;
Vinegar, sixteen ounces;
Double refined sugar, twenty-six ounces.

Macerate the root in the vinegar two days, now and then shaking the vessel; then strain it with a gentle pressure. To the strained liquor add the sugar, and boil a little, so as to form a syrup. (E.)

This syrup seems to be the best preparation of the colchicum. We must take care to gather this root in the proper season: and from errors in this particular we are to ascribe the uncertainty in the effects of this medicine as found in the shops.

The syrup of colchicum is often successfully employed as a diuretic, and may be taken from a drachm or two to the extent of an ounce or more.

SYRUPUS DIANTHI CARYOPHILLI. *Ed.*

Syrupus Caryophylli Rubri. *Syrup of Clove July-flower.*

Take of

Clove July-flowers, fresh gathered and freed from the heels, one pound;

Double refined sugar, seven pounds;

Boiling water, four pounds.

Macerate the petals in the water for twelve hours; then to the strained liquor add the sugar previously beat, and dissolve it by a gentle heat, so as to form a syrup. (E.)

As the beauty of the colour is a principal quality in this syrup, no force in the way of expression should be used in separating the liquor from the flowers.

Some have substituted to it one easily prepared at seasons when the flowers are not to be procured: an ounce of clove spice is infused for some days in twelve ounces of white wine, the liquor strained, and, with the addition of twenty ounces of sugar, boiled to a proper consistence: a little cochineal renders the colour of this syrup exactly similar to that prepared from the Clove July-flower; and its flavour is of the same kind, though not so pleasant. The counterfeit may be readily detected by adding to a little of the syrup some alkaline salt or ley, which will change the genuine syrup to a green colour; but in the counterfeit it will make no such alteration, only varying the shade of the red.

SYRUPUS CROCI. L. *Syrup of Saffron.*

Take of

Saffron, one ounce;

Boiling water, one pint.

Macerate the saffron, in the water, for twelve hours, in a close vessel; and dissolve double refined sugar in the strained liquor, that it may be made a syrup. (L.)

Saffron is very well fitted for making a syrup, as in this form a sufficient dose of it is contained in a reasonable compass. This syrup is a pleasant cordial, and gives a fine colour to juleps.

Officinal Preparations.

Pilulæ aloes cum myrrha, L. - - - *vide Pilulæ.*
galbani compositæ, - - - - - *Idem.*

SYRUPUS MANNÆ. D. *Syrup of Manna.*

Take of
Manna,
Double refined sugar, each one pound;
Senna, half an ounce;
Boiling water, a pound.
Macerate the senna in the water, in a covered vessel, for twelve hours; then, with the strained liquor mix the manna and the sugar, so that they may be dissolved. (D.)

This syrup is a mild purgative, and well adapted to children and persons of a delicate constitution.

SYRUPUS PAPAVERIS SOMNIFERI. *Ed.*

Syrupus Papaveris Albi. D. *Syrup of White Poppies.*

Syrupus Papaveris. L. *Syrup of Poppy.*

Take of
White poppy-heads, dried, and freed from the seeds, two pounds;
Boiling water, thirty pounds;
Double refined sugar, four pounds.
Macerate the sliced heads in the water for twelve hours: next boil till only one-third part of the liquor remain; then strain it, by expressing it strongly. Boil the strained liquor to the consumption of one-half, and strain again; lastly, add the sugar, and boil a little so as to form a syrup. (E.)

This syrup, impregnated with the opiate matter of the poppy-heads, is given to children in doses of two or three drachms; to adults, from half an ounce to an ounce and upwards, for easing pain, procuring rest, and answering the other intentions of mild opiates. Particular care is requisite in its preparation, that it may be always made, as nearly as possible, of the same strength, and accordingly the colleges have been very minute in their description of the process.

Officinal Preparation.

Confectio opiata, L. - - - - *vide Electuaria.*

SYRUPUS OPII. D. *Syrup of Opium.*

Take of
Watery extract of opium, eighteen grains;
Boiling water, eight ounces by measure.
Macerate until the opium be dissolved, then add sugar, so as to make a syrup. (D.)

This syrup is an elegant substitute for the former. It is made with infinitely less trouble, and is always of an uniform strength. It contains about two grains and a half of opium in the ounce.

SYRUPUS PAPAVERIS ERRATICI. D.

Syrupus Rhoeados. L. *Syrup of Red Poppy.*

Take of

The fresh petals of the red poppy, one pound;
Boiling water, twenty ounces by measure.

Put the flowers, by degrees, into the boiling water. After this, the vessel being removed from the fire, and taken out of the bath, macerate for twelve hours; then press out the liquor, and set it apart, that the feces may subside. Lastly, make it into a syrup, with refined sugar. (D.)

The design of putting the flowers into boiling water in a water bath is, that they may be a little scalded, so as to shrink enough to be all immerged in the water; without this precaution they can scarce be all got in: but they are to be continued no longer over the fire than till this effect is produced, lest the liquor become too thick, and the syrup be rendered ropy.

As a medicine it is perfectly insignificant.

SYRUPUS RHAMNI CATHARTICI. *Ed.*

Syrupus Rhamni. L. *Syrup of Buckthorn.*

Take of

The juice of ripe buckthorn berries, depurated, two parts;
Refined sugar, one part.

Boil them so as to form a syrup. (E.)

This preparation, in doses of three or four spoonfuls, operates as a brisk cathartic. The principal inconveniences attending it are, its being very unpleasant, and occasioning a thirst and dryness of the mouth and fauces, and sometimes violent gripes: these effects may be prevented by drinking liberally of water-gruel, or other warm liquids, during the operation.

SYRUPUS ROSÆ GALLICÆ. *Ed.*

Syrup of Red Roses.

Take of

The dried petals of red roses, seven ounces;
Double refined sugar, six pounds;
Boiling water, five pounds.

Macerate the roses in the water for twelve hours, then boil them a little and strain the liquor, add to it the sugar, and boil them again so as to form a syrup. (E.)

This syrup is supposed to be mildly astringent; but is principally valued on account of its red colour.

Officinal Preparation.

Electuarium catechu, E. - - - - *vide Electuaria.*

SYRUPUS ROSÆ CENTIFOLIA. *Ed.*

Syrup of Damask Roses.

Syrupus Rosæ. L. *Syrup of Roses.*

Take of
The fresh petals of the damask rose, one pound;
Boiling water, four pounds;
Double refined sugar, three pounds.

Macerate the roses in the water for the night, then to the liquor strained, and freed from the dregs, add the sugar; boil them into a syrup. (E.)

This syrup is an agreeable and mild purgative for children in the dose of half a spoonful, or a spoonful. It likewise proves gently laxative to adults; and with this intention may be of service in costive habits.

Officinal Preparations.

Electuarium cassiæ, E. L. D. - - *vide Electuaria.*
Electuarium scammonii, L. - - - *Idem.*

SYRUPUS SCILLÆ MARITIMÆ. *Ed.*

Syrup of Squills.

Take of
Vinegar of squills, two pounds;
Refined sugar, in powder, three pounds and a half.

Dissolve the sugar with a gentle heat, so as to form a syrup. (E.)

This syrup is used chiefly in doses of a spoonful or two, for promoting expectoration, which it does very powerfully. It is also given as an emetic to children.

SYRUPUS TOLUIFERÆ BALSAMI;

Vulgo, Syrupus Balsamicus. *Ed.*

Syrup of Balsam of Tolu, formerly *Balsamic Syrup.*

Syrupus Tolutanus. L. *Syrup of Tolu.*

Take of
Common syrup, two pounds;
Tincture of balsam of Tolu, one ounce.

With the syrup recently prepared, and when it has almost grown cold, after it has been removed from the fire, gradually mix the tincture with constant agitation. (E.)

In the formula of the London college, the benzoic acid of the balsam alone is contained. That of the Edinburgh college contains the whole substance of the balsam in larger quantity. They are both moderately impregnated with the agreeable flavour of the balsam.

SYRUPUS VIOLÆ ODORATÆ. *Ed.*

Syrupus Violæ. D. *Syrup of Violets.*

Take of

Fresh violets, one pound;
Boiling water, four pounds;
Double refined sugar, seven pounds and a half.

Macerate the violets in the water for twenty-four hours in a glass or a glazed earthen vessel, close covered; then strain without expression, and to the strained liquor add the sugar, powdered, and make into a syrup. (E.)

This syrup has a very agreeable flavour; and in the quantity of a spoonful or two proves to children gently laxative. It is apt to lose, in keeping, the elegant blue colour, for which it is chiefly valued; and hence some have been induced to counterfeit it with materials whose colour is more permanent, and which are more easily obtained. This abuse may be readily discovered, by adding to a little of the suspected syrup any acid or alkaline liquor. If the syrup be genuine, the acid will change it red, and the alkali green; but if counterfeit, these changes will not happen. From this mutability of the colour of the violet, it forms an excellent test of the presence of acids and alkalies; and it is also obvious, that a prescriber would be deceived if he should expect to give any blue tinge to acidulated or alkalized juleps, or mixtures, by the addition of the blue syrup.

SYRUPUS SENNÆ. D. L.

Syrup of Senna.

Take of

Manna,
Refined sugar, each one pound;
Senna, half an ounce;
Boiling water, a pint.

Macerate the senna in the water, in a covered vessel, for twelve hours; then, with the strained liquor, mix the manna and the sugar, so that they may be dissolved.

This preparation, which is intended to be an officinal substitute for an excellent nursery purgative, is a proof of the impropriety of colleges sanctioning prescriptions which they have not brought to the test of experiment. Mr. Phillips found, that the proportions as given by the Dublin college yielded, instead of a fluid syrup, a substance so thick, that it could not even be shaked out of an inverted vessel, owing to the crystallization of the manna. Treacle is the best addition for forming infusion of senna into a syrup, as it has no tendency to crystallize, and covers its taste so completely, that children take it readily.

SYRUPUS AMOMI ZINGIBERIS. *Ed.*

SYRUPUS ZINGIBERIS. D. L. *Syrup of Ginger.*

Take of
Ginger in powder, three ounces;
Boiling water, four pounds;
Refined sugar, seven pounds and a half.

Macerate the ginger in the water, in a close vessel, for twenty-four hours: strain the infusion, and form a syrup, by adding the sugar.

THIS is an agreeable and moderately aromatic syrup, impregnated with the flavour and virtues of the ginger.

T.

TAMARINDUS INDICA. *Ed.* L. D.

Fructus conditus.

Tamarind tree. The preserved fruit.

Willd. g. 1250. *sp.* 1. *Monadelphia Triandria.*—Nat. ord. *Lomentaceæ.*

D.	*Tamarinden.*	I.	*Tamarindo.*
DA.	*Tamarin.*	P.	*Tamarinho.*
F.	*Tamarins.*	S.	*Tamarindo*
G.	*Tamarinden.*	SW.	*Tamarind.*

THIS tree grows both in the East and West Indies. The fruit is a broad ash-coloured pod. The external covering is thin and brittle, and contains several hard seeds, enveloped in a soft brown pulp. Tamarinds are cured in two ways. The common way is to throw hot sugar from the boilers on the ripe pulp; but a better method is to put alternate layers of tamarinds and powdered sugar in a stone jar. By this means the tamarinds preserve their colour, and taste more agreeably.

East India tamarinds are longer than the West India sort; the former containing six or seven seeds each, the latter rarely above three or four.

Preserved tamarinds should be fresh and juicy, and should have an agreeable acid taste. They should not have a musty smell: the seeds should not be soft and swollen, and the blade of a knife should not get a coating of copper by being immersed amongst them.

Tamarinds contain sugar, mucilage, citric acid, super-tartrite of potass, tartarous acid, and malic acid.

Medical use.—The pulp of these fruits, taken in the quantity of from two or three drachms to an ounce or more, proves gently laxative and purgative; and at the same time, by its acidity, quenches thirst, and allays immoderate heat. It increases the action of the purgative sweets, cassia and manna, and weakens that of the resinous cathartics.

Salts, whose base is potass, form an improper addition to tamarind, for they are decomposed, and the tartarous acid of the fruit is precipitated in the form of super-tartrat of potass.

Officinal Preparations.

Infusum tamarind. cum senna, E. - -	*vide Infusa.*
Electuarium cassiæ, E. L. D. - - -	*Electuaria.*
sennæ, E. L. - - - -	*Idem.*

TANACETUM VULGARE. *Folia. Ed.* D.

Common Tansy. The leaves.

Willd. g. 1472. *sp.* 18. *Smith, g.* 360. *sp.* 1. *Syngenesia Polygamia superflua.*—Nat. ord. *Compositæ discoideæ.*

Tansy is perennial, and grows wild by road sides and the borders of fields, and is frequently also cultivated in gardens, both for culinary and medicinal uses: It flowers in June and July.

Medical use.—Considered as a medicine, it is a moderately warm bitter, accompanied with a strong, not very disagreeable flavour. Some physicians have had a great opinion of it in hysteric disorders, particularly those proceeding from a deficiency or suppression of the uterine purgations. The leaves and seeds have been of considerable esteem as anthelmintics; the seeds are less bitter, and more acrid and aromatic than those of rue, to which they are reckoned similar; or of santonicum, for which they have been frequently substituted. An infusion of tansy, drunk in a manner similar to tea, has been strongly recommended as a preventive of the return of gout.

TEUCRIUM.

Willd. g. 1093. *Smith, g.* 259. *Didynamia Gymnospermia.*—Nat. ord. *Verticillatæ.*

TEUCRIUM MARUM. *Sp.* 12. *Herba.* D.

Syrian herb Mastich.

This is a small shrubby plant, growing spontaneously in Syria, Candy, and other warm climates, and cultivated with us in gardens. The leaves have an aromatic bitterish taste; and, when rubbed betwixt the fingers, a quick pungent smell, like volatile alkali, which soon affects the head, and occasions sneezing: distilled with water, they yield a very acrid, penetrating essential oil, resembling that of scurvy-grass. These qualities sufficiently point out the uses to which this plant might be applied; at present it is little otherwise employed than in cephalic snuffs.

Officinal Preparation.

Pulvis asari comp. E. L. D. - - - - *vide Pulveres.*

TEUCRIUM CHAMÆDRYS. *Willd. sp.* 36. *Smith, sp.* 3. *Herba.* D.

Wall Germander. The herb.

This perennial herb is found plentifully in the isle of Ely and near Cambridge. It flowers in July and August. It is an aromatic bitter, and is considered to be tonic and stimulant. An infusion of it is given in ague, chlorosis, and arthritis.

TINCTURÆ.—*TINCTURES.*

The term Tincture has often been employed in a very vague sense. It is now commonly applied to solutions, made by digestion, in alcohol, or diluted alcohol. But it is also, though perhaps incorrectly, extended to solutions in ether, ethereal spirits, and spirit of ammonia.

Alcohol is capable of dissolving resins, gum resins, extractive, tannin, sugar, volatile oils, soaps, camphor, adipocere, colouring matters, acids, alkalies, and some compound salts. Many of these, as the gum resins, soaps, extractive, tannin, sugar, and saline substances, are also soluble in water, while water is capable of dissolving substances, such as gum, gelatin, and most of the compound salts, which are insoluble in alcohol. But the insolubility of these substances in the different menstrua is not absolute, but merely relative; for a certain proportion of alcohol may be added to a solution of gum in water without decomposing it; and a solution of resin in alcohol will bear a certain admixture of water without becoming turbid. Therefore, diluted alcohol, which is a mixture of these two menstrua, sometimes extracts the virtues of heterogeneous compounds more completely than either of them separately.

Alcohol is used as a menstruum,

1. When the solvend is not soluble, or sparingly soluble, in water.
2. When a watery solution of the solvend is extremely perishable.
3. When the use of alcohol is indicated as well as that of the solvend.

In making alcoholic tinctures, we must observe, that the virtues of recent vegetable matters are very imperfectly extracted by spiritous menstrua. They must, therefore, be previously carefully dried, and as we cannot assist the solution by means of heat, we must facilitate it by reducing the solvend to a state of as minute mechanical division as possible. To prevent loss, the solution is commonly made in a close vessel, and the heat applied must be very gentle, lest it be broken by the expansion of vapour.

The action of tinctures on the living system is always compounded of the action of the menstruum, and of the matters dissolved in it. Now, these actions may either coincide with, or oppose, each other; and as alcohol is at all times a powerful agent, it is evident that no substance should be exhibited in the form of a tincture, whose action is different from that of alcohol, unless it be capable of operating in so small a dose, that the quantity of alcohol taken along with it is inconsiderable.

Tinctures are not liable to spoil, as it is called, but they must nevertheless be kept in well closed phials, especially when they contain active ingredients, to prevent the evaporation of the menstruum.

They generally operate in doses so small, that they are rarely exhibited by themselves, but commonly combined with some vehicle. In choosing the latter, we must select some substance which does not decompose the tincture, or at least separates nothing from it in a palpable form.

The colleges direct all tinctures to be prepared in closed phials; and to be frequently shaken during the process.

TINCTURA ALOES SOCOTORINÆ. *Ed.*

The Tincture of Socotorine Aloes.

TINCTURA ALOES. L. D. *Tincture of Aloes.*

Take of
Socotorine aloes, in powder, half an ounce;
Extract of liquorice, an ounce and a half;
Alcohol, four ounces;
Water, one pound.

Digest for seven days in a closed vessel, with a gentle heat and frequent agitation; and pour off the depurated tincture. These directions are to be observed in preparing all tinctures. (E. D.)

IN this simple tincture, all the active parts of the aloes are suspended in the menstruum. The extract of liquorice serves both to assist the suspension, and to cover the taste of the aloes; and in those cases where we wish for the operation of the aloes alone, this is perhap one of the best formulæ for its exhibition in a fluid state. About an ounce may be taken for a dose.

TINCTURA ALOES ET MYRRHA. *Ed.*

Tincture of Aloes and Myrrh.

TINCTURA ALOES COMPOSITA. L. D. *Compound Tincture of Aloes.*

Take of
Myrrh, in powder, two ounces;

Alcohol, one pound and a half;
Water, half a pound.
Mix the alcohol with the water, then add the myrrh; digest for four days; and, lastly, add
Socotorine aloes, one ounce and a half;
Saffron, an ounce.
Digest again for three days, and pour off the tincture from the sediment. (E.)

This is supposed to be an improvement on the elixir proprietatis of Paracelsus. This tincture differs considerably in strength from that of the London and Dublin formula; the latter contains one part of aloes to eight of the menstruum; the former one to sixteen, while the simple tincture already mentioned contains but one to thirty-two. In prescription these proportions must be attended to. The myrrh and saffron may add to its stimulating properties.

TINCTURA AMOMI REPENTIS. *Ed.*

Tinctura Cardamomi. L. D.

Tincture of Cardamom.

Take of
Lesser cardamom seeds, four ounces;
Diluted alcohol, two pounds and a half.
Digest for seven days, and strain through paper. (E.)

Tincture of cardamoms has been in use for a considerable time. It is a pleasant warm cordial; and may be taken, along with any proper vehicle, in doses of from a drachm to a spoonful or two.

TINCTURA CARDAMOMI COMPOSITA. L. D.

Compound Tincture of Cardamom.

Take of
Lesser cardamom seeds, husked, and bruised,
Cochineal,
Caraway seeds, each, powdered, two drachms;
Cinnamon, bruised, half an ounce;
Proof spirit, two pints.
Digest for fourteen days, and strain. (D.)

This tincture contains so small a proportion of cardamoms as to be hardly entitled to derive its name from that article.

TINCTURA ANGUSTURÆ. D.

Tincture of Angustura.

Take of
Angustura bark in coarse powder, two ounces;
Proof spirit of wine, two pints.
Digest for seven days, and filter.

Angustura bark readily gives out its active principles to alcohol; hence the tincture is a convenient and useful preparation.

TINCTURA ARISTOLOCHIÆ SERPENTARIÆ. *Ed.*

Tinctura Serpentariæ. L. D. *Tincture of Snake-root.*

Take of
Virginian snake-root, sliced and bruised, three ounces;
Proof spirit, two pints.
Digest for eight days, and strain. (L. D.)

This tincture, which contains the whole virtues of the root, may be taken to the quantity of a spoonful or more every five or six hours; and to this extent it often operates as a useful diaphoretic.

TINCTURA ASSÆ FOETIDÆ. *Ed.* L. D.

Tincture of Assa Fœtida.

Take of
Assa fœtida, four ounces;
Alcohol, two pounds and a half.
Digest for seven days, and strain through paper. (E.)

This tincture possesses the virtues of the assa fœtida itself; and may be given in doses of from ten drops to fifty or sixty.

TINCTURA AURANTII CORTICIS. L. D.

Tincture of Orange-Peel.

Take of
Fresh orange-peel, three ounces;
Proof spirit, two pints.
Digest for three days, and strain. (L. D.)

This tincture is an agreeable bitter, flavoured at the same time with the essential oil of the orange-peel.

TINCTURA BALSAMI PERUVIANI. L.

Tincture of Balsam of Peru.

Take of
 Balsam of Peru, four ounces;
 Rectified spirit of wine, one pint.
Digest until the balsam be dissolved. (L.)

THE whole of the Peruvian balsam is dissolved by spirit of wine: this therefore may be considered as a good method of freeing it from its impurities, while at the same time it is thus reduced to a state under which it may be readily exhibited: but at present it is very little employed, unless in composition, either under this or any other form.

TINCTURA BENZOES COMPOSITA. *Ed.* L. D.

Vulgo, BALSAMUM TRAUMATICUM.

Compound Tincture of Benzoin.

Take of
 Benzoin, three ounces;
 Storax, strained, two ounces;
 Balsam of Tolu, one ounce;
 Socotorine aloes, half an ounce;
 Rectified spirit of wine, two pints.
Digest with a gentle heat for seven days, and strain. (D. L.)

THE Edinburgh college omit the storax, and use hepatic aloes in place of the socotorine. These differences are not very material; and both preparations may be considered as elegant simplifications of some very complicated compositions, which were celebrated under different names; such as Baume de Commandeur, Wade's balsam, Friars' balsam, Jesuits' drops, &c. These, in general, consisted of a confused farrago of discordant substances. They, however, derived considerable activity from the benzoin and aloes; and every thing to be expected from them may readily be obtained from the present formulæ.

TINCTURA CAMPHORÆ; vulgo, SPIRITUS VINOSUS CAMPHORATUS. *Ed.* SPIRITUS CAMPHORATUS. L. D.

Tincture of Camphor. Camphorated Spirit.

Take of
 Camphor, one ounce;
 Alcohol, one pound.
Mix them together, that the camphor may be dissolved.
(It may also be made with a double, triple, &c. proportion of camphor.) (E.)

THIS solution of camphor is only employed for external uses, against rheumatic pains, paralytic numbnesses, inflammations, for discussing tumours, preventing gangrenes, or restraining their progress. They are too pungent to be exhibited internally, and cannot be diluted with water, without being totally decomposed.

Officinal Preparation.

Aqua zinci vitriol. cum camph. L. - *vide Zincum.*

TINCTURA CASCARILLÆ. L. D.

Tincture of Cascarilla.

Take of
The bark of cascarilla, powdered, four ounces;
Proof spirit, two pints.
Digest with a gentle heat for eight days, and strain.

Proof spirit readily extracts the active power of the cascarilla; and the tincture may be employed to answer most of those purposes for which the bark itself is recommended: but in the cure of intermittents, it in general requires to be exhibited in substance.

TINCTURA CASSIÆ SENNÆ COMPOSITA;

Vulgo, Elixir Salutis. *Ed.*

Compound Tincture of Senna, commonly called *Elixir of Health.*

Tinctura Sennæ. L. D. *Tincture of Senna.*

Take of
Senna leaves, two ounces;
Jalap root, one ounce;
Coriander seeds, half an ounce;
Diluted alcohol, three pounds and a half.
Digest for seven days, and to the strained liquor add four ounces of double refined sugar. (E.)

This tincture is an useful carminative and cathartic, especially to those who have accustomed themselves to the use of spirituous liquors; it often relieves flatulent complaints and colics, where the common cordials have little effect: the dose is from one to two ounces.

TINCTURA CASTOREI. *Ed.* L. D.

Tincture of Castor.

Take of
Russian Castor, powdered, two ounces;
Proof spirit, two pints.
Digest for ten days, and strain. (L.)

It has been disputed whether a weak or rectified spirit, and whether cold or warm digestion, are preferable for making this tincture.

From several experiments made to determine this question, it appears that castor, macerated without heat, gives out its finer and most grateful parts to either spirit, but most perfectly to the rectified; that heat enables both menstrua to extract the greatest part of its grosser and more nauseous matter; and that proof spirit extracts this last more readily than rectified.

The tincture of castor is recommended in most kinds of nervous complaints and hysteric disorders: in the latter, it sometimes does service, though many have complained of its proving ineffectual. The dose is from twenty drops to forty, fifty, or more.

Officinal Preparation.

Tinctura sabinæ composita. L.

TINCTURA CINCHONÆ OFFICINALIS. *Ed.*

Tinctura Cinchonæ. D.

Tincture of Cinchona, or Peruvian Bark.

Take of
Cinchona bark, in coarse powder, four ounces;
Diluted alcohol, two pounds and a half.
Digest for seven days, and strain through paper. (E.)

This tincture is certainly impregnated with the virtues of cinchona, but not to such a degree that it can be given in sufficient doses to act as cinchona, without exhibiting more alcohol than is proper to be given as a medicine. Indeed, we are afraid that this and other bitter and tonic tinctures, as they are called, are with some only an apology for dram-drinking, and that the most apparent effects they produce are those of a slight degree of intoxication.

TINCTURA CINCHONÆ, sive CORTICIS PERUVIANI COMPOSITA. L. D.

Compound Tincture of Peruvian Bark.

Take of
Peruvian bark, powdered, two ounces;
Exterior peel of Seville oranges, dried, half an ounce;
Virginian snake-root, bruised, three drachms;
Saffron, one drachm;
Cochineal powdered, two scruples;
Proof spirit, twenty ounces.
Digest for fourteen days, and strain. (D.)

This has been for a considerable time celebrated under the title of *Huxham's Tincture of Bark.*

As a corroborant and stomachic, it is given in doses of two or three drachms: but when employed for the cure of intermittents, it must be taken to a greater extent.

TINCTURA COLOMBÆ. *Ed.* L. D.

Tincture of Colomba.

Take of
Colomba root, powdered, two ounces;
Proof spirit of wine, two pints.
Digest for seven days, and strain. (E. D.)

The colomba readily yields its active qualities to the menstruum here employed; and accordingly, under this form, it may be advantageously employed against bilious vomitings, and those different stomach complaints, in which the colomba has been found useful; but where there does not occur some objection to its use in substance, that form is in general preferable to the tincture.

TINCTURA CONVOLVULI JALAPÆ. *Ed.*

Tinctura Jalapæ. L. D. *Tincture of Jalap.*

Take of
Jalap, in coarse powder, three ounces;
Diluted alcohol, fifteen ounces.
Digest them for seven days, and strain the tincture through paper (E.)

Alcohol was formerly ordered for the preparation of this tincture; but diluted alcohol is a preferable menstruum, as it dissolves the active constituents of the jalap as well as pure alcohol, and is less stimulating.

TINCTURA CROCI. *Ed.*

Tincture of Saffron.

Take of
English saffron, one ounce;
Diluted alcohol, fifteen ounces.
After digesting them for seven days, let the tincture be strained through paper. (E.)

The proof spirit is a very proper menstruum for extracting the medical virtues of the saffron, and affords a convenient mode of exhibiting that drug, the qualities of which have been already mentioned.

TINCTURA DIGITALIS PURPUREÆ. *Ed.*

Tinctura Digitalis. D. L. *Tincture of Foxglove.*

Take of
The dried leaves of foxglove, one ounce;
Diluted alcohol, eight ounces.
Digest for seven days, and strain through paper. (E.)

This tincture is a very powerful medicine, and contains the virtues of the foxglove in a very manageable form. It has been chiefly used to diminish the force of the circulation of the blood in hæmoptysis, and often with remarkable success. It has been also said to cure phthisis pulmonalis, but subsequent experience has not confirmed the first trials. Like every other form in which foxglove is given, it should be given in very small doses at first, such as from ten to twenty drops, and cautiously increased.

TINCTURA FERRI MURIATI. L. D.

Tincture of Muriated Iron.

Tinctura Muriatis Ferri. *Ed. Tincture of Muriat of Iron.*

Take of

The rust of iron, half a pound;
Muriatic acid, three pounds;
Rectified spirit of wine, three pints.

Pour the muriatic acid on the rust of iron in a glass vessel; and shake the mixture now and then during three days. Set it by, that the feces may subside; then pour off the liquor; evaporate this to one pint, and, when cold, add to it the vinous spirit. (L.)

In making this preparation, each of the colleges uses iron in a different state; the Dublin college, metallic iron; the Edinburgh, the black oxyd; and the London college, the carbonat of red oxyd. There is no difference between the solutions of iron and of its black oxyd; because the iron is converted into the state of black oxyd, by the decomposition of the water, before it is dissolved; and accordingly, when iron is dissolved in muriatic acid, there is a disengagement of hydrogen gas; whereas the black oxyd is dissolved without any effervescence. But muriatic acid is capable of combining either with the black or red oxyds of iron, and forms with each, salts, having distinctive properties.

The red muriat of iron is not crystallizable; has a dark orange colour; is deliquescent; forms a brown red solution, having a very astringent taste; and is soluble in alcohol. The green muriat is crystallizable; has little colour; is very soluble in water, forming a pale green solution; and is insoluble in alcohol. But the aqueous solution of green muriat attracts oxygen so rapidly from the atmosphere, that unless the access of the air be totally excluded, it is always partially converted into red muriat. The solutions of iron and of its black oxyd, are accordingly found always to contain a greater or less proportion of red muriat, and are therefore not uniform or constant in their properties. Besides, as it is only the red muriat which is soluble in alcohol, it appears to us that it is better, according to the directions of the London college, to use the red carbonat of iron, by which means we obtain an unmixed and permanent solution of the red muriat. Muriat of iron is also formed, when we dissolve the sulphuret of iron in muriatic acid for the purpose of procuring sulphureted hydrogen gas. It is also the residuum which remains in the retort after the sublimation of muriat of ammonia and iron.

When well prepared, the alcoholic solution of muriat of iron has a yellowish colour, and very astringent taste. It is an excellent chalybeate, and may be given in doses of ten or twenty drops twice or thrice a-day, in any proper vehicle.

4 C

TINCTURA FERRI AMMONIACALIS. L.

Tincture of Ammoniacal Iron.

Take of
 Ammoniacal iron, four ounces;
 Proof spirit, one pint.
Digest and strain. (L.)

This is merely a spiritous solution of the Ammoniacal Iron, and is a much less elegant medicine than the simple tincture of muriat of Iron.

TINCTURA FERRI ACETATI. D.

Tincture of Acetated Iron.

Take of
 Acetated kali, two ounces;
 Sulphat of iron, one ounce;
 Rectified spirit of wine, two pints.
Rub the acetat of kali and sulphat of iron in an earthen-ware mortar, until they unite into a soft mass; then dry it with a moderate heat, and triturate it, when dried, with the spirit. Digest the mixture in a well-corked phial for seven days, shaking it occasionally. Lastly, after the feces have subsided, pour off the liquor. (D.)

The acetat of potass and sulphat of iron decompose each other, and form acetat of iron, and sulphat of potass. But as the sulphat of potass is not soluble in alcohol, the solution, after filtration, is an alcoholic solution of acetat of iron. The acetic acid is also capable of combining with both oxyds of iron, and as the iron in the sulphat is in the state of black oxyd, which has a strong attraction for oxygen, it is probable that the acetat prepared in the way directed is a mixed acetat.

It has an extremely styptic taste, and is given in doses of thirty or forty drops.

TINCTURA ACETATIS FERRI cum ALCOHOL. *Dub.*

Tincture of Acetat of Iron with Alcohol

Is prepared exactly as the preceding tincture, with the substitution of one pint of alcohol for the two pints of rectified spirit.

This is probably an unmixed tincture of acetat of potass and red oxyd of iron, as alcohol is incapable of dissolving the green salts of iron, but dissolves the red salts readily.

TINCTURA GALBANI. L.

Tincture of Galbanum.

Take of
Galbanum, cut into small pieces, two ounces;
Proof spirit of wine, two pints.
Digest with a gentle heat for eight days, and strain. (L.)

Galbanum is one of the strongest of the fetid gums; and although less active, it is much less disagreeable than assa fœtida; and under the form of tincture it may be successfully employed in cases of flatulence and hysteria, where its effects are immediately required, particularly with those who cannot bear assa fœtida.

TINCTURA GALLARUM. *Dub.*

Tincture of Galls.

Take of
Galls, in powder, four ounces;
Proof spirit, two pints.
Mix; digest for seven days, and filter.

This tincture, now for the first time introduced into practice by the Dublin college, is, no doubt, the most powerful of all the astringent tinctures.

TINCTURA GENTIANÆ COMPOSITA; vulgo, Elixir Stomachicum. *Ed.* L. D.

Compound Tincture of Gentian, commonly called *Stomachic Elixir.*

Take of
Gentian root, two ounces;
Seville orange-peel, dried, one ounce;
Canella alba, half an ounce;
Cochineal, half a drachm;
Diluted alcohol, two pounds and a half.
Macerate for seven days, and strain through paper. (E.)

This is a very elegant spiritous bitter. As the preparation is designed for keeping, lemon peel, an excellent ingredient in the watery bitter infusions, has, on account of the perishableness of its flavour, no place in this.

TINCTURA GUAIACI. *Ed.* L. D.

Tincture of Guaiac.

Take of
Gum guaiac, one pound;
Alcohol, two pounds and a half.
Digest for ten days, and strain. (E.)

What is call gum guaiac is in fact a resin, and perfectly soluble in alcohol. This solution is a powerful stimulating sudorific, and may be given in doses of about half an ounce in rheumatic and arthritic cases. It was once supposed to be a specific against the gout.

TINCTURA HELLEBORI NIGRI. *Ed.* L. D.

Tincture of Black Hellebore.

Take of
Black hellebore root, four ounces;
Cochineal, half a drachm;
Diluted alcohol, two pounds and a half.
Digest them together seven days, and afterwards filter the tincture through paper. (E.)

This is perhaps the best preparation of hellebore, when designed for an alterative, the menstruum here employed extracting the whole of its virtues. It has been found, from experience, particularly serviceable in uterine obstructions. In sanguine constitutions, where chalybeates are hurtful, it has been said that it seldom fails of exciting the menstrual evacuations, and removing the ill consequences of their suppression. A tea spoon full of the tincture may be taken twice a day in warm water or any other convenient vehicle.

TINCTURA HUMULI. L.

Tincture of Hops.

Take of
Hops, five ounces;
Proof-spirit, two pints.
Macerate for fourteen days, and filter.

Opium in every form disagrees so completely with some people, as to render its exhibition to them improper. In these cases, we must have recourse to other narcotics, and of them the hop is one of the safest and most agreeable. Its comparative strength is not yet well ascertained, nor even the best form of exhibiting it. It is difficultly pulverizable, and in its natural form it is so extremely light and bulky, as to absorb and retain a great deal of the spirit employed to extract a tincture from it, even when subjected to much compression.

TINCTURA HYOSCIAMI NIGRI. *Ed.*

Tincture of Henbane.

Take of
The leaves of henbane, dried, one ounce;
Diluted alcohol, eight ounces.
Digest for seven days, and strain through paper. (E.)

This tincture, although not yet come into general use, is a valuble anodyne, and in many cases may be substituted with advantage for the tincture of opium, especially where the latter produces obstinate constipation, or, instead of its usual suporific and sedative effects, it causes uneasiness, restlessness, and universal irritation.

An anonymous correspondent observes, that it is useful in recent coughs, in doses for an adult of not less than thirty drops, with ten drops of laudanum, which is equal to thirty drops of the latter. Tincture of henbane alone sometimes purges; when this is an inconvenience, it is corrected by the addition of a few drops of laudanum.

TINCTURA KINO. *Ed.* D. *Tincture of Kino.*

Take of
- Kino, in powder, two ounces;
- Diluted alcohol, a pound and a half.

Digest seven days, and strain through paper. (E.)

We have already stated our reasons for believing kino to be a species of tannin. This is certainly a very astringent tincture, and will be found an excellent medicine in obstinate diarrhœas and in lienteria.

TINCTURA LAURA CINNAMOMI. *Ed.*

Tinctura Cinnamomi. L. D. *Tincture of Cinnamon.*

Take of
- Cinnamon, three ounces;
- Diluted alcohol, two pounds and a half.

Macerate for seven days, and strain through paper. (E.)

The tincture of cinnamon possesses the astringent virtues of the cinnamon, as well as its aromatic cordial ones; and in this respect it differs from the distilled waters of that spice.

TINCTURA LAURI CINNAMOMI COMPOSITA;
olim, Tinctura Aromatica. *Ed.*

Compound Tincture of Cinnamon, formerly *Aromatic Tincture.*

Tinctura Cinnamomi Composita. L.

Tinctura Aromatica. E. *Aromatic Tincture.*

Take of
- Cinnamon, bruised, six drachms;
- Lesser cardamom seeds, without the capsules, one drachm;
- Long pepper, in powder,
- Ginger, in powder, two drachms;
- Proof spirit, two pounds.

Mix and digest for seven days, then strain. (D.)

In their formula, the London and Dublin colleges diminish the quantity of cardamom seeds, and substitute for it a proportion of ginger. This makes no alteration in the virtues of the preparation, which is a very warm aromatic, too hot to be given without dilution. A tea spoonful or two may be taken in wine, or any other convenient vehicle, in languors, weakness of the stomach, flatulencies, and other similar complaints; and in these cases it is often employed with advantage.

Officinal Preparation.

Æther sulphuricus cum alcohole aromaticus, E. *vide Tincturæ.*

TINCTURA LAVENDULÆ COMPOSITA. D.

Spiritus Lavendulæ Spicæ Compositus. *Ed.*

Compound Tincture or Spirit of Lavender.

Spiritus Lavendulæ Compositus. L. *Compound Spirit of Lavender.*

Take of

Spirit of lavender, three pounds;
Spirit of rosemary, one pound;
Cinnamon, one ounce;
Cloves, two drachms;
Nutmeg, half an ounce;
Red saunders wood, three drachms.

Macerate for seven days, and filter. (E.)

This preparation is a grateful cordial, of which from ten to a hundred drops may be conveniently taken dropped upon sugar. It does not appear very clearly whether it should be considered as a spirit or tincture; for although the spirit of lavender be the predominant ingredient, yet the mode of preparation is that of a tincture, and the spirit as a menstruum dissolves astringent colouring, and other substances, which would not rise with it in distillation.

TINCTURA MELOES VESICATORII. *Ed.*

Tinctura Cantharidum. D. *Tincture of Spanish Flies.*

Tinctura Lyttæ. L. *Tincture of Cantharides.*

Take of

Cantharides, bruised, one drachm;
Proof spirit, one pound.

Mix and digest for seven days; then strain through paper. (E.)

This tincture contains the active principle of the cantharides, whatever it may be. It is applied externally as a stimulant and rubefacient, and is sometimes given internally, in doses of from ten to twenty drops, as a diuretic. It has been usefully employed in cases of gleet in small doses. I have however heard of a practitioner of this city who used this powerful remedy in a case of gleet, beginning with doses of sixty drops, until he had gradually increased the amount to even 1500 drops in twenty-four hours. He informed the patient that no benefit was to be expected from it, *unless it produced a new action;* which unfortunately for the patient, took place, in inflammation and suppuration in some parts of the genital organs! Such a practice cannot be too severely reprehended.

TINCTURA MIMOSÆ CATECHU; olim, TINCTURA JAPONICA. *Ed.*

TINCTURA CATECHU. L. *Tincture of Catechu.*

Take of
 Extract of catechu, three ounces;
 Cinnamon, two ounces;
 Diluted alcohol, two pounds and a half.
Digest for eight days, and strain through paper. (E.)

THE cinnamon is a very useful addition to the catechu, not only as it warms the stomach, &c. but likewise as it improves the roughness and astringency of the other.

This tincture is of service in all kinds of defluctions, catarrhs, loosenesses, uterine fluxes, and other disorders, where astringent medicines are indicated. Two or three tea-spoonfuls may be taken every now and then in red wine, or any other proper vehicle.

TINCTURA MOSCHI. D. *Tincture of Musk.*

Take of
 Musk, two drachms;
 Rectified spirit of wine, one pound.
Mix and macerate for seven days, and strain. (D.)

RECTIFIED spirit is the most complete menstruum for musk; but in this form it is often impossible to give such a quantity of the musk as is necessary for our purpose; and hence this article is more frequently employed under the form of julep or bolus.

TINCTURA MYRRHÆ. *Ed.* L. D.

Tincture of Myrrh.

Take of
 Myrrh, in powder, three ounces;
 Alcohol, twenty ounces;
 Water, ten ounces.
Digest for seven days, and strain through paper. (E.)

TINCTURE of myrrh is recommended internally as a cardiac, for removing obstructions, particularly those of the uterine vessels, and resisting putrefaction. The dose is from fifteen drops to forty or more. The medicine may perhaps be given in these cases to advantage; though with us, it is more commonly used externally, for cleaning foul ulcers, and promoting the exfoliation of carious bones.

Officinal Preparations.

Tinctura sabinæ composita, L.
Trochisci glycyrrhizæ cum opio, D. - - *vide Trochisci.*

TINCTURA OPII, sive THEBAICA;

Vulgo, Laudanum Liquidum. *Ed.* L. D.

Tincture of Opium; Thebaic Tincture; or Liquid Laudanum.

Take of
- Opium, two ounces;
- Diluted alcohol, two pounds.

Digest seven days, and filter through paper. (E.)

As these tinctures, on evaporation, furnish the same quantity of extract, they are believed to be of nearly equal strength; but it is to be regretted that they are not so well adapted for keeping as could be wished: after some time, a part of the opium is gradually deposited from both, and consequently the tinctures become weaker: the part which thus separates, amounts sometimes, it is said, to near one-fourth of the quantity of opium at first dissolved. Mr. Phillips found, that when alcohol of sp. gr. 0.930 was employed with select crude opium, the tincture acquired sp. gr. 0.952, and contained 26 grains of opium *per* fluidounce; but when purified opium was used, the sp. gr. of the tincture was 0.958, and the quantity of opium in the fluidounce 36 grains; of the crude opium one grain in 3.5 remained undissolved, and of the purified only one in twenty-five; while in the tincture made with the former, one grain of opium was contained in 18.3 minims, and in that with the latter in 13.3, so that from calculation the strength of the tincture made with purified opium to that made with crude opium is as three to two nearly. But we must here observe, that calculation cannot be altogether relied upon in this case, because, although purified opium contains more soluble matter than crude opium, its narcotic powers are diminished by the preparation it has undergone.

TINCTURA OPII CAMPHORATA; sive

Elixir Paregoricum. D.

Camphorated Tincture of Opium. Paregoric Elixir.

Tinctura Camphoræ Composita. L.

Compound Tincture of Camphor.

Take of
- Hard purified opium,
- Flowers of benzoin, of each one drachm;
- Camphor, two scruples;

Essential oil of aniseed, one drachm;
Proof spirit of wine, two pints.
Digest for ten days, and strain. (L.)

In this formula the virtues of the opium and camphor are combined. It gets an agreeable flavour from the acid of benzoin and essential oil. The latter will also render it more stimulating; but whether it derives any salutary virtues from the former, we do not know. It was originally prescribed under the title of Elixir Asthmaticum, which it does not ill deserve. It contributes to allay the tickling which provokes frequent coughing; and at the same time it is supposed to open the breast, and give greater liberty of breathing. It is given to children against the chincough, &c. from five drops to twenty: to adults, from twenty to a hundred. Half an ounce, by measure, contains about a grain of opium.

TINCTURA QUASSIÆ. *Dub. Tincture of Quassia.*

Take of
Shavings of quassia, one ounce;
Proof spirit, two pints.
Digest for seven days, and filter.

As the Dublin college have introduced into their Pharmacopœia the most powerful of all astringent tinctures, in the present instance, they have also first directed a tincture to be prepared from the purest and most intense of all bitters.

TINCTURA RHEI PALMATI. *Ed.*

Tinctura Rhabarbari. L. D. *Tincture of Rhubarb.*

Take of
Rhubarb, three ounces;
Lesser cardamom seeds, half an ounce;
Diluted alcohol, two pounds and a half.
Digest for seven days, and strain through paper. (E.)

TINCTURA RHABARBARI COMPOSITA. L.

Compound Tincture of Rhubarb.

Take of
Rhubarb, sliced, two ounces;
Liquorice root, bruised, half an ounce;
Ginger, powdered,
Saffron, each two drachms;
Distilled water, one pint;
Proof spirit of wine, twelve ounces, by measure.
Digest for fourteen days, and strain. (L.)

TINCTURA RHEI CUM ALOE; olim, ELIXIR SACRUM. *Ed.*

Tincture of Rhubarb with Aloes, commonly called *Sacred Elixir.*

Take of
 Rhubarb, ten drachms;
 Socotorine aloes, six drachms;
 Lesser cardamom seeds, half an ounce;
 Diluted alcohol, two pounds and a half.
Digest for seven days, and strain through paper. (E.)

TINCTURA RHEI CUM GENTIANA;

Olim, TINCTURA RHEI AMARA. *Ed.*

Tincture of Rhubarb with Gentian, formerly, *Bitter Tincture of Rhubarb.*

Take of
 Rhubarb, two ounces;
 Gentian root, half an ounce;
 Diluted alcohol, two pounds and a half.
Digest for seven days, and then strain the tincture through paper. (E.)

ALL the foregoing tinctures of rhubarb are designed as stomachics, and corroborants, as well as purgatives: spiritous liquors excellently extract those parts of the rhubarb in which the two first qualities reside, and the additional ingredients considerably promote their efficacy. In weakness of the stomach, indigestion, laxity of the intestines, diarrhœas, colic, and other similar complaints, these medicines are frequently of great service.

TINCTURA SABINÆ COMPOSITA. L.

Compound Tincture of Savin.

Take of
 Extract of savin, one ounce;
 Tincture of castor, one pint;
 myrrh, half a pint.
Digest till the extract of savin be dissolved, and then strain. (L.)

THIS preparation is improved from one described in some former dispensatories under the name of Elixir Uterinum. It is said to be a medicine of great importance in uterine obstructions, and in hypochondriacal cases; though, possibly, means might be contrived of superadding more effectually the virtues of savin to a tincture of myrrh and castor. It may be given from five drops to twenty or thirty, or more, in any suitable vehicle.

TINCTURA SAPONIS. *Ed. Tincture of Soap.*

LINIMENTUM SAPONIS COMPOSITUM. L. *Compound Soap Liniment.*

LINIMENTUM SAPONACEUM. D. *Saponaceous Liniment.*

Take of
Castile soap, two ounces;
Camphor, one ounce;
Alcohol,
Water, each eight ounces;
Essential oil of rosemary, two scruples.

Dissolve the soap in the water over a gentle fire; strain the liquor through linen; and when it is almost cold, add the camphor and oil, dissolved in the alcohol. (D.)

OFFICINAL PREPARATION.

Linimentum volatile, D. - - *vide Tincturæ volatiles.*

TINCTURA SAPONIS CUM OPIO; olim, LINIMENTUM ANODYNUM. *Ed.*

Tincture of Soap with Opium, formerly *Anodyne Liniment.*

This is prepared in the same way, and from the same substances, as the simple tincture of soap, but with the addition from the beginning of one ounce (half an ounce to conform to the Dublin formula) of opium. (E.)

THESE tinctures are only used externally, and possess great efficacy in removing local pains when rubbed on the affected part.

TINCTURA SCILLÆ. L. D. *Tincture of Squills.*

Take of
Squills, fresh dried, four ounces;
Proof spirit of wine, two pints.

Digest for eight days, and pour off the liquor. (L.)

THE active principle of squills is soluble in alcohol, and there are cases in which a tincture may be useful.

TINCTURA TOLUIFERÆ BALSAMI; olim, TINCTURA TOLUTANA. *Ed.*

TINCTURA BALSAMICA TOLUTANI. L. D.

Tincture of the Balsam of Tolu.

Take of
Balsam of Tolu, one ounce;
Alcohol, one pound.

Digest until the balsam be dissolved; and then strain the tincture through paper. (E. D.)

THIS solution of balsam of Tolu possesses all the virtues of the balsam itself. It may be taken internally, with the several intentions for which that valuable balsam is proper, to the quantity of a tea spoonful or two, in any convenient vehicle. Mixed with the plain syrup of sugar, it forms an elegant balsamic syrup.

TINCTURA VALERIANÆ. L.

Tincture of Valerian.

Take of
The root of wild valerian, in coarse powder, four ounces;
Proof spirit of wine, two pints.
Digest with a gentle heat for eight days, and strain. (L.)

THE valerian root ought to be reduced to a pretty fine powder, otherwise the spirit will not sufficiently extract its virtues. The tincture proves of a deep colour, and considerably strong of the valerian; though it has not been found to answer so well in the cure of epileptic disorders as the root in substance, exhibited in the form of powder or bolus. The dose of the tincture is, from half a spoonful, to a spoonful, or more, two or three times a-day.

TINCTURA VERATRI ALBI. *Ed.*

Tincture of White Hellebore.

Take of
White hellebore root, eight ounces;
Diluted alcohol, two pounds and a half.
Digest them together for seven days, and filter the tincture through paper. (E.)

THIS tincture is sometimes used for assisting cathartics, &c. and as an emetic in apoplectic and maniacal disorders. It may likewise be so managed, as to prove a powerful alterative and deobstruent, in cases where milder remedies have little effect. But a great deal of caution is requisite in its use: the dose, at first, ought to be only a few drops; if considerable, it proves violently emetic or cathartic.

TINCTURA ZINGIBERIS. L.

Tincture of Ginger.

Take of
Ginger, powdered, two ounces;
Proof spirit, two pounds.
Digest in a gentle heat for eight days, and strain. (L.)

This simple tincture of ginger is a warm cordial, and is rather intended as an useful addition, in the quantity of a drachm or two, to purging mixtures, than for being used alone.

TINCTURÆ ÆTHEREÆ.

ÆTHEREAL TINCTURES, OR TINCTURES MADE WITH ETHEREAL SPIRITS.

We have classed these tinctures by themselves, because they are more strongly characterised by the nature of the menstruum than of the substance dissolved in it. Indeed, the ethereal spirits are used in these instances, not to dissolve bodies which would resist the action of alcohol and water, but for the sake of their own direct action on the system.

TINCTURA ALOES ÆTHEREA. *Ed.*

Ethereal Tincture of Aloes.

Take of
Myrrh,
Socotorine aloes, of each an ounce and a half;
English saffron, one ounce;
Sulphuric ether with alcohol, one pound.

Digest the myrrh with the liquor for four days, in a close vessel; then add the saffron and aloes.

Digest again for four days, and, when the feces have subsided, pour off the tincture. (E.)

This tincture agrees generally in its effects with the other tinctures of aloes, the only difference arising from the more penetrating and stimulating nature of the menstruum itself.

ÆTHER SULPHURICUS cum ALCOHOLE AROMATICUS. *Ed.*

Aromatic Sulphuric Ether with Alcohol.

This is made of the same aromatics, and in the same manner, as the compound tincture of cinnamon (p. 573); except that, in place of the alcohol, sulphuric ether with alcohol is employed. (E.)

This is designed for persons whose stomachs are too weak to bear the following acid tincture: to the taste, it is gratefully aromatic, without any perceptible acidity.

ACIDUM SULPHURICUM AROMATICUM. *Ed.*

Aromatic Sulphuric Acid.—Elixir of Vitriol.

Take of
Alcohol, two pounds;
Sulphuric acid, six ounces.
Drop the acid gradually into the alcohol.
Digest the mixture with a very gentle heat in a close vessel for three days, and then add of
Cinnamon, an ounce and a half;
Ginger, one ounce.
Digest again in a close vessel for six days, and then filter the tincture through paper placed in a glass funnel. (E.)

ALTHOUGH the name given to this preparation by the college does not sanction its arrangement with the ethereal tinctures, yet we have ventured to place it here, from the belief that the alcohol is completely or partially changed, by the digestion with the acid, into an ethereal spirit, and that the principal difference between this and the preceding tincture consists in the presence of the acid, which is not to be considered as the menstruum by which the tincture is formed, but as an acid mixed with the ethereal tincture. This is commonly known as the Acid Elixir of Vitriol.

Medical use.—This is a valuable medicine in weakness and relaxations of the stomach, and decays of constitution, particularly in those which proceed from irregularities, which are accompanied with slow febrile symptoms, or which follow the suppression of intermittents. It frequently succeeds, after bitters and aromatics by themselves had availed nothing; and, indeed, great part of its virtues depend on the sulphuric acid; which, barely diluted with water, has, in those cases where the stomach could bear the acidity, produced happy effects.

It is very usefully conjoined with cinchona, and other tonic barks, both as covering their disagreeable taste, and as coinciding with them in virtue. It may be given in doses of ten to thirty drops, or more, several times a-day. It is best sucked from the glass by means of a quill, which prevents its coming in contact with the teeth.

TINCTURÆ AMMONIATÆ SEU VOLATILES.

AMMONIATED OR VOLATILE TINCTURES.

AMMONIA, like ether, is so powerful an agent on the living system, that we think it gives a peculiar character to the compositions into which it enters. They are all highly stimulating and pungent, and apt to exite diaphoresis. As ammonia exerts considerable and peculiar powers as a solvent, these tinctures must never be combined in prescription with any thing acid, which would not only neutralize the ammonia, and destroy its peculiar action on the living system, but would precipitate whatever was dissolved by its agency. In prescribing these ammoniated tinctures, the practitioner must attend to the very great increase of strength in the ammoniated alcohol of the London College, being not less, according to Mr. Phillips, than as five to one.

LINIMENTUM CAMPHORÆ COMPOSITUM. L.

Compound Camphor Liniment.

Take of
Camphor, two ounces;
Water of pure ammonia, six ounces;
Spirit of lavender, sixteen ounces.
Mix the water of ammonia with the spirit; and distil from a glass retort, with a slow fire, sixteen ounces. Then dissolve the camphor in the distilled liquor. (L.)

This is more pungent and penetrating than the solution of camphor in alcohol. Is the distillation necessary to get an ammoniated alcohol without water? Probably. Mr. Phillips, dreading the extreme causticity of the *Aqua ammoniæ* of the present Pharmacopœia, proposes the substitution of an equivalent quantity of subcarbonate of ammonia.

LINIMENTUM VOLATILE. D. *Volatile Liniment.*

Take of
The aromatic spirit of volatile alkali, one ounce;
Liniment of soap, two ounces.
Mix them. (D.)

This is an entirely different composition from the volatile liniment of the Edinburgh and London pharmacopœias. The latter is a soap formed of ammonia and fixed oil, whereas the present is an ammoniated tincture of camphor, soap of soda, and volatile oils. In its effects it differs from the soap-liniment of the Dublin college only in being more stimulating.

TINCTURA CASTOREI COMPOSITA. *Ed.*

Compound Tincture of Castor.

Take of
Russian castor, one ounce;
Assa fœtida, half an ounce;
Ammoniated alcohol, one pound.
Digest for seven days, and filter through paper. (E.)

This composition is a medicine of real efficacy, particularly in hysterical disorders, and the several symptoms which accompany them. The spirit here used is an excellent menstruum, both for the castor and the assa fœtida, and greatly adds to their virtues.

TINCTURA CINCHONÆ AMMONIATA. L.

Ammoniated Tincture of Cinchona.

Take of
 Cinchona, powdered, four ounces;
 Compound spirit of ammonia, two pints.
Digest in a close vessel for ten days, and strain. (L.)

We are not acquainted with this tincture; but from our knowledge of the active principles of cinchona bark, we are not disposed to think it a very judicious preparation; for the nature of the menstruum is so stimulating, that little effect can be expected from any portion of the bark it is capable of dissolving.

TINCTURA GUAIACI AMMONIATA. *Ed.* D. L.

Ammoniated Tincture of Guaiac.

Take of
 Gum guaiac, four ounces;
 Ammoniated alcohol, one pound and a half.
Digest for seven days, and filter through paper. (E.)

This is a very elegant and efficacious tincture; the ammoniated spirit readily dissolving the resin, and at the same time promoting its medicinal virtue. In rheumatic cases, a tea, or even table, spoonful, taken every morning and evening, in any convenient vehicle, particularly in milk, has proved of singular service. It is rendered much more agreeable by adding an ounce of oil of sassafras to the ingredients.

TINCTURA OPII AMMONIATA;

olim, Elixir Paregoricum. *Ed.*

Ammoniated Tincture of Opium, formerly *Paregoric Elixir.*

Take of
 Benzoic acid,
 English saffron, of each three drachms;
 Opium, two drachms;
 Essential oil of aniseed, half a drachm;
 Ammoniated alcohol, sixteen ounces.
Digest for seven days, in a close vessel, and strain. (D.)

This is a preparation of considerable efficacy in many spasmodic diseases, as chincough, &c. the ammonia removing the spasm immediately, while the opium tends to prevent its return. Each drachm contains about a grain of opium.

TINCTURA VALERIANÆ AMMONIATA. L. D.

Ammoniated Tincture of Valerian.

Take of
Valerian root, in coarse powder, four ounces;
Compound spirit of ammonia, two pints.
Digest for seven days in a vessel closely covered, and strain. (D.)

The compound spirit of ammonia is here an excellent menstruum, and at the same time considerably promotes the virtues of the valerian, which in some cases wants assistance of this kind. The dose may be a tea-spoonful or two.

TOLUIFERA BALSAMUM. *Balsamum. Ed.* L. D.

Balsamum Tolutanum. L. D. *Balsam of Tolu.*

Willd. g. 828. *sp.* 1. *Decand. Monogyn.*—Nat. ord. *Lomentaceæ.*

This tree grows in Spanish America, and the balsam flows from incisions made in its bark, during the hot season, and is brought to us in gourd shells. It is of a yellowish-brown colour, inclining to red: in consistence thick and tenacious: by age it grows hard and brittle, without suffering any great loss of its more valuable parts. The smell of this balsam is extremely fragrant, somewhat resembling that of lemons; its taste warm and sweetish. Lewis says that he has sometimes procured benzoic acid from it; it yields very little volatile oil, although it impregnates the distilled water strongly with its flavour. By dissolving a proper quantity of sugar in this water, a syrup is obtained greatly superior to that prepared in the common way, with a decoction of the balsam.

In its medical virtues it agrees with the other balsams.

Officinal Preparations.

Syrupus toluiferæ balsami, L. - -	*vide Syrupi.*
Tinctura toluiferæ balsami, E. L. D. - -	*Tincturæ.*
benzoes composita, E. L. - -	*Idem.*

TORMENTILLA ERECTA. *Willd. Radix. Ed.* D.

Tormentilla Erecta. *Smith.* L.

Septfoil. Common Tormentil. The root.

Willd. g. 1001. *sp.* 1. *Smith, g.* 236. *sp.* 1. *Icosandria Polygynia.*—Nat. ord. *Senticosæ.*

Tormentil is perennial, and found wild in woods and on commons: it has long slender stalks, with usually seven long narrow leaves at a joint; the root is for the most part crooked and knotty, of a blackish colour on the outside, and a reddish within. This root has an austere styptic taste, accompanied with a slight kind of aromatic flavour; it is one of the most agreeable and efficacious of the vegetable astringents, and is employed with good effect in all cases where medicines of this class are proper. Neumann got from 960 grains, 365 alcoholic, and 170 watery extract, and inversely 570 watery, and 8 alcoholic.

Officinal Preparation.

Pulvis cret. compositus, L. - - *vide Pulveres.*

TRAGACANTHA. - - *vide Astragalus.*

TRIGONELLA FOENUM GRÆCUM.

Foenum Græcum. *Semen.* L. *Fenugreek. The seeds.*

Diadelphia Decandria.—Nat. ord. *Papilionaceæ.*

D.	*Bokshoornzaad.*	I.	*Fienogreco.*
DA.	*Fonuggreæk.*	P.	*Alforvas, Fenogrego.*
F.	*Fenu-grec.*	S.	*Alforva, Altholva.*
G.	*Bockshornsamen, Fœnum graecum.*	SW.	*Fenugrek.*

This plant is annual, and a native of the south of France. In Poland it is cultivated in large quantities. The seeds have a yellowish colour, a rhomboidal figure, a disagreeable strong smell, and a mucilaginous taste. Their principal use was in cataplasms, fomentations, and the like, and in emollient clysters. Neumann got from 7680 parts, 620 bitter watery, and 30 unctuous alcoholic, extract, and inversely 270 very ungrateful alcoholic, and 390 watery. The distilled water had a slight smell of fenugreek, which it soon lost.

TRITICUM.

Willd. g. 152. *Triandria Monogynia.*—Nat. ord. *Gramina.*

TRITICUM ÆSTIVUM. *Sp.* 1. *Seminum Farina. Amylum.* D.

TRITICUM HYBERNUM. *Sp.* 2. *Farina. Amylum.* L.

Wheat. Flour. Starch.

D.	*Tarw.*	P.	*Trigo.*
DA.	*Huede.*	POL.	*Pazenica.*
F.	*Froment.*	R.	*Pscheniza.*
G.	*Weizen.*	S.	*Trigo.*
I.	*Grano, fromento.*	SW.	*Hvede.*

By some these are considered only as varieties, not as distinct species. The latter, however, is the most productive, and is most commonly cultivated on that account; for there is no material difference between the grains they produce, which are indiscriminately employed for every purpose.

Wheat-flour consists principally of gluten, starch, albumen, and a sweet mucilage. These may be separated by forming the flour into a paste with a little water, and washing this paste with fresh quantities of water, until it runs from it colourless. What remains is the gluten: which, if not the same, is very analogous to the fibrin of animal substances.* From the water with which the paste was washed, a white powder separates on standing. This is the starch which we have already mentioned under the title Amylum. The albumen and sweet mucilage remain dissolved in the water. By evaporating it, the albumen first separates in white flakes, and the sweet mucilage may be got by total evaporation.

It is the presence of gluten which characterizes wheat flour; and on the due admixture of it with the other constituents depends the superiority of wheat flour for baking bread.

Bread is made by working the flour into a paste with water, a quantity of some ferment, such as yeast, and a little muriat of soda to render it sapid, allowing the paste to stand until a certain degree of fermentation take place, and then baking it in an oven heated to about 488°. During the fermentation a quantity of gas is formed, and as it is prevented from escaping by the toughness of the paste, and dilated by the heat of the oven, the bread is rendered light and spongy. In this process the nature of the constituents of the flour is altered, for we are not able to obtain either gluten or starch from bread.

Medical use.—Bread is not only one of the most important articles of nourishment, but is also employed in pharmacy for making cataplasms, and giving form to more active articles. An infusion of toasted bread has a deep colour and pleasant taste, and is an excellent drink in febrile diseases, and debility of the stomach.

AMYLUM. *Starch.*

The general properties of starch have been already enumerated. It is found in many vegetables combined with different substances. Fourcroy, accordingly, makes various species of it; as, combined,

* *Fibrin* is of a white colour, without taste or smell, tough, and elastic, but when dried, hard and almost brittle. It is not soluble in water or in alcohol. The concentrated caustic alkalies form with it a kind of a fluid viscid soap. It is dissolved even by the weak and diluted acids; but it undergoes some change by which it acquires the properties of jellying, and being soluble in hot water. By maceration in water it becomes putrid, and is converted into adipocere. By long boiling in water, it is rendered tough and corneous. When decomposed by heat or nitric acid, it is found to contain a large proportion of nitrogen. It forms the basis of the muscular fibre, and is contained in small quantity in the blood. The gluten of wheat does not seem to differ from it in any important property. It is eminently nutritious.

1. With gluten or fibrin; as in wheat, rye, and other similar seeds.
2. With extractive; as in beans, peas, lupins, &c.
3. With mucilaginous matter; as in the potatoe, and many other roots, in unripe corn.
4. With saccharine matter in most roots, and in corn after it has begun to germinate.
5. With oil; in the emulsive seeds, almonds, &c.
6. With an acrid principle; as in the root of the burdock, jatropha manihot, arum asarum, and other tuberous roots.

Medical use.—As a constituent of many vegetable substances, it forms a most important alimentary substance. In a medical point of view, it is to be considered as a demulcent; and accordingly, it forms the principal ingredient of an officinal lozenge, and a mucilage prepared from it often produces excellent effects, both taken by the mouth, and in the form of a clyster in dysentery and diarrhœa, from irritation of the intestines. Externally flour or starch is the usual application in erysipelatous affections of the skin, but upon what principle is not very apparent, unless it be an empirical practice remaining from the pathology which dreaded the repulsion of all external inflammations.

TRIOSTEUM PERFOLIATUM.

Bastard Ipecacuanha.

In very large doses it sometimes proves emetic. The bark of the root is a good cathartic in doses of 20 or 30 grains. It sometimes operates as a diuretic.*

TROCHISCI.—*TROCHES.*

Troches and lozenges are composed of powders made up with glutinous substances into little cakes, and afterwards dried. This form is principally made use of for the more commodious exhibition of certain medicines, by fitting them to dissolve slowly in the mouth, so as to pass by degrees into the stomach; and hence these preparations have generally a considerable proportion of sugar or other materials grateful to the palate. Some powders have likewise been reduced into troches, with a view to their preservation; though possibly for no very good reasons; for the moistening, and afterwards drying them in the air, must rather tend to injure than to preserve them. The lozenges of the confectioner are so superior in elegance to those of the apothecary, that they are almost universally preferred; and hence it probably is that the Dublin and London colleges have entirely omitted them.

* Barton's Collections, Part 1. p. 28.

TROCHISCI CARBONATIS CALCIS. *Ed.*

Troches of Carbonat of Lime.

Trochisci Cretæ. L. *Troches of Chalk.*

Take of
Carbonat of lime, prepared, four ounces;
Gum arabic, one ounce;
Nutmeg, one drachm;
Double refined sugar, six ounces.
Powder them together, and form them with water into a mass for making troches. (E.)

These are used against acidity of the stomach, especially when accompanied with diarrhœa.

TROCHISCI GLYCYRRHIZÆ GLABRÆ. *Ed.* L. D.

Troches of Liquorice.

Take of
Extract of liquorice,
Gum arabic, each one part;
Refined sugar, two parts.
Dissolve them in warm water, and strain; then evaporate the solution over a gentle fire, till it be of a proper consistence for being formed into troches.

These are agreeable pectorals, and may be used at pleasure in tickling coughs. The solution, and subsequent evaporation, of the extract of liquorice, directed by the Edinburgh college, is exceedingly troublesome, and apt to give the troches an empyreumatic flavour. They are more easily made, by reducing the liquorice also to powder, and mixing up the whole with rose-water. Refined extract of liquorice should be used; and it is easily powdered in the cold, after it has been laid for some days in a dry and rather warm place.

TROCHISCI GLYCYRRHIZÆ cum OPIO. *Ed.*

Liquorice Troches with Opium.

Trochisci Glycyrrhizæ Compositi. D. *Compound Troches of Liquorice.*

Take of
Opium, two drachms;
Tincture of Tolu, half an ounce;
Common syrup, eight ounces;
Extract of liquorice, softened in warm water,
Gum arabic, in powder, of each five ounces,

Triturate the opium well with the tincture, then add by degrees the syrup and extract; afterwards gradually sprinkle upon the mixture the powdered gum arabic. Lastly, dry them so as to form a mass to be made into troches, each weighing ten grains. (E.)

These troches are medicines of approved efficacy in tickling coughs depending on an irritation of the fauces. Besides the mechanical effect of the inviscating matters in involving acrid humours, or lining and defending the tender membranes, the opium must no doubt have a considerable share, by more immediately diminishing the irritability of the parts themselves. Six of the Dublin troches, and seven and a half of the Edinburgh, contain about one grain of opium.

TROCHISCI GUMMOSI. *Ed.*

Gum Troches.

Take of
Gum arabic, four parts;
Starch, one part;
Double refined sugar, twelve parts.

Powder them, and make them into a proper mass with rose water, so as to form troches. (E.)

This composition is a very agreeable pectoral, and may be used at pleasure. It is calculated for allaying the tickling in the throat which provokes coughing.

TROCHISCI MAGNESIÆ. L. *Troches of Magnesia.*

Take of
Burnt magnesia, four ounces;
Double refined sugar, two ounces;
Ginger, powdered, one scruple.

Triturate them together, and, with the addition of the mucilage of gum arabic, make troches. (L.)

These are excellent antacids, and at the same time tend to keep the bowels open.

TROCHISCI SULPHURIS. L. *Troches of Sulphur.*

Take of
Washed flowers of sulphur, two ounces;
Double refined sugar, four ounces.

Rub them together, with a sufficient quantity of the mucilage of quince seeds, and make troches. (L.)

This composition is to be considered only as an agreeable form for the exhibition of sulphur, no alteration or addition being here made to its virtues.

TROCHISCI NITRATIS POTASSÆ. *Ed.*

Troches of Nitrat of Potass.

TROCHISCI NITRI. L. *Troches of Nitre.*

Take of
Nitrat of potass, one part;
Double refined sugar, three parts.
Rub together to powder and form them with mucilage of gum tragacanth into a mass, to be divided into troches. (E.)

THIS is a very agreeable form for the exhibition of nitre; though when the salt is thus taken without any liquid, (if the quantity be considerable,) it is apt to occasion uneasiness about the stomach, which can only be prevented by large dilution with aqueous liquors.

TUSSILAGO FARFARA. *Folia. Flores. Ed.* L. D.

Colts foot. The herb and flowers.

Willd. g. 1483. *sp.* 12. *Smith, g.* 360. *sp.* 1. *Syngenesia superflua.*— Nat. Ord. *Compositæ radiatæ.*

THIS grows wild in moist situations, producing yellow flowers in February and March: these soon fall off, and are succeeded by large roundish leaves, hairy underneath: their taste is herbaceous, somewhat glutinous and subacrid. Tussilago is recommended in coughs, phthisis, and other disorders of the breast and lungs, and some use it in scrofula. It is chiefly directed to be taken with milk, and upon this probably, more than on the tussilago itself, any benefit derived from it in practice is to be explained.

U.

ULMUS CAMPESTRIS. *Ed.* L. D.

Cortex interior. Common Elm. The inner bark.

Willd. g. 505. *sp.* 1. *Smith, g.* 117. *sp.* 1. *Pentandria Digynia.*— Nat. ord. *Scabridæ.*

THIS tree grows wild in Britain. The inner bark has a yellowish colour, and a mucilaginous, bitter, astringent taste, without smell.

A decoction formed from it, by boiling an ounce with a pound of water, to the consumption of one half, has been highly recommended in the lepra ichthyosis, and has been said to cure dropsies.

ULMUS AMERICANA.

Rough-leaved Elm tree. Red Elm. The inner bark.

THE inner bark is esculent. It is useful in pleurisies, &c. and forms an excellent poultice for tumours, and liniment for chaps, &c. It aids the suppuration of gun-shot wounds, and is thought superior to the bread and milk and flaxseed poultice. It is highly beneficial in old ulcers and fresh burns, and forms an excellent diet drink in diarrhœa and dysentery.*

We have two species of ulmus or elm in the United States. The red or *slippery* elm, or American rough leaved elm of Marshal, (ulmus rubra of Muhlenburgh) on account of its many valuable properties, deserves particular mention. It rises to the height of thirty feet, with a pretty strong trunk, dividing into many branches, and covered with a light coloured rough bark. The leaves are oblong, oval, and sharp pointed, unequally sawed on their edges, unequal at the base, very rough on their upper surface, and hairy underneath. The flowers are produced thick upon the branches, upon short, collected foot stalks, and are succeeded by oval, compressed membraneous seed vessels, with entire margins, containing one oval compressed seed. The inner bark, by infusion or gentle boiling in water, affords a great quantity of insipid mucous substance, that is applicable to a variety of important uses. Dr. Mitchel says it has been beneficially administered in catarrhs, pleurisies, and quinsies; it has been applied as a poultice to tumours, and as a liniment to chaps and festers. [Letter to Dr. North, Amer. Museum, vol. 7th.]

The surgeons of our revolutionary army, and also those of general Wayne's army, who defeated the Indians in August 1794, experienced the most happy effects from the application of poultices of the elm bark to gun shot wounds, which were soon brought to a good suppuration, and to a disposition to heal. It was applied as the first remedy. When tendency to mortification was evident, this bark bruised, and boiled in water, produced the most surprising good effects. After repeated comparative experiments with other emollient applications, as milk and bread, and linseed poultice, its superiority was firmly established. In old ill-conditioned ulcers, and in fresh burns, equal benefit was derived from it. The infusion of the bark was used with advantage as a diet drink, in pleurisy, and catarrh, and also in diarrhœa and dysentery. Many of the above facts relative to the medicinal qualities of the red elm, were communicated, says the editor of the Domestic Encyclopædia, by Dr Joseph Strong, of Philadelphia, who served as surgeon in the western army; and adds, as a proof of the nutriment which it affords, that a soldier who lost his way supported himself for ten days upon this mucilage and sassafras. The editor of the above mentioned work, (vol. 2d, p. 448) proceeds to observe, that the red elm tree may be considered as a highly valuable addition to our stock of medicines, exclusively American, and ought to be carefully searched for by the medical gentlemen in the country, and preserved from the indiscriminate ax.

* Philadelphia Medical Museum, Vol. II.

The inner bark of the slippery elm, or its mucilage, has been found by recent experience to be singularly beneficial when applied to chilblains, cutaneous eruptions, and various kinds of sores and ulcers; and there is much reason to believe, that its internal use in dysentery, consumption, &c. may be attended with greater advantage than is generally imagined. This tree certainly may be recommended to the particular regard of medical practitioners as a new, and domestic article of our Materia Medica, whose medicinal virtues will probably be found to merit a large share of confidence.

UNGUENTA.—*OINTMENTS.*

UNDER this general head may be comprised,

LINIMENTA, - -	*Liniments.*
CERATA, - - -	*Cerates.*
EMPLASTRA, - -	*Plasters.*
UNGUENTA, - - -	*Ointments*, properly so called.

THESE are all combinations of fixed oil, or animal fat, with other substances, and differ from each other only in consistence. Deyeux has, indeed, lately defined plasters to be combinations of oil with metallic oxyds; but as this would comprehend many of our present ointments, and exclude many of our plasters, we shall adhere to the old meaning of the terms.

Liniments are the thinnest of these compositions, being only a little thicker than oil.

Ointments have generally a degree of consistence like that of butter.

Cerates are firmer, and contain a larger proportion of wax.

Plasters are the most solid, and derive their firmness, either from a large proportion of wax, rosin, &c. or from the presence of some metallic oxyd, such as that of lead.

Plasters should have such a consistence, that when cold they do not adhere to the fingers, but become soft and plastic when gently heated. The heat of the body should render it tenacious enough to adhere to the skin, and to the substance on which it is spread. When prepared, it is usually formed into rolls, and inclosed in paper. Plasters of a small size are often spread on leather, sometimes on strong paper, by means of a spatula gently heated, or the thumb. The leather is cut of the shape wanted, but somewhat larger; and the margin all round, about $\frac{1}{4}$ inch in breadth, is left uncovered, for its more easy removal when necessary. Linen is also often used, especially for the less active plasters, which are used as dressings, and often renewed. It is generally cut into long slips of various breadths, from one to six inches. These may either be dipt into the melted plaster, and passed through two pieces of straight and smooth wood, held firmly together, so as to remove any excess of plaster, or, what is more elegant, they are spread on one side only, by stretching the linen, and applying the plaster, which has been melted and allowed to become almost cold, evenly by means of a spatula gently heated, or, more accurately, by passing the linen on which the plaster has been laid, through a machine formed of a spatula, fixed by screws, at a proper distance from a plate of polished steel.

To prevent repetition, the Edinburgh college gives the following canon for the preparation of these substances.

In making these compositions, the fatty and resinous substances are to be melted with a gentle heat, and then constantly stirred, adding, at the same time, the dry ingredients, if there be any, until the mixture, on cooling, becomes stiff. *Ed.*

ADIPIS BOVIS, SUILLÆ, SEVIQUE OVILLI, PRÆPARATIO.

The Preparation of Hog's Lard, and Beef and Mutton Suet.

Cut them into pieces, and melt them over a slow fire; then separate them from the membranes by straining. (L.)

Before proceeding to melt these fats, it is better to separate as much of the membranes as possible, and to wash them in repeated quantities of water until they no longer give out any colour. Over the fire they become perfectly transparent, and if they do not crackle on throwing a few drops into the fire, it is a sign that all the water is evaporated, and that the fats are ready for straining, which should be done through a linen cloth without expression. The residuum may be repeated melted with a little water, until it become discoloured with the fire. The fluid fat should be poured into the vessels, or bladders, in which it is to be preserved.

These articles had formerly a place also among the preparations of the Edinburgh college. But now they introduce them only into their list of the materia medica; as the apothecary will in general find it more for his interest to purchase them thus prepared, then to prepare them for himself; for the process requires to be very cautiously conducted, to prevent the fat from burning or turning black.

CERA FLAVA PURIFICATA. D.

Purified Yellow Wax.

Take of

Yellow wax, any quantity.

Melt it with a moderate heat, remove the scum, and after allowing it to settle, pour it cautiously off from the fæces.

Yellow wax is so often adulterated, that this process is by no means unnecessary.

LINIMENTUM SIMPLEX. *Ed. Simple Liniment.*

Take of
Olive oil, four parts;
White wax, one part. (E.)

This consists of the same articles which form the Unguentum simplex of the Edinburgh Pharmacopœia, but merely in a different proportion, so as to render the composition thinner; and where a thin consistence is requisite, this may be considered as a very elegant and useful application.

LINIMENTUM TEREBINTHINÆ. L.

Turpentine Liniment.

Take of
Cerate of resin, one pound;
Oil of turpentine, half a pint.
Add the oil of turpentine to the cerate melted, and mix.

Much used for rubbing parts affected with rheumatic pains, and on sprained joints.

LINIMENTUM HYDRARGYRI. L.

Liniment of Mercury.

Take of
Stronger mercurial ointment,
Prepared lard, of each four ounces;
Camphor, one ounce;
Rectified spirit, fifteen minims;
Water of ammonia, four fluidounces.
First rub the camphor with the spirit, then with the lard and mercurial ointment, lastly, having gradually added the water of ammonia, mix all the ingredients together.

CERATA.—*CERATES.*

CERATUM CANTHARIDIS. L. D.

Cerate of Cantharides.

Take of
Cerate of spermaceti, softened with heat, six drachms;
Spanish flies, finely powdered, one drachm.
Mix them. (L.)

Under this form cantharides may be made to act to any extent that is requisite. It may supply the place either of the blistering plaster or ointment; and there are cases in which it is preferable to either.

It is particularly more convenient than the emplastrum cantharidum, where the skin to which the blister is to be applied is previously much affected, as in cases of small pox; and in supporting a drain under the form of issue, it is less apt to spread than the softer ointment.

CERATUM CARBONATIS ZINCI IMPURI. *Ed.*

Cerate of Impure Carbonat of Zinc.

CERATUM LAPIDIS CALAMINÆ; olim, CERATUM EPULOTICUM. L. D.

Calamine Cerate, formerly *Epulotic Cerate.*

Take of
 Calamine, prepared,
 Yellow wax, of each half a pound;
 Olive oil, one pint.

Melt the wax with the oil; and as soon as the mixture, exposed to the air, begins to thicken, mix with it the calamine, and stir the cerate until it be cold. (L.)

THIS composition resembles the cerate which Turner strongly recommends in cutaneous ulcerations and excoriations, and which has been usually distinguished by his name. It appears from experience to be an excellent epulotic, and as such is frequently made use of in practice.

CERATUM PLUMBI SUPERACETATIS. L.

Cerate of Superacetat of Lead.

Take of
 Superacetat of lead, in powder, two drachms;
 White wax, two ounces;
 Olive oil, half a pint.

Melt the wax in seven fluidounces of the oil, and gradually add to these the superacetat of lead, separately triturated with the rest of the oil, and stir the mixture with a wooden spatula until they unite.

THESE are also excellent cooling ointments, of the greatest use in many cases.

CERATUM PLUMBI COMPOSITUM. L.

CERATUM LITHARGYRI ACETATI. D. *Compound Cerate of Acetated Litharge.*

Take of
 Water of acetated litharge, two ounces and a half;
 Yellow wax, four ounces;

Olive oil, nine ounces;
Camphor, half a drachm.

Rub the camphor with a little of the oil. Melt the wax with the remaining oil, and as soon as the mixture begins to thicken, pour in by degrees the water of acetated litharge, and stir constantly until it be cold; then mix in the camphor previously rubbed with oil. (L. D.)

THIS application has been rendered famous by the recommendations of Mr. Goulard. It is unquestionably in many cases very useful. It cannot, however, be considered as varying essentially from the saturnine ointments to be mentioned. It is employed with nearly the same intentions, and differs from them chiefly in consistence.

CERATUM RESINÆ FLAVÆ. L. D.

Cerate of Yellow Resin.

Take of
Ointment of yellow resin, half a pound;
Yellow wax, one ounce.

Melt them together, and make a cerate. (L. D.)

THIS had formerly the name of *Unguentum citrinum.* It is not otherwise different from the Yellow basilicum, or Unguentum resinæ flavæ, than being of a stiffer consistence, which renders it for some purposes more commodious.

CERATUM SAPONIS. L. D. *Soap Cerate.*

Take of
Hard Spanish soap, eight ounces;
Yellow wax, ten ounces;
Litharge, powdered, one pound;
Olive oil, fourteen ounces;
Vinegar, eight pounds.

Boil the vinegar with the litharge, over a slow fire, constantly stirring, until the mixture unites and thickens; then mix in the other articles, and make a cerate. (D.)

NOTWITHSTANDING the name, this cerate may rather be considered as a saturnine application; its action depending very little on the soap.

CERATUM SABINÆ. L. *Cerate of Savine.*

Take of
Fresh savine leaves, bruised, one pound;
Yellow wax, half a pound;
Prepared hogs lard, two pounds.

Boil the savine leaves with the lard and wax melted together, and express through linen.

This is an excellent issue ointment, being in many respects preferable to those of cantharides. If fresh leaves are not to be had, it may be made by mixing the dried leaves finely powdered, with any ointment of proper consistency.

CERATUM SIMPLEX. *Ed.*

Simple Cerate.

Ceratum Spermatis Ceti. L. D. *Cerate of Spermaceti.*

Take of
- Olive oil, six parts;
- White wax, three parts;
- Spermaceti, one part. (E.)

This differs from the simple ointment, in containing a greater proportion of wax to the oil, and in the addition of the spermaceti. But by these means it obtains only a more firm consistence, without any essential change of properties.

It scarcely differs from the Ceratum Spermatis Ceti of the London and Dublin colleges, the latter containing one-thirteenth part of spermaceti, and the former one-tenth part; we have therefore introduced one formula only.

The ceratum spermatis ceti had formerly the name of *Ceratum album*, and it differs in nothing from the Unguentum spermatis ceti, or Linimentum album, as it was formerly called, excepting in consistence, both the wax and the spermaceti bearing a greater proportion to the oil.

EMPLASTRA.—*PLASTERS.*

EMPLASTRUM AMMONIACI cum HYDRARGYRO. L.

Plaster of Gum Ammoniac with Quicksilver.

Take of
- Gum ammoniac, strained, one pound;
- Purified quicksilver, three ounces;
- Sulphureted oil, a drachm, or as much as may be necessary.

Triturate the quicksilver with the sulphureted oil, until its globules disappear; then gradually add the gum ammoniac melted, and mix them. (L.)

This mercurial plaster is considered as a powerful resolvent and discutient, acting with much greater certainty for these intentions than any composition of vegetable substances alone; the mercury exerting itself in a considerable degree, and being sometimes introduced into the habit in such quantity as to effect the mouth. Pains in the joints and limbs from a venereal cause, nodes, tophi, and beginning indurations, are said to yield to them sometimes.

EMPLASTRUM AROMATICUM. *Dub.*

Aromatic Plaster.

Take of
- Frankincense, three ounces;
- Yellow wax, half an ounce;
- Cinnamon, in powder, six drachms;
- Essential oil of pimento,
- lemon, each two drachms.

Melt the frankincense and wax together, and strain; when getting stiff, from being allowed to cool, mix in the cinnamon and oils, and make a plaster.

EMPLASTRUM ASSÆ FOETIDÆ;

Vulgo, Emplastrum Anti-hystericum. *Ed.*

Plaster of Assa fœtida, commonly called *Anti-hysteric Plaster.*

Take of
- Plaster of semi-vitrified oxyd of lead,
- Assa fœtida, each two parts;
- Galbanum,
- Yellow wax, each one part. (E.)

This plaster is applied to the umbilical region, or over the whole abdomen, in hysteric cases; and sometimes with good effect; but probably more from its effect as giving an additional degree of heat to the part, than from any influence derived from the fetid gums.

EMPLASTRUM CALEFACIENS. *Dub.*

Calefacient Plaster.

Take of
- Plaster of cantharides, one part;
- Burgundy pitch, seven parts.

Melt together, at a moderate heat, and make into a plaster.

This is a very convenient plaster, being more active as a stimulant and rubefacient than the simple Burgundy pitch plaster, while it will scarcely ever raise a blister.

EMPLASTRUM CERÆ. D.

Emplastrum Ceræ Compositum. L. *Compound Wax Plaster.*

Take of
- Yellow wax,

Prepared mutton suet, of each three pounds;
Yellow resin, one pound.
Melt them together, and strain the mixture while it is fluid. (L. D.)

EMPLASTRUM CUMINI. L. *Cummin Plaster.*

Take of
Cummin seeds,
Caraway seeds,
Bay-berries, of each three ounces;
Burgundy pitch, three pounds;
Yellow wax, three ounces.
Melt the pitch and wax together, and mix with them the rest of the ingredients, powdered, and make a plaster. (L.)

This plaster has been recommended as a moderately warm discutient; and is directed by some to be applied to the hypogastric region, for strengthening the viscera, and expelling flatulencies: but it is a matter of great doubt, whether it derives any virtue, either from the article from which it is named, or from the caraway seeds or bay-berries which enter its composition.

EMPLASTRUM GALBANI. D.

Plaster of Galbanum.

Take of
Plaster of litharge, two pounds;
Galbanum, half a pound;
Yellow wax, sliced, four ounces.
Add the plaster and wax to the galbanum, melted, and then melt the whole together with a moderate heat.

EMPLASTRUM GALBANI COMPOSITUM. L.

Compound Plaster of Galbanum.

Take of
Strained galbanum, eight ounces;
Plaster of lead, three pounds;
Turpentine, ten drachms;
Frankincense, in powder, three ounces.
With the galbanum and turpentine melted together, mix first the frankincense, and afterwards the litharge plaster, melted also with a very slow fire, and make a plaster.

EMPLASTRUM GUMMOSUM. Ed. *Gum Plaster.*

Take of
Plaster of semi-vitrified oxyd of lead, eight parts;

Gum ammoniacum,
Galbanum,
Yellow wax, each one part.
Melt together. (E.)

THESE plasters are used as a digestive and suppurative; particularly in abscesses, after a part of the matter has been maturated and discharged, for suppurating or discussing the remaining hard part; but it is very doubtful whether it derives any advantage from the gums entering its composition.

EMPLASTRUM HYDRARGYRI. *Ed.*

Plaster of Quicksilver.

Take of
Olive oil,
White resin, each one part;
Quicksilver, three parts;
Plaster of semi-vitrified oxyd of lead, six parts.
Melt the oil and resin together, and when this mixture is cold, let the quicksilver be rubbed with it till the globules disappear; then add by degrees the litharge plaster, melted, and let the whole be accurately mixed. (E.)

SEE the observations on Emplastrum Ammoniaci cum Hydrargyro.

EMPLASTRUM LADANI COMPOSITUM. L.

Compound Ladanum Plaster.

Take of
Ladanum, three ounces;
Frankincense, one ounce;
Cinnamon, powdered,
Expressed oil of mace, of each half an ounce;
Essential oil of mint, one drachm.
To the melted frankincense, add first the ladanum, softened by heat; then the oil of mace. Mix these afterwards with the cinnamon and oil of mint, and beat them together, in a warm mortar, into a plaster. Let it be kept in a close vessel. (L.)

THIS has been considered as a very elegant stomach plaster, It is contrived so as to be easily made occasionally, (for these kinds of compositions, on account of their volatile ingredients, are not fit for keeping), and to be but moderately adhesive, so as not tó offend the skin, and that it may, without difficulty, be frequently renewed; which these sorts of applications, in order to their producing any considerable effect, require to be.

EMPLASTRUM LITHARGYRI COMPOSITUM. L.

Compound Plaster of Litharge.

Take of
Litharge plaster, three pounds;
Strained galbanum, eight ounces;
Turpentine, ten drachms;
Frankincense, three ounces.

The galbanum and turpentine being melted, mix with them the powdered frankincense, and afterwards the litharge plaster, melted also with a very slow fire, and make a plaster. (L.)

SEE the observations on Emplastrum Gummosum.

EMPLASTRUM LITHARGYRI CUM HYDRARGYRO. L.

Litharge Plaster with Quicksilver.

Take of
Litharge plaster, one pound;
Purified quicksilver, three ounces;
Sulphureted oil, one drachm, or what is sufficient.

Make the plaster in the same manner as the ammoniacum plaster with quicksilver. (L.)—The observations on which, see.

EMPLASTRUM MELOES VESICATORII;

olim, EMPLASTRUM VESICATORIUM. *Ed.*

Plaster of Spanish Flies, formerly *Blistering Plaster.*

EMPLASTRUM CANTHARIDIS. D. EMPLASTRUM LYTTÆ. L.

Plaster of Spanish Flies.

Take of
Mutton suet,
Yellow wax,
White rosin,
Cantharides, each equal weights.

Mix the cantharides, reduced to a fine powder, with the other ingredients, previously melted, and removed from the fire. (E.)

THIS formula is very well suited to answer the intention in view, that of exciting blisters; for it is of a proper consistence and sufficient degree of tenacity, which are here the only requisites. Cantharides of good quality, duly applied to the skin, seldom fail of producing blisters. When, therefore, the desired effect does not take place, it is to be ascribed to the flies either being faulty at first, or having their activity afterwards destroyed by some accidental circumstance; such as too great heat in forming, or in spreading the plaster, or the like. It is therefore not unusual to sprinkle powder of cantharides on the blister after it is spread.

EMPLASTRUM MELOES VESICATORII COMPOSITUM. *Ed.*

Compound Plaster of Spanish Flies.

Take of
Venice turpentine, eighteen parts;
Burgundy pitch,
Cantharides, each twelve parts;
Yellow wax, four parts;
Sub-acetite of copper, two parts;
Mustard seed,
Black pepper, each one part.

Having first melted the pitch and wax, add the turpentine, and to these, in fusion, and still hot, add the other ingredients, reduced to a fine powder, and mixed, and stir the whole carefully together, so as to form a plaster. (E.)

THIS is supposed to be the most infallible blistering plaster. It certainly contains a sufficient variety of stimulating ingredients.

EMPLASTRUM OXYDI FERRI RUBRI;

olim, EMPLASTRUM ROBORANS. *Ed.*

Plaster of Red Oxyd of Iron, commonly called *Strengthening Plaster.*

Take of
Plaster of semi-vitrified oxyd of lead, twenty-four parts;
White resin, six parts;
Yellow wax,
Olive oil, each three parts;
Red oxyd of iron, eight parts.

Grind the red oxyd of iron with the oil, and then add it to the other ingredients previously melted. (E.)

THIS plaster is used in weaknesses of the large muscles, as of the loins: and its effects seem to proceed from the artificial mechanical support given to the part, which may also be done by any other plaster that adheres with equal firmness.

EMPLASTRUM OXYDI PLUMBI SEMIVITREI;

olim, EMPLASTRUM COMMUNE. *Ed.*

Plaster of the Semi-vitrified Oxyd of Lead, formerly *Common Plaster.*

EMPLASTRUM LITHARGYRI. L. D. *Litharge Plaster.*

Take of
Semi-vitrified oxyd of lead, one part;
Olive oil, two parts.

Boil them, adding water, and constantly stirring the mixture till the oil and litharge be formed into a plaster. (E.)

Oxyds of lead, boiled with oils, unite with them into a plaster of an excellent consistence, and which makes a proper basis for several other plasters.

In the boiling of these compositions, a quantity of water must be added, to prevent the plaster from burning and growing black. Such water as it may be necessary to add during the boiling, must be previously made hot; for cold liquor would not only prolong the process, but likewise occasion the matter to explode, and be thrown about with violence, to the great danger of the operator: this accident will equally happen upon the addition of hot water, if the plaster be extremely hot. It is therefore better to remove it from the fire a little before each addition of water.

These plasters, which have been long known under the name of Diachylon, are common applications in excoriations of the skin, slight flesh wounds, and the like. They keep the part soft and somewhat warm, and defend it from the air, which is all that can be expected in these cases from any plaster.

EMPLASTRUM PICIS BURGUNDICÆ. D.

Emplastrum Picis Compositum. L.

Compound Burgundy Pitch Plaster.

Take of
- Burgundy pitch, two pounds;
- Galbanum, one pound;
- Yellow resin,
- Yellow wax, of each four ounces;
- Expressed oil of mace, one ounce.

To the pitch, resin, and wax, melted together, add first the galbanum, and then the oil of mace. (D.)

EMPLASTRUM RESINOSUM;

Vulgo, Emplastrum Adhæsivum. *Ed.*

Resinous Plaster, commonly called *Adhesive Plaster*.

Emplastrum Lithargyri cum Resina. L.

Litharge Plaster with Resin.

Take of
- Plaster of semi-vitrified oxyd of lead, five parts;
- White resin, one part.

Melt them together, and make a plaster. (E.)

This plaster is chiefly used as an adhesive for keeping on other dressings, for retaining the edges of recent wounds together, when we are endeavouring to cure them by the first intention, and for giving mechanical support to new flesh, and contracting the size of ulcers, in the manner recommended by Mr. Baynton, for the cure of ulcers of the legs.

EMPLASTRUM SAPONACEUM. *Ed.* D.

Saponaceous Plaster.

EMPLASTRUM SAPONIS. L. *Soap Plaster.*

Take of

Soap, one part;
Litharge plaster, six parts.

Mix the soap with the melted litharge plaster, and boil them to the thickness of a plaster. (L. D.)

THIS plaster has been supposed to derive a resolvent power from the soap; but it is a matter of great doubt, whether it derives any material advantage from the addition.

EMPLASTRUM SIMPLEX, SIVE EMPLASTRUM CEREUM. *Ed.*

Simple or *Wax Plaster.*

Take of

Yellow wax, three parts;
Mutton suet,
White resin, each two parts. (E.)

THIS plaster had formerly the title of *Emplastrum Attrahens*, and was chiefly employed as a dressing after blisters, to support some discharge, and it is a very well contrived plaster for that purpose. Sometimes, however, it irritates too much on account of the resin; and hence, when designed only for dressing blisters, the resin ought to be entirely omitted, unless where a continuance of the pain and irritation, excited by the vesicatory, is required. Indeed, plasters of any kind are not very proper for dressing blisters; their consistence makes them sit uneasy, and their adhesiveness renders the taking them off painful. Cerates, which are softer and less adhesive, appear much more eligible: the Ceratum spermatis ceti will serve for general use; and for some particular purposes, the Ceratum resinæ flavæ may be applied.

EMPLASTUM THURIS COMPOSITUM. L.

Compound Frankincense Plaster.

Take of

Frankincense, half a pound;
Dragons blood, three ounces;
Litharge plaster, two pounds.

To the melted litharge plaster, add the rest, powdered. (L.)

IT has been supposed that plasters composed of styptic medicines constringe and strengthen the part to which they are applied, but on no very just foundation; for plasters in general relax rather than astringe; the unctuous ingredients necessary in their composition counteracting and destroying the effect of the others.

If constantly worn with a proper bandage, it will, in children, frequently do service, though, perhaps, not so much from any strengthening quality of the ingredients, as from its being a soft, close, and adhesive, covering.

UNGUENTA.—*OINTMENTS.*

UNGUENTUM ACETATIS PLUMBI;

olim, UNGUENTUM SATURNINUM. *Ed.*

Ointment of Acetat of Lead, formerly *Saturnine Ointment.*

UNGUENTUM CERUSSÆ ACETATÆ. L. D. *Ointment of Acetated Ceruse.*

Take of

Acetated ceruse, two drachms;
White wax, two ounces;
Olive oil, half a pint.

Rub the acetated ceruse, previously powdered, with some part of the olive oil; then add it to the wax, melted with the remaining oil. Stir the mixture until it be cold. (L.)

THIS is an excellent cooling ointment, of the greatest use in many cases.

UNGUENTUM ACIDI NITROSI. *Ed.*

Ointment of Nitrous Acid.

Take of

Hog's lard, one pound;
Nitrous acid, six drachms.

Mix the acid gradually with the melted axunge, and diligently beat the mixture as it cools. (E.)

THE axunge in this ointment seems to be oxydized; for during the action of the acid upon it, there is a great deal of nitric oxyd gas disengaged. It acquires a yellowish colour, and a firm consistency; and forms an excellent and cheap substitute, in slight herpetic and other cutaneous affections, for the ointment of nitrat of mercury.

UNGUENTUM ADIPIS SUILLÆ. L.

Ointment of Hog's Lard.

Take of

Prepared hog's lard, two pounds;
Rose water, three ounces.

Beat the lard with the rose water until they be mixed; then melt the mixture with a slow fire, and set it apart that the water may subside; after which, pour off the lard from the water, constantly stirring it until it be cold. (L.)

In the last edition of the London Pharmacopœia, this was styled *Unguentum Simplex;* the name given by the Edinburgh college to the following preparation.

UNGUENTUM SIMPLEX. *Ed. Simple Ointment.*

Take of
Olive oil, five parts;
White wax, two parts. (E.)

Both these ointments may be used for softening the skin and healing chaps. The last is, however, preferable, as being more steadily of one uniform consistence. For the same reason it is also to be preferred as the basis of other more compounded ointments.

UNGUENTUM CERÆ. L. D. *Wax Ointment.*

Take of
White wax, four ounces;
Spermaceti, three ounces;
Olive oil, one pint.
Stir them, after being melted with a slow fire, constantly and briskly, until cold. (L.)

This ointment had formerly the title of *Unguentum album* in the London Pharmacopœia. It differs very little from the Unguentum simplex of the Edinburgh Pharmacopœia, and in nothing from the Unguentum spermatis ceti of the other Pharmacopœias, excepting that in this ointment the proportion of wax is four times greater. It is an useful cooling ointment for excoriations and other frettings of the skin.

UNGUENTUM SPERMATIS CETI. D.

Ointment of Spermaceti.

Take of
Spermaceti, one pound;
White wax, half a pound;
Prepared hogs lard, three pounds.
Make into an ointment.

This had formerly the name of *Linimentum album*, and it is perhaps only in consistence that it can be considered as differing from the unguentum simplex, or the ceratum simplex, already mentioned.

UNGUENTUM CANTHARIDUM. L.

Ointment of Spanish Flies.

Take of
  Spanish flies, powdered, two ounces;
  Distilled water, eight ounces;
  Ointment of yellow resin, eight ounces.

Boil the water with the Spanish flies to one half, and strain. To the strained liquor add the ointment of yellow resin. Evaporate this mixture to the thickness of an ointment in a water-bath, saturated with sea-salt. (L.)

UNGUENTUM INFUSI MELOES VESICATORII;
olim, UNGUENTUM EPISPASTICUM MITIUS. *Ed.*

Ointment of Infusion of Cantharides, formerly called *Milder Epispastic Ointment.*

Take of
  Cantharides,
  Pine resin,
  Yellow wax, each one part;
  Hog's lard,
  Venice turpentine, each two parts;
  Boiling water, four parts.

Infuse the cantharides in the water for a night; then strongly press out and strain the liquor, and boil it with the lard till the water be consumed; then add the resin and wax; and when these are melted, take the ointment off the fire and add the turpentine. (E.)

THESE ointments, containing the soluble parts of the cantharides, uniformly blended with the other ingredients, are more commodious, and in general occasion less pain, though little less effectual in their action, than the compositions with the fly in substance. This, however, does not uniformly hold, and accordingly the Edinburgh college, with propriety, introduce the following.

UNGUENTUM PULVERIS MELOES VESICATORII;
olim, UNGUENTUM EPISPASTICUM FORTIUS. *Ed.*

Ointment of the Powder of Spanish Flies, formerly *Stronger Epispastic Ointment.*

Take of
  Resinous ointment, seven parts;
  Powdered cantharides, one part. (E.)

THIS ointment is employed in the dressings for blisters, intended to be made *perpetual*, as they are called, or to be kept running for a considerable time, which in many chronic, and some acute cases, is of great service. Particular care should be taken, that the cantharides employed in these compositions be reduced into very subtile powder, and that the mixtures be made as equal and uniform as possible. But with these precautions, there are some particular habits in which this ointment operates with even less pain than the former, while at the same time it is generally more effectual.

UNGUENTUM ELEMI. D.

Unguentum Elemi Compositum. L. *Compound Ointment of Elemi.*

Take of
 Elemi, one pound;
 Turpentine, ten ounces;
 Mutton suet, prepared, two pounds;
 Olive oil, two ounces.
Melt the elemi with the suet; and having removed it from the fire, mix it immediately with the turpentine and oil; after which strain the mixture. (L. D.)

This ointment, formerly known by the name of *Linimentum Arcæi,* has long been used for digesting, cleansing, and incarnating; and for these purposes is preferred some by surgeons to all the other compositions of this kind, probably because it is more expensive.

UNGUENTUM HELLEBORI ALBI. L. D.

Ointment of White Hellebore.

Take of
 White Hellebore, one ounce;
 Hog's lard, four ounces;
 Essence of lemon, half a scruple.
Mix, and make them into an ointment. (D.)

White hellebore externally applied has long been celebrated in the cure of cutaneous diseases.

UNGUENTUM HYDRARGYRI FORTIUS; vulgo,

Unguentum Coeruleum.

Stronger Mercurial Ointment, commonly called *Blue Ointment.*

Take of
 Purified mercury, by weight, two pounds;
 Prepared lard, twenty-three ounces;
 Prepared suet, an ounce.
First triturate the quicksilver with the suet and a little of the hog's lard, until the globules be extinguished; then add the rest of the lard, and form it into an ointment. (L.)

UNGUENTUM HYDRARGYRI MITIUS.

Milder Mercurial Ointment.

Take of
The stronger ointment of quicksilver, one part;
Hog's lard, prepared, two parts.
Mix them. (L.)

UNGUENTUM OXYDI HYDRARGYRI CINEREI. *Ed.*

Ointment of Grey Oxyd of Quicksilver.

Take of
Grey oxyd of quicksilver, one part;
Hog's lard, three parts. (E.)

These ointments are principally employed, not with a view to their topical action, but with the intention of introducing mercury in an active state into the circulating system: which may be effected by gentle friction on the sound skin of any part, particularly on the inside of the thighs or legs. For this purpose, these simple ointments are much better suited than the more compounded ones with turpentine and the like, formerly employed. For, by any acrid substance, topical inflammation is apt to be excited, preventing further friction, and giving much uneasiness. To avoid this, it is necessary, even with the mildest and weakest ointment, to change occasionally the place at which the friction is performed.

It is requisite that the ointments, in which the mercury is extinguished by trituration, should be prepared with very great care: for upon the degree of triture which has been employed, the activity of the mercury very much depends. The addition of the mutton suet, now adopted by the colleges of London and Edinburgh, is an advantage to the ointment, as it prevents it from running into the state of oil, which the hog's lard alone, in warm weather, or in a warm chamber, is sometimes apt to do, and which is followed by a separation of parts. We are even inclined to think, that the proportion of suet directed by the London college is too small for this purpose, and indeed seems to be principally intended for the more effectual triture of the mercury: but it is much more to be regretted, than in a medicine of such activity, the colleges should not have directed the same proportion of mercury to the fatty matter.

UNGUENTUM HYDRARGYRI PRÆCIPITATI ALBI. L.

Ointment of White Precipitated Quicksilver.

UNGUENTUM SUBMURIATIS HYDRARGYRI AMMONIATI. D.

Ointment of Ammoniated Submuriat of Quicksilver.

Take of
White precipitated quicksilver, one drachm;
Prepared lard, one ounce and a half.

Add the precipitated quicksilver to the lard, melted with a slow fire, and mix.

This is a very elegant mercurial ointment, and frequently made use of in the cure of obstinate cutaneous affections.

UNGUENTUM OXYDI HYDRARGYRI RUBRI. L.

Ointment of red Oxyd of Quicksilver.

UNGUENTUM SUBNITRATIS HYDRARGYRI. D.

Ointment of Subnitrat of Quicksilver.

UNGUENTUM HYDRARGYRI NITRICO-OXYDI. L.

Ointment of Nitric-oxyd of Quicksilver.

Take of

Red oxyd of quicksilver by nitrous acid, one part;
Hogs lard, eight parts. (E.)

The oxyd should be reduced to very fine powder before it be added to the axunge. This is an excellent stimulating ointment, often of very great service in indolent ill-conditioned sores, when we wish to excite them to greater action. As an eye-ointment, its effects are most remarkable, in the cure of all inflammations of the tunica conjunctiva, and more particularly when there is a thickening and swelling of the inner membrane of the palpebræ. In such cases, it seems to act with much greater certainty, if applied immediately after the eyelids have been scarified. In inflammation, accompanied with specks, it has a most powerful effect in removing both. It is also useful in all those ophthalmias which so frequently appear after small pox, measles, and eruptive diseases of the hairy scalp. It is used in the same quantity, and in the same manner as the Unguentum nitratis hydrargyri; and if it prove too stimulating, it may be diluted with axunge. It is useful to know that if it be mixed with any ointment containing resin, the red oxyd is very quickly converted into the black, and the ointment gradually loses its red colour, and passes through olive-green to black.

UNGUENTUM NITRATIS HYDRARGYRI:

vulgo, UNGUENTUM CITRINUM. *Ed.*

Ointment of Nitrat of Quicksilver, commonly called *Yellow Ointment.*

UNGUENTUM HYDRARGYRI NITRATI. L. D. *Ointment of Nitrated Quicksilver.*

Take of

Quicksilver, one part;
Nitrous acid, two parts;
Hog's lard, twelve parts.

Dissolve the quicksilver in the nitrous acid, by digestion in a sand heat; and, while the solution is very hot, mix with it the lard, previously melted by itself, and just beginning to grow stiff. Stir them briskly together in a marble mortar, so as to form the whole into an ointment. (E. L. D.)

UNGUENTUM NITRATIS HYDRARGYRI MITIUS. *Ed.*

Milder Ointment of Nitrat of Quicksilver.

This is prepared in the same way with three times the quantity of hog's lard. (E.)

THIS ointment, when prepared with lard alone, soon becomes so very hard, that it is necessary to mix it with fresh axunge before it can be used. The substitution of olive oil for part of the axunge obviates, in a great measure, this inconvenience. The hardening is entirely owing to the excess of the acid in the solution of mercury. Hence the London college have acted in 1809 very inconsiderately in increasing the quantity of nitrous acid, from two ounces by weight to two fluidounces, which caused, as Mr. Phillips found, violent action, and the evolution of much noxious vapour, when the solution of mercury is mixed with the axunge, and renders the ointment extremely corrosive. They have in 1815 corrected this error: But the property which nitrat of mercury, prepared by ebullition, has, of being decomposed by water, furnished me with an easy way of getting rid of all excess of acid, and of procuring the subnitrat of mercury in the state of the most minute division possible. An ointment, prepared with this subnitrat, had a most beautiful golden colour; after six months was perfectly soft; and had all the properties desired.

When the citrine ointment is too hard, it should be softened by triturating it with lard or oil; for, if melted with them, it very soon hardens again.

Medical use.—This ointment has the very best effects in herpes, tinea capitis, and similar obstinate cutaneous affections, and is almost specific in psorophthalmia, in those slight excoriations of the tarsi, attended with extreme itching, and in all the inflammations of the eyes, attended by eruptive disorders of the hairy scalp or face. It is most conveniently and effectually used, by rubbing a piece of the the size of half a garden pea, with the point of a hair pencil, over the tarsi, among the roots of the ciliæ, and allowing a small quantity to get on the inner membrane of the palpebræ. In obstinate cases, a weak solution of muriat of mercury, used as a collyrium along with this ointment, proves a most powerful remedy.

UNGUENTUM OXYDI PLUMBI ALBI;

vulgo, UNGUENTUM ALBUM. *Ed.*

Ointment of White Oxyd of Lead, formerly *White Ointment.*

Take of

Simple ointment, five parts;

White oxyd of lead, one part. (E.)

This is a cooling desiccative ointment, of great use when applied to excoriated surfaces.

UNGUENTUM OXYDI ZINCI IMPURI; olim, UNGUENTUM TUTIÆ. *Ed.*

Ointment of Impure Oxyd of Zinc, formerly *Ointment of Tutty.*

UNGUENTUM TUTIÆ. L. D. *Ointment of Tutty.*

Take of
Simple liniment, five parts;
Prepared impure oxyd of zinc, one part. (E.)

UNGUENTUM OXYDI ZINCI. *Ed.*

Ointment of Oxyd of Zinc.

Take of
Simple liniment, six parts;
Oxyd of zinc, one part. (E.)

These ointments are chiefly used in affections of the eye, particularly in those cases where redness arises rather from relaxation than from active inflammation.

UNGUENTUM PICIS. *Ed.* L. D. *Tar Ointment.*

Take of
Tar,
Mutton suet, prepared, of each half a pound.
Melt them together, and strain. (L. D.)

This composition, from the empyreumatic oil and saline matters the tar contains, is undoubtedly of some activity. Accordingly, it has been successfully employed against some cutaneous affections, particularly tinea capitis.

UNGUENTUM PIPERIS NIGRI. *Dub.*

Ointment of Black Pepper.

Take of
Prepared lard, one pound;
Black pepper, in powder, four ounces.
Make into an ointment.

This is stimulating and irritating.

UNGUENTUM RESINOSUM. *Ed.*

Resinous Ointment.

UNGUENTUM RESINÆ FLAVÆ. L. D. *Ointment of Yellow Resin.*

Take of
- Hog's lard, eight parts;
- White resin, five parts;
- Yellow wax, two parts. (E.)

THIS is commonly employed in dressings, for digesting, cleansing, and incarnating, wounds and ulcers. The addition of spirits of turpentine to this ointment so as to give it the consistence of a liniment, forms the application employed by Mr. Kentish, to burns, &c.

UNGUENTUM SABINÆ. *Dub. Savine Ointment.*

Take of
- Fresh savine leaves, separated from the stalks, and bruised, half a pound;
- Prepared hog's lard, two pounds;
- Yellow wax, half a pound.

Boil the leaves in the lard until they become crisp; then filter with expression; lastly, add the wax, and melt them together.

THIS is an excellent issue ointment, being, in many respects, preferable to those of cantharides.

UNGUENTUM SAMBUCI. L.

UNGUENTUM SAMBUCINUM. D. *Elder Ointment.*

Take of
- Elder flowers, four pounds;
- Mutton suet, prepared, three pounds;
- Olive oil, one pint.

Boil the flowers in suet and oil, till they be almost crisp; then strain with expression. (L. D.)

COMPOSITIONS of this kind were formerly very frequent; but vegetables, by boiling in oils, impart to them nothing but a little mucilage, which changes the greasy oils to drying oils, and any resin they may contain; but that also is never in such quantity as to affect the nature of the oil. We, therefore, do not suppose that this ointment possesses any properties different from a simple ointment of the same consistency.

UNGUENTUM SUB-ACETITIS CUPRI. *Ed.*

Ointment of Sub-Acetite of Copper.

Take of
- Resinous ointment, fifteen parts;
- Sub-acetite of copper, one part. (E.)

This ointment is used for cleansing sores, and keeping down fungous flesh. Where ulcers continue to run from a weakness in the vessels of the parts, the tonic powers of copper promise considerable advantage.

It is also frequently used with advantage in cases of ophthalmia, depending on scrofula, where the palpebræ are principally affected; but when it is to be thus applied, it is in general requisite that it should be somewhat weakened by the addition of a proportion of simple ointment or hog's lard.

UNGUENTUM SUB-MURIATIS HYDRARGYRI AMMONIATI. *Dub.*

Ointment of Ammoniated Sub-muriat of Quicksilver.

Take of
Ointment of white wax, one pound;
Ammoniated sub-muriat of quicksilver, an ounce and a half.
Make into an ointment.

This is a very elegant mercurial ointment, and frequently made use of in the cure of obstinate cutaneous affections.

UNGUENTUM SULPHURIS. *Ed.* L. D.

Sulphur Ointment.

Take of
Hog's lard, four parts;
Sublimed sulphur, one part.
To each pound of this ointment may be added,
Volatile oil of lemons, or
of lavender, half a drachm. (E.)

Sulphur is a certain remedy for the itch, more safe than mercury. A pound of ointment serves for four unctions. The patient is to be rubbed every night, a fourth part of the body at each time. Though the disease may be thus cured by a single application, it is in general advisable to touch the parts most affected for a few nights longer, and to conjoin with the frictions the internal use of sulphur.

V.

VALERIANA OFFICINALIS. *Ed.* D.

VALERIANA SYLVESTRIS. *Radix.* L. *Wild Valerian. The root.*
Willd. g. 75. *sp.* 6. *Smith, g.* 15. *sp.* 3. *Triandria Monogynia.*—Nat. ord. *Aggregatæ.*

THIS plant is perennial, and grows wild in Britain. It varies in its appearance and sensible qualities, according to the situation in which it grows. In marshes and shadowy places its leaves are broader than on dry heaths and high pastures. The roots produced in low watery grounds, have a remarkably faint smell in comparison of the others, and sometimes scarcely any. The roots in autumn or winter, have much stronger sensible qualities than those collected in spring and summer. The root consists of a number of strings or fibres matted together, issuing from one common head, of a whitish or pale brownish colour: its smell is strong, like a mixture of aromatics with fetids; the taste unpleasantly warm, bitterish, and sub-acrid. Neumann got from 480 grains of the dry root, 186 alcoholic, aud 74 watery extract; and inversely, 261 watery and 5 alcoholic. The distilled alcohol was slightly, the water strongly impregnated with the smell of the valerian, but no separable oil was obtained.

Medical use.—Wild valerian is a medicine of great use in nervous disorders, and is particularly serviceable in epilepsies proceeding from a debility of the nervous system.

Some recommend it as useful in procuring sleep, particularly in fever, even when opium fails: but it is principally useful in affections of the hysterical kind.

The common dose is from a scruple to a drachm in powder: and in infusion, from one to two drachms. Its unpleasant flavour is most effectually concealed by a suitable addition of mace.

As its virtues reside entirely in an essential oil, the decoction and watery extract are improper forms for exhibiting it.

OFFICINAL PREPARATIONS.

Tinctura valerianæ, L. - -	*vide Tincturæ.*
ammoniata, L. D.	*Tincturæ Ammoniatæ.*
Extractum valerianæ, D. - -	*Extracta.*

VERATRUM ALBUM. *Radix. Ed.* L. D.

HELLEBORUS ALBUS. L. D. *White Hellebore. The root.*
Willd. g. 1859. *sp.* 1. *Polygamia Monœcia.*—Nat. ord. *Liliaceæ.*

THIS plant grows spontaneously in Switzerland and the mountainous parts of Germany. The root has a nauseous, bitterish, acrid taste burning the mouth and fauces: if wounded when fresh, it emits an extremely acrimonious juice, which, when inserted into a wound, is said to prove very dangerous. Neumann got from 960 grains 560 watery and 10 alcoholic extract; and inversely, 420 alcoholic and 180 watery. Nothing rose in distillation.

This perennial plant grows in wet meadows and swampy places, often locally associated with scunk cabbage, which, early in the spring season, it considerably resembles in appearance; the latter plant, however, has no stalk, while the hellebore sends forth one which attains to the height of two or three feet, terminating in June in a spike of flowers and seeds. The leaves are large and handsomely plaited. The root is bulbous, and when fresh has a nauseous, bitterish, acrid taste, burning the mouth and fauces. Snuffed up the nostrils in very small quantities, it excites violent sneezing, with a sense of heat and a copious discharge of mucus. The fresh root, in form of ointment or decoction, cures the itch. Crows are destroyed by boiling Indian corn in a strong decoction of the roots, and strewing it on the ground where these birds resort. The root when dried has no particular smell, but a durable nauseous and bitter taste, and when powdered and applied to issues or ulcers, is said to produce griping and purging. Taken internally, it acts with extreme violence as an emetic and cathartic, and even in a small dose, has occasioned spasms, convulsions, and fatal consequences. The ancients sometimes employed this as a remedy in obstinate maniacal cases, and it is said, with success; but it has scarcely been regarded in modern practice. The American species very probably possesses all the properties of the foreign officinal root. It is undoubtedly a plant of highly active powers, meriting a particular investigation as an article of our Materia Medica. In fact, a new interest has lately been excited both in Europe and the United States, relative to the properties of white hellebore. It is even supposed to be the basis of the French specific remedy, called *Eau Medicinale d'Husson*, so highly famed for its almost infallible powers in the cure of gout, as to command the enormous price of from one to two crowns a dose. This remedy was discovered about forty years ago, by M. Husson, a French officer, who affirms it to be prepared from a plant whose virtues were before unknown in medicine; and it has long been celebrated in France and other parts of the European continent.

Dr. Edwin G. Jones, member of the Royal College of Physicians, London, after a thorough investigation of the subject, has, in a late publication, adduced the most unequivocal evidence of the superior powers of the *Eau Medicinale*, in curing the most distressing paroxysms of gout. His experience of its efficacy has been extensive, and among the numerous and remarkable instances to which he refers, are persons of distinguished rank and respectability, and whose cases were marked with symptoms of extreme severity. We have therefore the authority of Dr. Jones to assert, that this singular remedy exerts an extraordinary influence over the gout; and that it will safely, and almost immediately remove, often by a single dose, the severest paroxysms of that cruel disease, is sufficiently ascertained by a multitude of facts, collected from various sources of unquestionable authenticity. Scarcely an instance of its failure has yet been known to occur in practice. It is not, however, asserted, that it performs a radical cure of gout, eliminating the disease altogether from the system, but its operation is different from that of any remedy hitherto employed, it removes the paroxysms as often and almost as soon as they occur. It in fact relieves the patient from agonizing pain, from all the miseries of long confinement, and restores him to his usual state of health, and the exercise of his limbs. It appears to be a powerful sedative, diminishing almost immediately the irritability of the system. Hence it allays pain, procures rest and sleep, reduces the pulse and abates fever.

This remedy has been extended to other diseases, and in several cases it has removed very severe acute rheumatisms in the same singular manner it does the gout.—The full dose of this medicine, according to Husson, and Dr. Jones, is about two drachms for an adult, mixed with an equal quantity of water, and taken on an empty stomach. Its operation may be promoted by some aromatic, or by peppermint, pennyroyal, or ginger teas. It in general occasions some nausea and vomiting, followed by bilious stools. A single dose will often carry off an attack, but it sometimes requires to be repeated in under doses.* Some instances are recorded of its violent effects when exhibited in a dose disproportionate to the constitution, and particular circumstances. On some occasions much advantage has been derived from small doses taken every day for a considerable time.

The discovery of the substance from which this remedy is prepared would be an invaluable acquisition to our Materia Medica. The importance and popularity of the subject were incitements to various attempts for that purpose, and to the ingenuity of Mr. J. Moor, member of the royal college of surgeons, London, the public are indebted for the composition, which if not identically the same, bears a strong resemblance to the *Eau Medicinale* in smell, tase, and dose; and also in all its effects, so far as it has been tried in the cure of gout. The composition of Mr. Moor consists of wine of opium Sy-

* *Extracts of Letters from a Sufferer from Gout.—In proof of the efficacy of the Eau Medicinale.*

Mr. ——— was perfectly right when he told me that I would give him any price for a bottle of his *Eau Medicinale* when I had the gout.—I have been tormented with it all this week, and have it now in my two feet so as to be unable to stand on them.—If Mr. ——— will have the goodness to spare me one bottle, he will infinitely oblige a distracted and suffering brother, who is his very obedient servant.

Dear Sir.—I have this moment received your polite note of yesterday, and thank you cordially for your kind intention of even taking from your stock of *Eau Medicinale*, one bottle for me.—As you expected I got one at Mr. Marshal's on Saturday evening, and took one half of it, by which I was pretty well at ease on Sunday morning; I took the remainder in the evening, and on Monday was almost free from pain and could walk in my room, when I had the honor of a visit from your friend Major ——— who found me, I may say, very well; and was it not for the rainy weather, I could without any difficulty or inconvenience, being entirely free from swelling and pain, have carried this note myself to Mr. ——— who, I hope, will be so obliging as to forward it to you, &c. &c.

denham, one part, wine of white hellebore, three parts, made by infusing, for ten days, eight ounces of the sliced root of that plant, in two and a half pints of white-wine, and strained through paper. This compound, when exhibited in doses of from one to two drachms, has in a variety of instances effected a speedy cure of gouty paroxysms. There are indeed well attested examples where the most painful gouty affection has yielded to a single dose of about one drachm, and the instances of its failure have hitherto, it is believed, been more rare than can be said of any other remedy. The employment of the composition of Mr. Moor, has also, in the hands of respectable physicians, been extended to acute rheumatism, and to some comatose affections, with the most decided advantage, and a perseverance in similar trials is strongly recommended. It has been observed, that beneficial effects may more certainly be expected when it excites some degree of nausea and vomiting, which an overdose like *Eau Medicinale* seldom fails to induce.

We have hitherto been furnished with the additional evidence of every day's experience of the efficacy of Mr. Moor's composition in the cure of both gout and rheumatism, and no circumstance, it is believed, has yet occurred, tending to impair our faith in the analogy of its principles with the original preparation of M. Husson. Farther particulars respecting the character and properties of this interesting article, and the most eligible mode of preparation, are anxiously anticipated.

It has lately been discovered, that the root of white hellebore is employed as a valuable article in a new process for tanning leather.

Officinal Preparations.

Decoctum hellebori albi, L. - - - -	*vide Decocta.*
Tinctura veratri albi, E. - - - - -	*Tincturæ.*
Unguentum hellebori albi, L. D. - - - -	*Unguenta.*

VERONICA BECCABUNGA. Beccabunga. *Herba.* D.

Brooklime. The herb.

Willd. g. 44. *sp.* 30. *Smith, g.* 9. *sp.* 8. *Diandria Monogynia.*—Nat. ord. *Personatæ.*

This is a low perennial plant, common in little rivulets and ditches of standing water. The leaves remain all the winter, but are in greatest perfection in the spring. Their prevailing taste is an herbaceous one, accompanied with a very light bitterness.

If any good effects be expected from brooklime, it should be used as food.

Officinal Preparation.

Succus cochleariæ compositus, L. - - *vide Succi expressi.*

VERATRUM LUTEUM.

Devil's bit. Blazing Star.

The root is a pungent bitter, and is employed as a tonic in some parts of the union, in a spirituous infusion. A watery infusion of the same is deemed an excellent anthelmintic, which in part seems owing to a narcotic quality belonging to it.*

VINA MEDICATA.—*MEDICATED WINES.*

Parmentier has occupied thirty-two pages of the Annales de Chimie, to prove that wine is an extremely bad menstruum for extracting the virtues of medicinal substances. His argument, (for there is but one,) is, that by the infusion of vegetable substances in wine, its natural tendency to decomposition is so much accelerated, that at the end of the process, instead of wine, we have only a liquor containing the elements of bad vinegar. As a solvent, diluted alcohol perfectly supersedes the use of wine; and if we wish to use wine to cover the taste, or to assist the operation of any medicine, M. Parmentier proposes, that a tincture of the substance should be extemporaneously mixed with wine as a vehicle.

Notwithstanding this argument appears to us to have great weight, we shall give to the medicated wines, retained in the pharmacopœias, the characters they still generally possess.

VINUM ALOES SOCOTORINÆ; vulgo, Tinctura Sacra. *Ed.*

Wine of Socotorine Aloes, commonly called *Sacred Tincture.*

Vinum Aloes. L. D. *Aloetic Wine.*

Take of
Socotorine aloes, four ounces;
Canella alba, two ounces;
Spanish white wine, three pounds.
Powder the aloes and canella alba separately, then mix and pour on the wine, afterwards digest for fourteen days; frequently shaking the vessel: and, lastly, filter the liquor. (D.)

This medicine has long been in great esteem, not only as a cathartic, but likewise as a stimulus.

It appears from long experience to be a medicine of excellent service. The dose, as a purgative, is from one to two ounces. It may be introduced into the habit, so as to be productive of excellent effects, as an alterant, by giving it in small doses, at proper intervals: thus managed, it does not for a considerable time operate remarkably by

* Barton's Collections, Part II. p. 52.

stool; but at length proves purgative, and occasions a lax habit of much longer continuance than that produced by the other common cathartics.

VINUM FERRI. L. *Wine of Iron.*

VINUM FERRATUM; olim, VINUM CHALYBEATUM. D.

Ironated Wine, formerly *Chalybeate Wine.*

Take of
  Iron filings, four ounces;
  Spanish white wine, four pints.
Digest for a month, often shaking the vessel, and then strain. (L.)

THIS is merely a solution of the ferrum tartarisatum in wine; for the iron is only dissolved in the wine by means of the supertartrat of potass it contains. The Rhenish wine directed by the Dublin college, will, therefore, dissolve a larger quantity of iron than the Spanish white wine of the London college. But a solution of a known proportion of the ferrum tartarisatum in wine, will give a medicine of more equal powers, and may be made extemporaneously.

The dose is from a drachm to half an ounce, repeated twice or thrice a-day in chlorotic cases.

VINUM GENTIANÆ COMPOSITUM;

Vulgo, VINUM AMARUM. *Ed.*

Compound Wine of Gentian, commonly called *Bitter Wine.*

Take of
  Gentian root, half an ounce;
  Peruvian bark, one ounce;
  Seville orange peel, dried, two drachms;
  Canella alba, one drachm;
  Diluted alcohol, four ounces;
  Spanish white wine, two pounds and a half.
First pour the spirit on the root and bark cut and bruised, and after twenty-four hours add the wine; then macerate for seven days and strain. (E.)

THIS wine is intended to supply the place of the *Tinctura ad stomachicos*, as it was formerly called. Wine is a menstruum fully capable of extracting the active powers of the different ingredients; and it supplies us with a very useful and elegant stomachic medicine, answering the purposes intended much better than the celebrated elixir of Van Helmont, and other unchemical and uncertain preparations, which had formerly a place in our pharmacopœias.

VINUM IPECACUANHÆ. *Ed.* L. D.

Wine of Ipecacuanha.

Take of
The root of Ipecacuanha, bruised, two ounces;
Spanish white wine, two pints.
Digest for ten days, and strain. (L.)

This wine is a very mild and safe emetic, and equally serviceable in dysenteries also, with the ipecacuanha in substance; this root yielding nearly all its virtues to the Spanish white wine. The common dose is an ounce, more or less, according to the age and strength of the patient.

VINUM OPII. L. *Wine of Opium.*

Take of
Extract of opium, one ounce;
Cinnamon, bruised,
Cloves, bruised, of each one drachm;
Wine, one pint.
Macerate for eight days, and filter.

This is the Tinctura Thebaica of the Dispensatory 1745; the Laudanum Liquidum of Hoffman, which has continued to be popular, notwithstanding its exclusion from the late Pharmacopœias. Mr. Ware, in particular, considers it as superior to every other solution of opium as an application in chronic inflammation of the eyes: and, with the same intention, it is sometimes used when inspissated by spontaneous evaporation.

VINUM NICOTIANÆ TABACI. *Ed.*

Tobacco Wine.

Take of
The dried leaves of tobacco, one ounce;
Spanish white wine, one pound.
Macerate for seven days, and then strain the liquor. (E.)

Wine seems to extract more fully the active principles of the tobacco than either water or spirit taken separately.

VINUM RHEI PALMATI. *Ed.*

Vinum Rhabarbari. L. *Rhubarb Wine.*

Take of
Rhubarb, sliced, two ounces;
Canella alba, one drachm;

Diluted alcohol, two ounces;
Spanish white wine, fifteen ounces.
Macerate for seven days, and strain through paper. (E.)

By assisting the solvent power of the wine, the diluted alcohol in the above formula is a very useful addition.

This is a warm, cordial, laxative medicine. It is used chiefly in weakness of the stomach and bowels, and some kinds of loosenesses, for evacuating the offending matter, and strengthening the tone of the viscera. It may be given in doses of from half a spoonful to three or four spoonfuls or more, according to the circumstances of the disorder, and strength of the patient.

VINUM TARTRITIS ANTIMONII; olim, Vinum Antimoniale. *Ed.*

Wine of Tartrat of Antimony, formerly *Antimonial Wine.*

Vinum Tartari Stibiati. D. *Wine of Antimoniated Tartar.*

Vinum Ant. Tartar. L. *Wine of Tartarized Antimony.*

Take of
Antimoniated tartar, two scruples;
Distilled water, boiling hot, two ounces;
Spanish white wine, eight ounces.
Dissolve the antimoniated tartar in the water, and then add the wine. (L.)

This is a solution of tartrat of antimony and potass in wine: in preparing it with the glass of antimony, a portion of the glass is dissolved by the super-tartrat of potass contained in the wine; and as the quantity of this is variable, so also the quantity of oxyd of antimony dissolved, varies: and therefore the preparation ought to be entirely rejected, since its strength can never be known. It is to be regretted, that the strength of the solutions of tartar-emetic in wine, as prescribed by the different colleges, is not uniform. According to the Edinburgh college, one ounce of the solution contains two grains of tartar-emetic, while the same quantity, according to the other colleges, contains four grains.

I would recommend our apothecaries to prepare this uniformly; and to employ the prescription above, containing four grains to the ounce.

In its employment and effects, the vinous solution of tartar-emetic does not differ from one made with water.

VIOLA ODORATA. *Ed.* L. D.

Flos recens. Sweet Violet. The recent flower.

Willd. g. 446. *sp.* 12. *Smith, g.* 96. *sp.* 2. *Pentandria Monogynia.*— Nat. ord. *Campanaceæ.*

This plant is perennial, and is found wild under hedges and in shady places; but the shops are generally supplied from gardens. Its flowers are so remarkable for their delightful odour, and their peculiar richness of colour, that they have given a name to both.

In our markets we meet with the flowers of other species; these may be distinguished from the foregoing by their being larger, of a pale colour, and of no smell.

Medical use.—They impart their colour and flavour to aqueous liquors: a syrup made from this infusion has long maintained a place in the shops, and is said to be an agreeable and useful laxative for children, but is chiefly valued as a delicate test of the presence of uncombined acids or alkalies, the former changing its blue to a red, and the latter to a green colour.

Officinal Preparation.

Syrupus violæ odoratæ, E. L. D. - - *vide Syrupi.*

VITIS VINIFERA. *Fructus siccatus, ejusque succus fermentatus. Ed.* L. D.

Vitis. *Fructus. Uva passa, Vinum. Tartarum, Tartari crystalli. Acetum.* L.

Uvæ Passæ. *Vinum album Hispanicum, Vinum album Rhenanum, Vinum rubrum Lusitanicum.* D.

The Vine. Grapes. Raisins. Wine. Tartar. Crystals of Tartar. Vinegar.

Willd g, 453. *sp.* 1. *Pentand. Monogyn.*—Nat. ord. *Hederaceæ.*

The vine grows in temperate situations in many parts of the world, and is cultivated very generally for the sake of its agreeable sub-acid fruit. Before they are ripe, grapes are extremely harsh and acid, and by expression furnish a liquor which is called Verjuice. It contains malic acid, super-tartrat of potass, and extractive, and may be made to furnish wine by the addition of sugar. As the grape advances to maturity, the quantity of sugar increases, while that of malic acid diminishes: it however never disappears entirely. When thoroughly ripe, the grape is one of the most agreeable fruits. It is cooling, antiseptic, and nutritious; and, when eaten in considerable quantity, diuretic, and gently laxative. In inflammatory diseases, and all others where acids are indicated, they form an excellent article of diet.

Raisins, (*uvæ passæ*,) are grapes which have been carefully dried. By this means not only the water they contained is dissipated, but the quantity of acid seems to be diminished. They become more saccharine, mucilaginous, and laxative, than the recent grape, but are less cooling.

Officinal Preparations.

Decoctum althææ officinalis, E. - - -	*vide Decocta.*
guaiaci compositum, E. - -	*Idem.*
hordei compositum, L. - - -	*Idem.*
Tinctura cardamomi composita, L. D. - -	*Tincturæ.*
sennæ, L. D. - - -	*Idem.*

VINUM.—*WINE.*

D.	*Wyn.*	P.	*Vinho.*
DA.	*Vin.*	POL.	*Wino.*
F.	*Vin.*	R.	*Wino, Winogradnoe Wino.*
G.	*Wein.*	S.	*Vino.*
I.	*Vino.*	SW.	*Vin.*

Wine is the juice of the grape altered by fermentation. The numerous varieties of wine depend principally on the proportion of sugar contained in the must, and the manner of its fermentation. When the proportion of sugar is sufficient, and the fermentation complete, the wine is perfect and generous: if the quantity of sugar be too large, part of it remains undecomposed, as the fermentation is languid, and the wine is sweet and luscious; if, on the contrary, it be too small, the wine is thin and weak; and if it be bottled before the fermentation be completed, it will proceed slowly in the bottle, and, on drawing the cork, the wine will froth and sparkle in the glass, as for example, Champaigne. When the must is separated from the husk of the grape before it is fermented, the wine has little or no colour: these are called White wines. If, on the contrary, the husks are allowed to remain in the must while the fermentation is going on, the alcohol dissolves the colouring matter of the husks, and the wine is coloured: such are called Red wines. Besides in these principal circumstances, wines vary very much in flavour. The red wines most commonly drunk in Great Britain are Port, which is strong and austere, containing much tannin, and Claret which is thinner and higher flavoured. The white wines are all strong, Madeira, Sherry, Lisbon, Malaga, and Hock. Of these the last is the most acidulous, and Malaga the sweetest.

The following Tables exhibit a comparative view of the contents of different Wines and Spiritous Liquors. The first is taken from Mr. Brande's paper in Phil. Trans. vol. 101. *The second is from Neumann.*

	Strongest.	Medium.	Weakest.
Rum,		53.68	
Brandy,		53.39	
Hollands,		51.60	
Raisin wine,		25.77	
Port,	25.83	23.49	21.40
Madeira,	24.42	22.27	19.34
Marsala,	25.87	21.56	17.26
Currant wine,		20.55	
Constantia,		19.75	
Sherry,	19.83	19.17	18.25
Lisbon,		18.94	
Bucellas,		18.49	
Red Madeira,		18.40	
Cape muscat,		18.25	
—— madeira,		18.11	
Grape wine		18.11	
Calcavalla,		18.10	
White hermitage,		17.43	
Rousillon,		17.26	
Malaga,		17.26	
Malmsey mad,		16.40	
Sheruaz,		15.52	
Syracuse,		15.28	
Nice,		14.63	
Claret,	16.32	14.44	12.91
Tent,		13.30	
Burgundy,	14.53	13.24	11.95
White champagne,		12.80	
Vin de Grave,		12.80	
Frontignac,		12.79	
Cote roti,		12.32	
Red hermitage,		12.32	
Gooseberry wine,		11.84	
Hock,	14.37	11.62	8.88
Tokay,		9.88	
Elder wine,		9.87	
Cyder,		9.87	
Perry,		9.87	
Ale,		8.88	
Brown stout,		6.80	

The first column in this Table shows the quantity of rectified spirit; the second that of thick, oily, unctuous, resinous matter; the third of gummy and tartareous matter; and the fourth of water in 17280 *parts.*

	I.	II.	III	IV.		I.	II.	III	IV.
Malmsey,	1920	2100	1140	12120	Madeira,	1140	1560	960	13620
Alicant,	1800	2900	100	12840?	Moselle,	1080	260	90	15850
Neufchatel,	1560	1920	900	12900	Rhenish,	1080	200	94	15906
French,	1440	400	60	15380	Tokay,	1080	2100	2400	11700
Frontignac,	1440	1680	320	13830	Burgundy,	1080	240	100	15860
Muscadine,	1440	1200	480	14160	Old rhenish,	960	480	140	15700
Salamanca,	1440	1680	960	13200	Pontac,	960	320	120	15880
Sherry,	1440	2880	1080	11880	White Brandenburgh,	960	420	180	14880?
Tinto,	1440	3120	840	11880	Vin de grave,	960	360	120	15840
Hermitage,	1380	600	100	15200	Red Brandenburgh,	840	280	120	16040
Monte Pulciano,	1320	180	160	15620	Aland,	840	1560	780	14100
Carcassone,	1320	250	80	15630	Red Tyrol,	720	600	240	15120
Champagne,	1280	400	60	15540	Spanish,	600	1200	4560	10920
Canary,	1140	1200	2160	12780					

Medical use.—Wine, taken in moderate quantities, acts as a beneficial stimulus to the whole system. It promotes digestion, increases the action of the heart and arteries, raises the heat of the body, and exhilarates the spirits. Taken to excess, it produces inebriety, which is often succeeded by headach, stupor, nausea, and diarrhœa, which last for several days. Habitual excess in wine debilitates the stomach, produces inflammation of the liver, weakens the nervous system, and gives rise to dropsy, gout, apoplexy, tremors, and cutaneous affections.

To convalescents, and in all diseases of general debility, and deficiency of the vital powers, wine is the remedy on which we must place our chief dependance; and when properly administered, its effects are often scarcely credible.

W.

WINTERA AROMATICA. *Cortex. Ed.*

Winteranus Cortex officinarum. Winters Bark.

Willd. g. 1063. *Polyandria Tetragynia.*—Nat. ord. *Oleraceæ.*

D.	*Wintersbark.*	I.	*Scorza Magelanica.*
DA.	*Vintersbark.*	P.	*Canella de Winter.*
F.	*Ecorce de Winter, Ecorce sans pareil ou sine pari.*	S.	*Corteza Winterana, o Magelanica.*
G.	*Wintersrinde, Amerikanische gewürzrinde.*	SW.	*Vintersbark.*

This is the produce of a tree growing about the southern promontory of America. It was first discovered on the coast of Magellan by Captain Winter, in the year 1567: the sailors then employed the bark as a spice, and afterwards found it serviceable in the scurvy; for which purpose it is at present also sometimes made use of in diet drinks. The true Winters bark is not often met with in the shops, Canella alba being generally substituted for it; and by some they are reckoned to be the same: there is, however, a considerable difference betwixt them in appearance, and a greater in quality. The Winters bark is in large pieces, of a more cinnamon colour than the canella, and tastes much warmer and more pungent. Its smell resembles that of cascarilla. Its virtues reside in a very hot, stimulant, essential oil.

Z.

ZANTHORHIZA APIIFOLIA.

ZANTHORHIZA TINCTORIA. *Woodhouse.*

Parsley-leaved Yellow-root.

Is a native plant of North Carolina, first brought by the late John Bartram, from that state, and planted in his garden at Kingsess, in the county of Philadelphia, where it has continued to flourish in a most luxuriant manner. It is denominated *Simplicissima* by Marshal, *Apiifolia* by L'Herretier, and *Marbosia*, by Mr. William Bartram, in honour of Mr. De Marbois. Zanthorhiza Tinctoria is a more expressive name than any it has yet received.

Dr. Woodhouse has given an excellent account of this valuable plant, in the fifth volume of the Medical Repository of New York, from which the present extract is taken.

"The stems are three feet high, and somewhat thicker than a goose quill. The root is from three to twelve inches long, and about the diameter of a man's little finger, sending off numerous scions. The leaves are placed alternately, having long petioles and pinnated, terminating in an old one; the follicles sessile, and lacerated deeply on their edges. The *peduncles* are branchy, and placed immediately beneath the first leaves, from which cause the flowers appear before the leaves, very early in the spring."

The stem and root are of a bright *yellow* colour, and possess a strong bitter taste.

The *zanthorhiza tinctoria* contains a gum and resin, both of which are intensely bitter; the resin is more abundant than the gum.

It imparts a drab colour to cloth, and a handsome yellow to silk; but the dye will not take on cotton or linen.

The watery extract of the grated roots mixed with alum, and added to Prussian blue, was first used by Mr. James Bartram, for colouring plants, and the plumage of birds of a green colour. The green is far more lively and elegant than that made with gamboge and Prussian blue, which is generally used for painting in water colours, and stands well in the shade, but soon contracts a dull colour when exposed to a bright light, and to a high temperature. Various subjects coloured by this green, and inclosed in a book, were as lively after one year, as when first painted.

It is a strong and pleasant bitter, and preferable to all our native bitters. It sits easy on the stomach in the dose of two scruples.

The colour of the leaves appears to reside in a resin which is altered by the combined action of light and oxygen, by either of which, separately, it cannot be affected.

As the zanthorhiza is a strong and pleasant bitter, and very nearly allied to the columbo root, it promises to become a valuable addition to the American Materia Medica. It is preferable to all our native bitters. Dr. Woodhouse has often used the powdered stem and root of the zanthorhiza with success, in the dose of two scruples to an adult, in many of those diseases in which bitters are recommended, but generally combined with other remedies. It is a medicine which sits easy on the stomach, and produces no disagreeable effects.

ZANTHOXYLUM CLAVA HERCULIS.

Tooth-ach tree.

The bark is a very powerful stimulant, and exerts its effects on the salivary glands when applied to the mouth and external fauces, and even when taken into the stomach. The seed-vessels possess the same property. It has been given internally in rheumatism. Another species, the zanthoxylum fraxinifolium, or prickly-ash, is a vegetable endued with very active powers. A spiritous infusion of the berries is much esteemed in Virginia in violent colic. They are both more active than mezereon, and are well worthy of the attention of our physicians.*

It is a native of Jamaica, and other tropical countries, where it grows to the height of sixteen feet, and is about twelve inches in diameter. This straight tree somewhat resembles the common ash: the bark of the trunk is covered with numerous prickles; and the wood is of a bright yellow cast.

The wood of the zanthoxylum is chiefly employed for the heading of hogsheads, for bedsteads, and numerous other purposes; it also possesses remarkable medicinal virtues. The fresh juice expressed from the roots, affords certain relief in the painful disease, termed *dry bellyache.* This important fact was discovered in the West Indies, by watching a female slave, who collected the root in the woods, and gave two spoonfuls of its juice to a negro, suffering under that colic, at an interval of two hours. Such medicine occasioned a profound,

* Barton's Collections, Part I. p. 25. 52. Part II. p. 58.

but composed sleep for twelve hours; when all sense of pain, and other distressing symptoms, had vanished; the cure was completed, by giving an infusion of such expressed root in water, by way of diet drink. Farther, the juice of the prickly yellow wood, when preserved in rum, and administered in doses not exceeding a wine-glassful, has effectually removed the most obstinate epileptic fits; but Dr. Henry has not mentioned the *manner* in which this preparation ought to be managed.

To the above observations of Dr. Willick, the following by Dr. Mease are added: (*Dom. Ency.*)

Two species grow in the United States.

1. *Zanthoxylum fraxinifolium*, or ash-leaved zanthoxylum, growing in Pennsylvania and Maryland: and zanthoxylum clavis herculis, or prickly yellow wood, which grows in the more southern states.

The bark and capsules are of a hot acrid taste, and when a small quantity is chewed, powerfully promotes the flow of saliva. It is used in this way to relieve the toothach. A tincture of the same parts of the tree is a common country remedy for the chronic rheumatism.

In the West Indies a decoction of the bark is used with great success as an internal remedy, and also as a wash for foul ulcers, which it powerfully cleanses, and disposes to healthy granulations. The powdered bark is also mixed with the dressings. In the *London Medical and Physical Journal*, volume second, and following, there are several cases related of the efficacy of this medicine in the above disease.

ZINCUM.—*Ed.* L. D. ZINC.

D.	*Zink*, *Spiauter*.	P.	*Zinco*.
DA.	*Zink*.	POL.	*Cynek*.
F.	*Zinc*.	R.	*Schpiauter*.
G.	*Zink*, *Spiauter*.	S.	*Zinco*.
I.	*Zinco*.	SW.	*Zink*.

Zinc is bluish-white, lamellated, sapid, and odorous; specific gravity 7.190; laminable, soft, clogging the file; fusible at 700°; vaporizable; a powerful agent in the phenomena of galvanism; oxydized by fusion; at a red heat it catches fire, and emits white films of oxyd, which contain about 0.33 oxygen; it is soluble in hydrogen; it combines with phosphorus, sulphur, arsenic, antimony, and mercury; it easily decomposes water; it is oxydized and dissolved by almost all the acids. Oxyd, white films.

It is always found oxydized,

1. Combined with a greater or less proportion of carbonic acid. Calamine.
2. Combined with sulphur. Blende.
3. Combined with sulphuric acid, generally in solution.

The ores of zinc are rarely worked by themselves, or with the sole intention of extracting zinc, but are generally melted with the lead ores, particularly galena, which they commonly accompany. By this process the zinc is obtained in two forms; part of it is sublimed in the state of an oxyd, and attaches itself to the chimney of the furnace in the form of a grey, granular, earthy-like, incrustration, which is known by the name of tutty or cadmia; part of it is sublimed in its metallic form, and is condensed in the throat of the chimney in small grains, which are afterwards melted in a crucible, and cast in ingots.

Officinal Preparations.

Oxydum zinci, E. L. D.
Sulphas zinci, E. L. D.

OXYDUM ZINCI IMPURUM. *Ed.* Tutia. L. D.

Impure Oxyd of Zinc. Tutty.

It is moderately hard and ponderous; of a brownish colour, and full of small protuberances on the outside, smooth and yellowish within; some pieces have a bluish cast, from minute globules of zinc in its metallic form. Tutty is celebrated as an ophthalmic, and frequently employed as such in unguents and collyria.

Officinal Preparations.

Oxydum zinci impurum præparatum, E. L.
Unguentum oxydi zinci impuri, E. L. D. - *vide Unguenta.*

OXYDUM ZINCI. *Ed. Oxyd of Zinc.*

Zincum Calcinatum. L. *Calcined Zinc.*

Calx Zinci; olim, Flores Zinci. D. *Calx of Zinc*, formerly *Flowers of Zinc.*

Let a large crucible be placed in a furnace filled with live coals, so as to be somewhat inclined towards its mouth; and when the bottom of the crucible is moderately red, throw into it a small piece of zinc, about the weight of a drachm. The zinc soon inflames, and is at the same time converted into white flakes, which are to be from time to time removed from the surface of the metal with an iron spatula, that the combustion may be more complete; and at last, when the zinc ceases to flame, the oxyd of zinc is to be taken out of the crucible. Having put in another piece of zinc, the operation is to be repeated, and may be repeated as often as is necessary. Lastly, the oxyd of zinc is to be prepared in the same way as the carbonat of lime. (E.)

This is an instance of simple oxydizement. At a red heat, zinc attracts the oxygen of the atmosphere so strongly, that it is quickly covered with a crust of white oxyd, which prevents the air from acting on the metal below; and therefore we are desired to operate only on small pieces at a time, and to place the crucible so that we may easily take out the oxyd formed, and introduce fresh pieces of zinc. As soon as the crust of oxyd is broken or removed the zinc inflames, and burns with a brilliant white or greenish, blue flame, being at the same time converted into very light white flocculi. To save these as much as possible, we are directed to use a very deep and large crucible, and to cover it with an inverted crucible. But as we must not cover it so as to prevent the access of the air, it is doubtful whether the latter precaution be of much service. The greater part of the zinc is, however, oxydized in the crucible, without being previously converted into vapour; and as this portion of the oxyd is always mixed with particles of zinc, it is necessary to separate them by trituration and elutriation.

The oxyd thus obtained is of a pure white colour without smell or taste, infusible and fixed in the fire, insoluble in water or alcohol, and entirely soluble in acids. The presence of lead in it is detected by sulphuric acid, which forms in that case an insoluble sulphat of lead. The white oxyd of zinc contains 82.15 zinc, and 17.85 oxygen.

Medical use.—White oxyd of zinc is applied externally as a detergent and exsiccant remedy. With twice its weight of axunge, it forms an excellent application to deep chaps, or excoriated nipples. But besides being applied externally, it has also been used internally. In doses from one to seven or eight grains, it has been much celebrated in the cure of epilepsy and several spasmodic affections: and there are sufficient testimonies of their good effects, where tonic remedies in those affections are proper.

Officinal Preparations.

Unguentum oxydi zinci, E. - - - *vide Unguenta.*

OXYDUM ZINCI IMPURUM PRÆPARATUM. *Ed.*

Prepared Impure Oxyd of Zinc.

Tutia Præparata. L. *Prepared Tutty.*

It is prepared as carbonat of lime.

This oxyd is prepared for external use only.

CARBONAS ZINCI IMPURUS. *Ed.*

Lapis Calaminaris. L. D.

Impure Carbonat of Zinc. Calamine.

D. *Kalmei, Kalamintsteen.*
DA. *Galmey.*
F. *Calamine, Pierre calaminaire.*
G. *Galmey.*
I. *Gialla mina, Zellamina, Pietra calaminaris.*
P. *Calamina, Pedra calaminaria.*
POL. *Galmaia, Galman.*
R. *Kamen kalaminar, Galmeja.*
S. *Calamina, Piedra calaminar.*
SW. *Gallmeja.*

This mineral is found plentifully in England, Germany, and other countries, either in distinct mines, or intermingled with the ores of different metals. It is usually of a greyish, brownish, yellowish, or pale reddish colour; without lustre, or transparency; fracture commonly uneven or earthy; considerably hard, though not sufficiently so as to strike fire with steel. Before the blowpipe it decrepitates, but does not melt, and becomes yellower, and is sublimed. It is partly soluble in acids, and often effervesces with them.

Mr. Smithson has analysed several varieties of Calamine.

	Sp. Grav.	*Ox. of Zinc.*	*Carb. Acid.*	*Water.*	*Quartz.*
Derbyshire	4.333	65.2	34.8		
Somersetshire	4.336	64.8	35.2		
Carinthia	3.598	71.4	13.5	15.1	
Hungary	3.434	68.3		4.4	25.
Fribourg		38.		12.	50.

Calamine is generally roasted before it comes into the shops, to render it more easily reducible into a fine powder. In this state it is employed in collyria, against defluctions of thin acrid humours upon the eyes, for drying up moist running ulcers, and healing excoriations.

CARBONAS ZINCI IMPURUS PRÆPARATUS. *Ed.*

Prepared Impure Carbonat of Zinc.

Lapis Calaminaris Præparatus. L. D.

Prepared Calamine.

The impure carbonat of zinc, after being roasted by those who make brass, is prepared in the same way as carbonat of lime. (E.)

As this oxyd of zinc is intended for external application, and often to parts very easily irritated, too much pains cannot be bestowed in reducing it to a fine powder.

SULPHAS ZINCI. Vitriolum Album. L. D.

Sulphat of Zinc. White Vitriol.

This is chiefly found native in the mines of Goslar, sometimes in transparent pieces, but more commonly in the form of white efflorences, which are dissolved in water and afterwards reduced by evaporation and crystallization into large masses. But as native sulphat of zinc is seldom pure, it is ordered to be prepared.

Medical use.—White vitriol is sometimes given, from five or six grains to half a drachm, as an emetic; it operates very quickly, and if pure, without violence. Externally it is employed as an ophthalmic, and often made the basis of collyria, both in extemporaneous prescription and in dispensatories. In cases of poisons taken into the stomach, it may be given in doses, to promote vomiting, of thirty to sixty grains, and even up to half an ounce.

SULPHAS ZINCI. *Ed. Sulphat of Zinc.*

ZINCUM VITRIOLATUM. L. D. *Vitriolated Zinc.*

Take of

Zinc, cut into small pieces, three ounces;
Sulphuric acid, five ounces;
Water, twenty ounces

Mix them, and when the effervescence is finished, digest the mixture for a little on hot sand; then strain the decanted liquor through paper, and after proper evaporation set it apart, that it may crystallize. (E.)

THE sulphat of zinc of commerce is never pure, but always contains iron, copper, and a little lead. From the mode of its preparation, there is also a deficiency of acid and water of crystallization. The means directed for purifying it by the London and Dublin colleges will supply these, but do not separate the foreign metals, except perhaps the lead. If, therefore, a pure sulphat of zinc be wanted, we may, according to the directions of the Edinburgh college, dissolve pure zinc in pure sulphuric acid; but we believe this process is very rarely practised, especially as the common sulphat of zinc may be sufficiently purified by exposing it in solution to the air, by which means red oxyd of iron is precipitated, and by digesting it upon pure zinc, which precipitates the other metals.

Sulphat of zinc crystallizes in tetrahedral prisms terminated by pyramids. It has a metallic styptic taste; effloresces slowly when exposed to the air. It is soluble in 2.5 parts of water at 60°, and in much less boiling water. It is not soluble in alcohol. It is decomposed by the alkalies and earths, hydrogureted sulphurets, and sulphureted hydrogurets. It consists of 20 oxyd of zinc, 40 acid, and 40 water of crystallization.

Medical use.—Sulphat of zinc, in doses from ten grains to half a drachm, operates almost instantly as an emetic, and is at the same time perfectly safe. It is therefore given, when immediate vomiting is required, as in cases where poison has been swallowed. By employing it internally, in smaller doses, it acts as a tonic; and some think it in every case preferable to the oxyd of zinc.

Externally, it is used as a styptic application to stop hemorrhagies; diminish increased discharges, as gonorrhœa; and to cure external inflammations arising from debility and relaxation of the blood-vessels, as in some cases of ophthalmia.

SOLUTIO SULPHATIS ZINCI. *Ed.*

Solution of Sulphat of Zinc.

Take of

Sulphat of zinc, sixteen grains;
Water, eight ounces;
Diluted sulphuric acid, sixteen drops.

Dissolve the sulphat of zinc in the water; then, having added the acid, filter through paper. (E.)

The acid is here added to dissolve the excess of oxyd of zinc, which the common sulphat often contains. This solution is of a strength proper for injecting into the urethra in gonorrhœa, or applying to the eyes in chronic ophthalmia.

AQUA ZINCI VITRIOLATI cum CAMPHORA. L.

Water of Vitriolated Zinc with Camphor.

Take of
Vitriolated zinc, half an ounce;
Camphorated spirit, half an ounce, by measure;
Boiling water, two pints.
Mix and filter through paper. (L.)

It is used externally as a lotion for some ulcers, particularly those in which it is necessary to restrain a great discharge. It is also not unfrequently employed as a collyrium in some cases of ophthalmia, where a large discharge of watery fluid takes place from the eyes with but little inflammation; but when it is to be applied to this tender organ, it ought first, at least, to be diluted by the addition of more water.

AQUA ALUMINIS COMPOSITA. L.

Compound Alum Water.

Take of
Alum,
Vitriolated zinc, of each half an ounce;
Boiling distilled water, two pints.
Pour the water on the salts in a glass vessel, and strain. (L.)

This water was long known in the shops, under the title of *Aqua aluminosa Bateana.*

It is used for cleansing and healing ulcers and wounds; and for removing cutaneous eruptions, the part being bathed with it hot three or four times a day. It is sometimes likewise employed as a collyrium; and as an injection in gonorrhœa and fluor albus, when not accompanied with virulence.

SOLUTIO ACETITIS ZINCI. *Ed.*

Solution of Acetite of Zinc.

Take of
Sulphat of zinc, a drachm;
Distilled water, ten ounces.
Dissolve.

Take of

Acetite of lead, four scruples;

Distilled water, ten ounces.

Dissolve.

Mix the solutions; let them stand at rest a little, and then filter the liquor. (E.)

TINCTURA ACETATIS ZINCI. D.

Tincture of Acetat of Zinc.

Take of

Sulphat of zinc,

Acetat of kali, each one ounce.

Triturate them together, and add one pint of rectified spirit of wine.

Macerate for a week, with occasional agitation, and strain through paper.

This is a case of double elective attraction, the lead combining and forming an insoluble compound with the sulphuric acid, while the zinc unites with the acetic acid, and remains in solution.

The acetat of zinc may be obtained by evaporation in talcky crystals. It is soluble in water, and is decomposed by heat. It is not poisonous.

When crystallized acetat of lead and sulphat of zinc are triturated together, the mixture presently becomes moist, which is owing to the new compounds combining with less water of crystallization than the original salts, by which means a portion of the water is disengaged in its fluid form.

Medical use.—The solution of acetat of zinc is with many practitioners deservedly much esteemed as an astringent collyrium, and injection. The solution in spirit of wine of the Dublin college is stronger and more stimulant than that in water of the Edinburgh.

CATALOGUE

OF NEW ARTICLES THAT MERIT A PLACE IN THE APOTHECARIES' SHOPS.

It was the observation of professor Cullen, one of the most celebrated writers on the Materia Medica that any age has produced, that the writings on that subject are, for the most part, a compilation of mistakes and falsehoods. And he adds, that these errors arise from the obstinacy of old professors, and their blind attachment to theory, as well as the vanity of young physicians, being the authors of observations that are hastily made and dressed in the closet; and besides, many of the operations of nature have been falsely imputed to the effects of medicines, pretendedly founded on experience.* So distant are they from a true and faithful delineation of nature. Allied to these evils are the numerous frauds and sophistications of chemistry and pharmacy, and the reprehensible practice of administering nostrums or secret remedies, and other popular impositions, the fertile and disgraceful sources of empiricism. A knowledge of the medicinal powers, possessed by the indigenous vegetables, of which our own soil is so abundantly productive, should be deemed an acquisition of primary importance. However disparaging to medical erudition, it is but justice to confess, that we are indebted to the bold enterprise of illiterate pretenders for the discovery of some of our most active remedies. It is therefore, extremely desirable, that our patriotic physicians and citizens should unite their exertions in the investigation of native substances, and institute such chemical analyses and experiments as will tend to elucidate their specific properties.

The following catalogue, consists of a selection of new articles, which merit a place in the apothecaries' shops; many of which should be cultivated in our gardens, and claim the attention of every American practitioner, that the importation of expensive foreign drugs may be superseded:

Acorus Calamus.
Actea Spicata.
Agrimonia.
Aralia Spinosa.
Arbutus Uva Ursi.
Arum Americanum.
Arum Triphyllum.
Asclepias Decumbens.
Asculus Hippocastanum.
Cassia Marilandica.
Convolvulus Panduratus.
Cornusflorida.
Cornus Sericea.
Datura Stramonium.
Eupatorium Perfoliatum.
Eupatorium Pilosum.
Frasero Carolinensis.
Geranium Maculatum.
Geum Urbanum.
Hamamelis.
Heracleum Sphondilium.
Iris Pseudacorus.
Juglans Cinerea.
Juniperus Virginiana.

* Vide Cullen's Treatise on the Materia Medica. Vol. I.

Kalmia Latifolia.
Kalmia Angustifolia.
Leonurus Cardiaca.
Liriodendron tulipifera.
Lobelia inflata.
Lytta Vittata.
Melia Azedarach.
Myrica Cerifera Humilis.
Nigella.
Phytolacca Decandra.
Prinos Verticillatus.
Prunus Virginiana.
Quercus Robur.
Rhus Toxicodendron.
Rumex Acutus.
Rumex Aquaticus.
Rumex Crispus.
Sanguinaria Canadensis.
Salix Alba.
Salix Latifolia.
Sentellaria Lateriflora.
Secale Cornutum.
Sophora tinctoria.
Statice Limonium.
Tanasetum Vulgare.
Ulmus Americana.
Veratrum Album.
Zanthorhiza Apiifolia.
Zanthoxylum Clava Herculis.

TABLES,

Showing the Proportion of ANTIMONY, OPIUM, *and* QUICKSILVER, *contained in some Compound Medicines.*

TARTRITE OF ANTIMONY.

Wine of Tartrite of Antimony contains two grains of tartrite of antimony or tartar-emetic in the ounce. *Ed.*

Solution of Tartarized Antimony contains one grain of tartarized antimony in four fluidrachms. *Lond.*

OPIUM.

Opiate Confection contains one grain of opium in about thirty-six grains. *Lond.*

Opiate or Thebaic Electuary contains in each drachm about a grain and a half of opium. *Ed.*

Electuary of Catechu, or *Japonic Confection*, contains in each ounce about two grains and a half of opium; for one grain of opium is contained in one hundred and ninety-three grains. *Ed.*

Compound Electuary of Catechu contains in each ounce about two grains and a half of purified opium. *Dub.*

Compound Powder of Kino contains a grain of opium in a scruple. *Lond.*

Compound Powder of Chalk with Opium contains one grain of opium in two scruples. *Lond.*

Compound Powder of Ipecacuan contains one grain of opium in ten grains. *Lond. Dub.*

Powder of Ipecacuan and Opium contains six grains of opium in each drachm, or one grain in ten. *Ed.*

Powder of burnt Horn with Opium contains one grain of opium in ten. *Lond.*

Opiate or Thebaic Pills contain six grains of opium in each drachm, or five grains contain half a grain of opium. *Ed.*

Pills of Storax, in five grains of the mass, contain one grain of purified opium. *Dub.*

Pills of Soap with Opium contain one grain of opium in five. *Lond.*

Tincture of Opium or *Liquid Laudanum* is made with two scruples of opium in each ounce of the liquid, or with five grains in each drachm; but a drachm of the tincture appears, by evaporation, to contain about three grains and a half of opium. *Ed.*

Tincture of Opium contains, in a drachm measure, about four grains and a half of purified opium. *Dub.*

Camphorated Tincture of Opium contains in four drachms and a half, by measure, very nearly one grain of purified opium. *Dub.*

Ammoniated Tincture of Opium, or *Paregoric Elixir*, is made with about eight grains in each ounce of the liquid, or with about one grain in the drachm. *Ed.*

Syrup of Opium contains in an ounce measure about a grain of the watery extract of opium; for the liquor, by the addition of the sugar, is more than double in bulk. *Dub.*

Tincture of Soap and Opium, formerly called *Opiate Liniment and Anodyne Balsam*, is made with one scruple of opium in each ounce of the liquid. *Ed.*

Troches of Liquorice with Opium contain about one grain of opium in each drachm. *Ed.*

QUICKSILVER.

Solution of Oxymuriat of Quicksilver contains one grain of oxymuriat of mercury in two fluid ounces. *Lond.*

Quicksilver Pills contain fifteen grains of quicksilver in each drachm. Each pill contains one grain of quicksilver. *Ed.*

Quicksilver Pills contain one grain of quicksilver in three grains. *Lond.*

Quicksilver Pills contain in six grains two of quicksilver. *Dub.*

Compound Pills of Submuriat of Quicksilver contain a grain of submuriat of quicksilver in about five grains. *Lond.*

Quicksilver Ointment contains twelve grains of quicksilver in each drachm; made with double quicksilver, each drachm contains twenty-four grains. *Ed.*

Stronger Quicksilver Ointment contains one drachm of quicksilver in two drachms. *Lond. Dub.*

Weaker Quicksilver Ointment contains one drachm of quicksilver in six drachms. *Lond.*

Quicksilver Liniment contains one drachm of quicksilver in about six drachms. *Lond.*

Quicksilver Plaster contains about sixteen grains of quicksilver in each drachm. *Ed.*

Quicksilver with Chalk contains one grain of quicksilver in three grains. *Lond.*

Quicksilver with Magnesia, in three grains, contains two of quicksilver. *Dub.*

Stronger Ointment of Nitrat of Quicksilver contains in each drachm four grains of quicksilver and eight of nitrous acid. *Ed.*

Milder Ointment of Nitrat of Quicksilver contains in each scruple half a grain of quicksilver and one grain of nitrous acid. *Ed.*

ARSENIC.

Solution of Arsenic contains one grain of oxyd of arsenic in two fluid drachms. *Lond.*

IRON.

Tincture of Acetat of Iron with Alcohol, in a drachm measure, contains about one grain of dry acetat of iron. *Dub.*

OR;

One grain of *Tartrite of Antimony* is contained in

Wine of tartrite of antimony. *Ed.* - - - - - grs. 240

Wine of ammoniated tartar. *Dub.* - - -	grs. 120
Solution of tartarised antimony. *Lond.* - - - -	240
Pills of submuriat of quicksilver. *Lond.* - - -	4

One grain of *Opium* is contained in

Confection of opium. *Lond.* - - - - -	grs. 36
Opiate electuary. *Lond.* - - - - - -	43
Electuary of catechu. *Ed. Dub.* - - - - -	193
Troches of liquorice with opium. *Ed.* - - - -	75
Pills of soap with opium. *Lond.* - - - - -	5
Pills of storax. *Dub.* - - - - - - -	5
Opiate pills. *Ed.* - - - - - - -	10
Powder of burnt horn with opium. *Lond.* - - -	10
Compound powder of chalk with opium. *Lond.* - -	43
Compound powder of ipecacuan. *Lond. Dub.* - - -	10
Powder of Impecacuan and opium. *Ed.* - - - -	10
Tincture of opium. *Ed. Dub.* - - - - - -	12
Tincture of opium. *Lond.* - - - - - -	18
Camphorated tincture of opium. *Dub.* - - -	244
Compound tincture of camphor. *Lond.* - - - -	244
Ammoniated tincture of opium. *Ed.* - - - - -	68
Tincture of soap and opium. *Ed.* - - - - -	31.5
Syrup of opium. *Dub.* - - - - - - -	480
Wine of opium. *Lond.* - - - - - - -	16

One grain of *Quicksilver* is contained in

Quicksilver pills. *Lond. Dub.* - - - - - -	grs. 3
ditto. *Ed.* - - - - - - -	4
Quicksilver liniment. *Lond.* - - - - - -	3
Stronger quicksilver ointment. *Lond. Dub.* - - -	2
Weaker quicksilver ointment. *Lond. Dub.* - - -	6
Quicksilver ointment. *Ed.* - - - - - - -	5
Quicksilver Plaster. *Ed.* - - - - - - - -	5.5
Plaster of quicksilver. *Lond.* - - - - - -	5.
Ammoniac plaster with quicksilver. *Lond.* - - -	5.
Quicksilver with magnesia. *Dub.* - - - - -	1.5
Quicksilver with chalk. *Dub.* - - - - - -	1.5
ditto. *Lond.* - - - - - - -	3.

One grain of *Calomel* is contained in

Pills of submuriat of quicksilver. *Lond.* - - -	grs. 4

One grain of the *Grey Oxyd of Quicksilver* is contained in

Ointment of the grey oxyd of quicksilver. *Ed.* - -	grs. 4

One grain of the *Red Oxyd of Quicksilver* is contained in

Ointment of red oxyd of quicksilver. *Ed.* - - -	grs. 9
Ointment of nitric-oxyd of quicksilver. *Lond.* - - -	9
Ointment of subnitrat of quicksilver. *Dub.* - - -	13

One grain of *Submuriat of Quicksilver and Ammonia* is contained in

Ointment of white precipitated quicksilver. *Lond.* - -	grs. 13

One grain of *Nitrat of Mercury* is contained in

Stronger ointment of nitrat of quicksilver. *Ed.*	-	grs. 5
Ointment of nitrated quicksilver. *Lond. Dub.*	- -	5
Milder Ointment of nitrat of quicksilver. *Ed.*	- -	13

One grain of *Oxymuriat of Mercury* is contained in

Solution of oxymuriat of quicksilver. *Lond.*	- -	grs. 960

One grain of *Oxyd of Arsenic* is contained in

Solution of Arsenic. *Lond.*	- - - - -	grs. 120

In many instances these proportions are only to be considered as approximations to the truth, as they are calculated from the quantities of the ingredients taken to form the preparation, not from the quantities which exist in it after it is formed. The *nitrat of mercury*, for example, in the different ointments into which it enters, is estimated as equal to the whole quantity of mercury and nitrous acid employed to form it, although, from the very nature of the preparation, it cannot be so much. In the solutions of opium, the opium is estimated as equal to the whole quantity employed, although not above two-thirds of it be dissolved. And, lastly, no allowance is made for the loss by evaporation.

POSOLOGICAL AND PROSODIAL TABLE.

ACETIS potassa, ℈i to ʒi
Acetitis ammoniæ aqua, ʒij to ʒvi
Acidum acetosum impurum, ʒi to ℥ss; ℥i to ℥ij, *in glysters*
aromaticum *analeptic*
camphoratum *analeptic*
distillatum, ditto
forte, ℈i to ʒi
Acidi acetosi syrupus, ʒi to ʒij
Acidum benzoicum, gr. x to ʒss
Acidi carbonici aqua, ℔ij *daily*
Acidum citricum, gt. x to ʒss.
muriaticum, gt. x to gt. xl
nitrosum, gt. v to gt. xx
dilutum, gt. x to xl
succinicum, gr. v to ℈i.
sulphuricum dilutum, gt. x to gt. xl
aromaticum, gt. x to gt. xl
Aconiti napelli herba, gr. i to gr. v
succus spissatus, gr. ½ to gr. iij.
Acori calami radix, ℈i to ʒi
Æsculi hippocastani cortex, ʒss to ʒi
Æther sulphuricus, gt. xx to ʒi.
cum alcohole, ʒss to ʒij
cum alcohole aromaticus, ʒss to ʒij
Ætheris nitrici spiritus, ʒss to ʒij.
Alcohol, ʒss to ʒi
ammoniatum, ʒss to ʒi
aromaticum, ʒss to ʒi
fœtidum, ʒss to ʒi
succinatum, gt. x to gt. xl
Allii porri radicis succus, ʒi to ℥ss.
sativi radix, ʒi to ʒij
succus, ʒi to ℥ss
Aloes perfoliatae (socotorinæ) decoctum, ℥ss to ℥ij
extractum, gr. v to xx

Aloes perfoliatae pilulae, gr. xv to ʒss.
pilulæ compositæ, gr. x to xxv
cum assafœtida, gr. x to ℈i
cum colocynthide, gr. v to gr. x
cum myrrha, gr. x to ℈i
pulvis compositus, gr. x to ℈i
pulvis cum canella, gr. x to ℈i
pulvis cum ferro, gr. v to ℈i
pulvis cum guaiaco, gr. x to ℈i
Aloes vulgaris (hepaticae) succus spissatus, gr. v to gr. xx.
tinctura ʒss to ʒij
tinctura cum myrrha, ʒss to ʒij
tinctura ætherea, ʒss to ʒij
vinum, ℥ss to ℥i
Althææ officinalis decoctum, *ad libitum*
syrupus, ʒi to ʒij
Aluminæ sulphas, gr. x to ℈i
sulphatis pulvis compositus, gr. x to ʒss
Ammoniæ aqua, gt. x to gt. xx
acetitis aqua, ʒij to ℥ss
carbonas, gr. v to gr. xv
carbonatis aqua, gt. xx to ʒi
hydro-sulphuretum, gt. v to xij
murias gr. x to ʒss
Ammoniacum gummi resina, gr. x to ʒss
Ammoniaci mistura, ʒij to ℥i
Amomi zingiberis radix, gr. v to ℈i
syrupus, ʒi to ʒij
tinctura, ʒi to ʒij
repentis semina, gr. v to ℈i
tinctura, ʒi to ʒij
composita, ʒi to ʒij
zedoariæ radix, ℈i to ʒi
Amygdali communis oleum fixum, ℥ss to i
emulsio, ℔ij *daily*
Amygdalæ confectio, ʒi to ℥ss.
Amyli mucilago, ʒi to ℥i; ℥iv to ℥vj *in clyster*
trochisci, ʒi to ʒij
Amyridis elemiferæ resinæ, gr. x to ʒss
gileadensis resina liquida, ℈i to ʒi
Anethi graveolentis semina, ℈i to ʒi

Anethi graveolentis aqua destillata, ℥i to ℥iij
Anethi fœniculi semina, ℈i to ʒi
aqua destillata, ℥i to ℥iij
oleum volatile, gt. ij to gt. v
Angelicæ archangelicæ radix, herba, semen, ʒss to ʒiij
Angusturæ cortex, gr. x to ʒi
infusum, ℥ss to ℥iv.
Anthemidis nobilis flores, ℈i to ʒi
decoctum, *in clyster*
extractum, gr. x to ʒss
infusum, ℥ss to ℥iv
oleum, gt. v to gt. x
pyrethri radix, gr. iij to ℈ss
Antimonii sulphuretum præparatum, gr. v to ℈ij
fuscum (*kermes mineralis*) gr. i to iss
præcipitatum, gr. i to v
oxydum, gr. i to x
oxydum cum sulphure per nitratem potassæ, gr. i to iv
cum sulphure vitrificatum, gr. $\frac{1}{4}$ to iss
vitrificatum cum cera, gr. iij to ℈i
cum phosphat calcis, gr. iij to viij
album (*antimonium calcinatum,*) gr. x to ʒss
et potassæ tartris,
as a diaphoretic, gr. $\frac{1}{4}$ to $\frac{1}{2}$
as an emetic, gr. $\frac{1}{2}$ to gr. iij.
tartarizati liquor, ʒij to ʒvi.
tartritis vinum, ʒij to vi
vinum, ʒiij to ℥ss
pilulæ composita, gr iij to v
Apii petroselini semina, ℈i to ij
Arbuti uvæ ursi folia, gr. x to ℈ij
Arctii lappæ radix, *a decoction of* ℥ij *in* ℔ij *of water, daily*
Argenti nitras, gr. $\frac{1}{8}$ to $\frac{1}{2}$
Ari maculati radix, gr. vi to ℈i
conserva, ʒss to ʒiss
Aristolochiæ serpentariæ radix, gr. x to ʒss
tinctura, ʒi to ʒij
Arnicæ montanæ herba, gr. v to x
Arsenici oxydum album, gr. $\frac{1}{8}$ to $\frac{1}{4}$
aqua, gt. v to x
Artemisiæ abrotani folia, ℈i to ʒi

Artemisiæ absinthii herba, ℈i to ʒi
maritimæ cacumina, ℈i to ℈ij
conserva, ʒij to ℥ss
santonicæ cacumina, ʒss to ʒi
Asari Europææ folia, gr. v to x
pulvis compositus, gr. v to ʒi
Astragali tragacanthi gummi, gr. x to ʒi
Astragali tragacanthæ pulvis compositus, ʒss to ʒi
Atropæ belladonnæ folia, gr. ss to gr. v
succus spissatus, gr. i to gr. iij
Barytæ muriatis solutio, gr. v to x
Bitumen petroleum sulphuratum, gr. v to ʒss
Bituminis petrolei oleum, gr. x to ʒss
Bolus gallicus, ℈i to ʒi
Bubonis galbani gummi resina, gr. x to ℈i
pilulæ compositæ, gr. x to ʒss
tinctura, ʒi to iij
Calcis aqua, ℥iv to ℔i *daily*
muriatis solutio, gt. xl to ʒij
carbonas præparatus, ℈i to ʒij
carbonatis mistura, ℥i to iv
pulvis compositus, ʒi to ij
pulvis compositus cum opio, gr. xv to ℈i
trochisci, ʒi to ij
Cancri astaci lapilli præparati, ʒss to i
paguri chelæ præparatæ, ʒss to i
chelarum pulvis compositus, ℈i to ʒj
Canellæ albæ cortex, gr. v to ℈ij
Capsici annui fructus, gr. v to x
tinctura, ʒss to ʒi.
Cardamines pratensis flores, ℈i to ʒi
Cari carui semina, gr. x to ʒi
aqua, ℥i to ℥iij.
oleum volatile, gr. i to v
spiritus, ʒi to ℥i
Caryophylli aromatici floris germen, gr. v to ℈i
oleum volatile, gt. iij to vi
infusum, ʒij to ℥i
Cassiæ fistulæ pulpa, ʒss to i
electuarium, ʒi to ℥i
sennæ folia, ℈i to ʒi

Cassiæ sennæ electuarium, ʒss to ℥ss
extractum, gr. x to ʒss
infusum, ℥i to iij
infusum tartarizatum, ℥iss to iij
pulvis compositus, ℈i to ʒi
tinctura, ℥ss to ℥i
Castoreum Rossicum, gr. x to ℈i
Castorei tinctura, ʒss to i
composita, ʒss to i
Centaureæ benedictæ herba, gr. xv to ʒi
Cephaëlidis ipecacuanhæ radix,
as a stomachic, gr. ss to gr. ij
as an emetic, ℈i to ʒss
Cephaëlidis ipecacuanhæ vinum,
as a stomachic, gt. xx to xl.
as an emetic, ℥ss to ℥i
pulvis compositus, gr. x to ℈i
Cera, ℈i to ʒi, *in emulsion*
Chironiæ centaurei summitates, ℈i to ʒi
Cinaræ scolymi folia, ℥ss to i, *of the expressed juice*
Cinchonæ officinalis cortex, ℈i to ʒij
decoctum, ℥i to ℥iv
extractum, gr. x to ℈i
extractum cum resina, gr. v to ℈i
infusum, ℥i to iv
tinctura, ʒi to ʒij
tinctura ammoniata, ʒss to ij
tinctura composita, ʒi to ij
Cissampeli pareiræ radix, gr. xv to ℈ij
Cisti cretici resina (Ladanum,) gr. x to ʒss
Citri aurantii folia, flores, gr. x to ʒi
fructus cortex exterior, ʒss to ℈ij
aqua destillata, ℥i to iij
conserva corticis, ʒi to v
infusum compositum, ℥i to ℥iv.
syrupus corticis, ʒi to ij
tinctura corticis, ʒi to ij
Citri medicæ, succus expressus, ʒi to ℥ss.
succus spissatus, ʒi to ʒij
syrupus succi, ʒi to ij
fructus cortex exterior, ℥ss to ij, *in infusion*

Citri medicæ aqua destillata, ℥i to ij
oleum volatile, gt. ii to gt. v
Cocci cactus, gr. v to ℈i
Cochleariæ officinalis herba, ℥i to iv, *of the juice*
succus compositus ℥i to iv
Cochleariæ armoraciæ radix, ℈i to ʒi
infusum compositum, ℥ss to ℥iv
spiritus compositus, ʒi to ℥i
Colchici autumnalis radix, gr. ss to iij
syrupus, ʒi to ℥i
oxymel, ʒi to ℥ss
Colchici autumnalis acetum, ʒss to ʒi
Colombæ radix, gr. x to ℈i
infusum, ℥i to ℥iv.
tinctura, ʒi to ij
Confectio aromatica, gr. x to ʒi
opiata, gr. x to ʒss
Conii maculati folia, gr. ij to ℈i.
succus spissatus, gr. i to gr. ij
Convolvuli scammoniæ gummi resina, gr. v to gr. xv
electuarium, ℈i to ʒi
pulvis compositus, gr. x to gr. xv
pulvis cum aloe, gr. x to xv
pulvis cum calomelane, gr. x to ℈i
Convolvuli jalapæ radix, gr. x to ʒss
extractum, gt. v to xv.
pulvis compositus, ʒss to ʒi
tinctura, ʒi to ij
Copaiferæ officinalis resina, gr. xv to ʒss
Coriandri sativi semina, ℈i to ʒi
Cornu ustum, ʒss to ʒij
Cornu usti mistura, ℥iv to ℔ss
cum opio pulvis, gr. xv to ʒss
Croci sativi floris stigmata, gr. v to ʒss
syrupus, ʒi to ij
tinctura, ʒss to ij
Crotonis elutheriæ cortex, gr. x to ʒi
extractum, gr. x to ʒss.
tinctura, ʒi to ʒij.
infusum, ℥i to ℥iv.
Cucumeris colocynthidis fructus medulla, gr. i to viij

Cucumeris colocynthidis extractum, gr. v to ʒss
extractum compositum, gr. v to ʒss
Cumini cymini semina, ℈i to ʒi
Cupri sub-acetis, gr. $\frac{1}{8}$ to $\frac{1}{2}$
ammoniaretum, gr. $\frac{1}{2}$ to v
ammoniareti aqua, gt. v to gt. xxx
ammoniareti pilulæ, No. 1
sulphas, gr. i to x
Curcumæ longæ radix, ℈i to ʒi
Daphnes mezerei radicis cortex, gr. i to x
decoctum ℔i *daily*
Daturæ stramonii herba, gr. i to v
Dauci carotæ semina, ℈i to ʒi
Delphinii staphisagriæ semina, gr. iij to x
Dianthi caryophylli flores, ℈i to ʒi
syrupus, ʒi to ij
Digitalis purpureæ folia, gr. ss to iij
infusum, ℥ss to ℥i
tinctura, gt. x to xl
Dolichi prurientis pubes leguminis rigida, gr. v to x
Dorsteniæ contrayervæ radix, gr. x to ʒss
pulvis compositus, ℈i to ij
Electuarium opiatum, ʒi to ij
Eryngii maritimi radix, ʒi to ij
Ferri acetati tinctura, gt. x to xxx
alkalini aqua, ʒss to ʒi
carbonas, ʒss to ʒi
carbonas præcipitatus, ʒss to ʒi
limatura, gr. iij to gr. x
mistura composita, ℥i to ℥ij
muriatis tinctura, gt. x to xx
et ammoniæ tinctura, gt. xx to ʒi.
et potassæ tartris, gr. x to ʒss.
et ammoniæ murias, gr. iij to xv.
oxydum nigrum purificatum, do.
supercarbonatis aqua, ℔i. *daily*.
pilulæ cum myrrha, gr. x to ℈i
sulphas, gr. i to v.
vinum, ʒi to ℥ss.
Ferulæ assæ fœtidæ gummi resina, gr. x to ʒss.
mistura, ℥ss to ℥i.

Ferulæ assæ fœtidæ pilulæ compositæ, gr. x to xx.
tinctura, ʒss to ʒi.
Fici caricæ fructus, No iv, *in decoction.*
Fraxini orni succus concretus (*manna,*) ℥ss to iss.
succi concreti syrupus, ℥i to ℥ij.
Fumariæ officinalis herba, ℥i to ℥ij. *of the expressed juice.*
Gentianæ luteæ radix, gr. x to ℈ij.
infusum compositum, ʒiss to iv.
extractum, gr. x to ʒss.
tinctura composita, ʒi to ij.
vinum compositum, ℥ss to ℥i.
Geoffrææ inermis cortex, ℈i to ij.
decoctum, ℥i.
Glycyrrhizæ glabræ radix, gr. x to ʒi.
extractum, ʒi to ij.
trochisci, ℥i to ij.
trochisci cum opio, ʒi to ℥ss *during the day.*
Gratiolæ officinalis herba, gr. x to ℈i.
Guaiaci officinalis resina, gr. x to ʒss.
decoctum compositum, ℔ij. *daily.*
mistura, ℥i to ℥ij.
tinctura, ʒi to ʒij.
tinctura ammoniata, ʒi to ij.
Hæmatoxyli Campechiani extractum, ℈i to ij.
lignum, ℈i to ʒi.
Hellebori nigri radix, gr. x to ℈i.
extractum, gr. v to gr. x.
tinctura, ℥ss to i.
fœtidi folia, gr. x to ʒi.
Hordei distichi decoctum, ℥ij. to vj.
compositum, ℥ij. to vj.
Humuli lupuli extractum, gr. v to ℈i.
strobuli, gr. x to ℈i.
Hydrargyrum purificatum, ℥ij to iv.
cum creta, gr. x to ʒss.
Hydrargyri acetis, gr. i to vj.
murias, gr. $\frac{1}{8}$ to $\frac{1}{2}$.
oxymuriatis liquor, ʒi to ℥ss.
oxydum cinereum, gr. i to gr. v.
oxydum rubrum, gr. ss to gr. ij.
pilulæ, gr. v to xv.

Hydrargyri submurias, gr. i to gr. v.
præcipitatus, gr. i to gr. v.
submuriatis pilulæ, gr. v to gr. xv.
subnitras et ammoniæ, gr. v to gr. x.
subsulphas, gr. i to gr. v.
sulphuretum nigrum, ℈i to ʒi.
rubrum, gr. x to ʒss.
Hyosciami nigri herba, semen, gr. iij to x.
succus spissatus, gr. i to v.
tinctura, gt. xx to ʒi.
Hyperici perforati flores, ℈i to ʒi.
Hysopi officinalis herba, ℈i to ʒi.
Inulæ helenii radix, ℈i to ʒi.
Iridis florentinæ radix, ℈i to ʒi.
Iridis pseudacori radicis succus expressus, gt. lx to lxxx.
Isis nobilis (Corallium), gr. x to ʒi.
Juglandis regiæ fructus, *externally in decoction.*
Juniperi communis baccæ, ʒss to i.
oleum volatile, gt. ij to x.
spiritus compositus, ʒi to ℥i.
Juniperi lyciæ gummi resina, (Olibanum), ℈i to ij.
Juniperi sabinæ foliæ, gr. x to ℈ij.
extractum, gr. x to ʒss.
tinctura composita, gt. xxx to ʒi.
Kino, gr. x to ℈i.
pulvis compositus, gr. v to ℈i.
tinctura, ʒi to ʒij.
Lactucæ virosæ succus spissatus, gr. iij to xv.
Lauri cinnamomi cortex, gr. v to ℈i.
aqua destillata, ℥i to iij.
oleum volatile, gt. i to ij.
pulvis compositus, gr. v to gr. x.
spiritus, ʒi to ℥i.
tinctura, ʒi to ʒij.
- tinctura composita, ʒss to ij
Laurus cassia, *considerably weaker than the preceding species, in other respects similar.*
Lauri camphoræ; Camphora, gr. iij to ℈i.
Acidum acetosum camphoratum, *odour analeptic.*
Emulsio camphorata, ℥ss to ij.
Camphoræ tinctura composita, ʒss to ℥ss.
Lauri nobilis folia; baccæ, gr. x to ʒss

Lauri sassafras lignum, radix, eorumque cortex, ℈i to ʒi.
oleum volatile, gt. ij to gt. x.
Lavandulæ spicæ, spicæ florentes, ℈i to ʒi.
oleum volatile, gt. i to v.
spiritus, *an analeptic perfume.*
spiritus compositus, ʒss to ℥ss.
Leontodi taraxaci radix, ʒss to ʒi, herba, ℥i to ij, *of the juice.*
extractum, gr. x to ʒi.
Lichen, ℈i to ʒi.
Lichenis islandici decoctum, ℥i to ℥iv.
Lilii candidi radix, *externally as a poultice.*
Lini usitatissimi semina, *in infusion* ℥i *to water* ℔i.
oleum fixum, ℥ss to ℥i; *or, in clysters,* ℥iij to vj.
infusum, ℥iss to ℥iv.
Lini cathartici herba, ʒss to ʒi, *or an infusion of an handful of the fresh plant.*
Lobeliæ syphiliticæ radix, ℥ss, *boiled in* ℔xij *of water to* ℔viij; *half a pint twice a-day.*
Magnesia, gr. x to ℈i.
Magnesiæ carbonas, ℈i to ʒi.
trochisci, ʒi to ij.
sulphas, ʒi to ℥i.
Malvæ sylvestris folia, flores, ʒss to ʒi.
Marrubii vulgaris herba, ʒss to ʒi.
Mel despumatum, ʒij to ℥i; *in clysters,* ℥iij.
acetatum, ʒi to ℥ss.
boracis, ʒi to ʒij.
rosæ, ʒi to ℥ss.
Meleleucæ leucadendri oleum volatile, gt. i to v.
Melissæ officinalis herba, gr. x to ℈ij.
Meloes vesicatorii pulvis, gr. ss to i.
tinctura, gt. x to xxx.
Menthæ viridis herba, gr. x to ʒi.
aqua, ℥i to iij.
oleum volatile, gt. ij to gt. v.
spiritus, ʒi to ℥i.
Menthæ piperitæ herba, gr. x to ℈ij.
aqua, ℥i to iij.
oleum volatile, gt. i to gt. iij.
spiritus, ʒi to ℥i.
Menthæ pulegii herba, gr. x to ℈ij.

Menthæ pulegii aqua, ℥i to iij.
oleum, gt. ij to v.
spiritus, ʒi to ℥i.
Menyanthis trifoliatæ herba, ʒss to ʒi.
Mimosæ catechu extractum, gr. x to ʒss.
electuarium, ℈i to ʒi.
infusum, ℥i to iij.
tinctura, ʒi to ij.
Mimosæ niloticæ gummi, ʒi to ij.
emulsio, ℔ij *daily.*
mucilago, ʒi to ℥ss.
Momordicæ elaterii succus spissatus, gr. ss to gr. vj.
Mori nigræ syrupus, ʒi to ℥ss.
Moschus, gr. v to ℈i.
Moschi tinctura, ʒi to ℥ss.
mistura, ʒss to ʒi.
Murias ammoniæ, gr. x to ʒss.
Murias sodæ, ʒiij to ℥ss *in clysters.*
Myristicæ moschatæ fructus nucleus, gr. v to ℈i.
involucri oleum expressum, *externally.*
nucis involucrum, (Macis,) gr. x to ℈i.
oleum volatile, gt. ij to gt v.
spiritus, ʒij to ℥i.
Myroxyli peruiferi balsamum, gr. v to ʒss.
tinctura, ʒss to ʒi.
Myrrha, gr. x to ʒss.
Myrrhæ tinctura, ʒi to ij.
pulvis compositus, gr. xv to ℈i.
Myrti pimentæ fructus, gr. v to ℈ij.
aqua destillata, ʒi to iij.
oleum volatile, gt. ij to v.
Myrti pimentæ spiritus, ʒi to ℥i.
Nicotianæ tabaci folia, gr. ss to v.
vinum, gt. xxx to gt. lxxx.
Oleæ Europææ oleum fixum, ℥ss to ℥i.
Oleum animale, gt. x to xl.
vini, gt. i to iv.
Onisci aselli (Millipedæ præparatæ,) ʒi to ij.
Opium, gr. ss to gr. ij.
Opii pilulæ, gr. v to ℈i.
extractum, gr. ss to gr. v.

Opii tinctura, gt. xx to xl.
ammoniata, ʒss to ij.
camphorata, ʒss to ij.
vinum, gt. x to ʒss.
Origani vulgaris herba, gr. x to ℈i.
oleum volatile, gt. i. to ij.
marjoranæ herba, ℈i to ʒi.
Ostreæ edulis testæ præparatæ, ʒss to i.
Ovis arietis sevum præparatum, *externally.*
Oxalis acetosellæ folia, ℥ss to ℥iss *of the juice.*
conserva, ʒij to ℥ss.
Pæneæ sarcocollæ gummi resina, (Sarcocolla) gr. x to ʒss.
Panacis quinquefolii radix, ℈i to ʒi.
Papaveris rhœæ flores, ʒi *in decoction.*
syrupus, ʒi to iij.
Papaveris somniferi syrupus, ℥ss to i *to adults;* ʒi to ij *to children: one ounce is supposed to contain one grain of opium.*
extractum, gr. i to v.
succus spissatus (Opium,) gr. ss to gr. ij.
Parietariæ officinalis herba, gr. x to ʒi, or ℥i to iij *of the juice.*
Pastinacæ opoponacis gummi resina, gr. x to ʒss.
Phasiani galli ovorum testæ præparatæ, ʒss to i.
Physeteris macrocephali sevum (Spermaceti,) ʒss to iss.
Pimpinellæ anisi semina, gr. xv to ʒss.
oleum volatile, gt. v to gt. x.
spiritus compositus, ʒi to ℥ss.
Pini abietis resinæ, gr. x to ʒss.
Pini balsameæ resina liquida, (Balsamum Canadense) gt. x to ℥ss.
Pini laricis resina liquida, (Terebinthina veneta,) gt. x to ʒss; *and in clysters,* ℥ss to i.
Pini sylvestris resina, liquida, (Terebinthina vulgaris) gt. x. to ʒss; *and in clysters* ℥ss to i.
resina empyreumatica (Pix liquida,) ℈i to ʒi.
Pini oleum volatile (Oleum terebinthinæ) rectificatum, gt. x to ℥ss. lately ℥i to ij in tænia.
Piperis nigri baccæ, gr. x to ℈i.
cubebæ baccæ, gr. v to ℈i.
longi fructus, gr. v to ℈i.
Pistaciæ lentisci resina (Mastiche,) gr. v to ʒss.
terebinthi resina liquida (Terebinthina Chia,) ℈i to ʒi.
Plumbi acetis, gr. ss to ij.

Polygalæ senegæ radix, ℈i to ʒss.
senegæ decoctum, ℥ss to ij.
Polygoni bistortæ radix, gr. x to ʒi.
Polypodii filicis maris radix, ʒi to ij.
Potassæ aqua, gt. x to xxx.
acetis, ℈i to ʒi.
carbonas gr. v to ℈i.
carbonatis aqua, ʒss to ʒi.
nitras, gr. v to ℈i.
nitratis trochisci, ʒi to ij.
sulphas, ℈i to ℥ss.
sulphas cum sulphure, gr. xv to ʒss.
supersulphas, ℈i to ʒij.
supercarbonatis aqua, ℥ij to ℥iv.
subcarbonas, gr. v to ℈i.
sulphuretum, gr. v to xv.
supertartris, ʒi to ℥i.
tartris, ʒi to ℥i.
Potentillæ reptantis radix, ʒss to i.
Pruni domesticæ fructus, ℥ij to iij, *stewed.*
spinosæ fructus.
conserva, ʒij to ℥ss.
Pterocarpi draconis resina, gr. x to ℈ij.
Pulvis aromaticus, gr. v to gr. x.
opiatus, gr. v to gr. x.
Punicæ granati fructus cortex, ℈i to ʒi.
floris petala, ʒss to iss.
Pyri cydoniæ decoctum, ℥i to ℥iv.
Quassiæ simarubæ cortex, ℈i to ʒss, *or* ʒij *in decoction.*
simarubæ infusum, ℥iss to ℥iv.
excelsæ lignum, gr. v to ℈i; *or* ℥i to ij *of an infusion of* ʒij *in* ℔i *water.*
infusum, ℥iss to ℥iv.
Quercus roboris cortex, gr. x to ʒss; *or* ℥i to ij *of an infusion of* ʒij *in* ℔i water.
Quercus cerris gallæ, gr. x to ʒss.
Rhamni cathartici baccæ, ʒi to ʒij.
succus expressus, ʒss to i.
syrupus, ℥ss to iss.
Rhei palmati radix, gr. x to ℈ij.
extractum gr. x to ʒss.

Rhei palmati infusum, ℥iss to iv.

pilulæ compositæ, gr. x to ʒss.

tinctura, ℥ss to iss; *as a stomachic*, ʒi to ʒij.

composita, ℥ss to iss.

cum aloe, ℥ss to i.

cum gentiana, ℥ss to iss; *or*, ʒij to ʒss *as a stomachic*.

vinum, ℥ss to iss.

Rhododendri chrysanthi folia, gr. v to x; *or an infusion of* ʒij *in* ℥x. *of water*.

Rhi toxicodendri folia, gr. ss to gr. ij.

Ribis nigri succus spissatus, ℥ss to i.

syrupus, ʒi to ℥ss.

Ricini communis oleum expressum, ℥ss to ℥i.

Rosæ Gallicæ, petala, ℈i to ʒi.

conserva, ʒ to ℥.

infusum, ℥ij to vj.

mel, ʒi to ij.

syrupus, ʒi to iij.

Rosæ damascenae petala, ℈i to ʒi.

aqua destillata, ℥i to iij.

syrupus, ʒij to ss.

caninæ (Cynosbatus) conserva, ʒi to ʒi.

pulpa, ʒi to ℥ij.

Roris marini officinalis summitates, gr. x to ʒij; *and in infusion* ʒi to iss.

oleum volatile, gt. ij to gt. v.

spiritus, ʒi to ℥i.

Rubiæ tinctorum radix, ℈i to ʒi.

Rubi idæi syrupus, ʒi to ℥ss.

Rumicis acetosæ folia, ℥i to ℥ij *of the juice*.

Rutæ graveolentis herba, gr. xv to ℈ij.

extractum, gr. x to ℈i.

Sagapenum gummi resina, gr. x to ʒss.

Salicis cortex, ℈i to ʒi.

Salviæ officinalis folia, gr. xv to ℈i.

Sambuci nigri cortex interior, gr. v to ℈i.

succus spissatus, ℥ss to iss.

Sapo, gr. v to ʒss.

Saponis cum opio pilulæ, gr. v to gr. xv.

Scillæ maritimæ radix recens, gr. v to gr. xv.

Scillæ maritimæ radix siccata, gr. i to gr. iij.
acetum, ʒss to ʒiss.
conserva, ʒss to i.
oxymel, ʒss to ij.
mel, ʒss to ij.
pilulæ, gr. x to ℈i.
syrupus, ʒi to iij.
tinctura, gr. x to xx.

Sinapeos albæ semina, ℈i to ℥ss.
oleum fixum, ℥ss to i.

Sii nodiflori herba, ℥ij, *or* iij *of the juice.*

Sisymbrii nasturtii herba, ʒi, *or* iij *of the juice.*

Smilacis sarsaparillæ radix, ℈i to ʒi.
decoctum, ℥iv to ℔ss.
compositum, ℥iv to ℔ss.
extractum, gr. x to ʒi.

Sodæ carbonas, gr. x to ʒss.
subcarbonas, gr. x to ʒss.
exsiccata, gr. v to gr. xv.
supercarbonatis aqua, ℥iv to ℔ss.
et potassæ tartris, ʒi to ℥i.
sulphas, ℈i to ℥i.
murias, ʒiij to ℥ss, *in glysters.*
phosphas, ℥i to iss.
sub-boras, gr. x to ʒss.
tartris, ℈i to ℥i.

Solani dulcamaræ stipites, ʒss to ʒi, *in infusion.*
decoctum, ℥ss to ℥ij.

Spartii scoparii summitates, ℈i to ʒi.
extractum, ʒss to i.

Spigeliæ marilandicæ radix, ℈ss to ℈i.

Spiritus ætheris sulphurici compositus, ʒss to iss.
nitrosi, ʒss to ʒi.

Spongia usta, ʒi to ℥i.

Stalagmitidis cambogiodis suc. spissat. (Gambogia) gr. i to gr. x.
Cambogiæ pilulæ compositæ, gr. x to ℈i.

Stanni pulvis et limatura, ʒi to ℥ss.

Styracis officinalis balsamum, gr. x to ʒss.
benzoini balsamum, gr. x to ʒss.
tinctura composita, ʒss to i.

Succinum præparatum, ℈i to ʒi.

Succini oleum rectificatum, gt. x to xx.
Sulphas aluminæ, ℈ss to ℈i.
Sulphur præcipitatum, ℈i to ʒi.
    sublimatum lotum, ℈i to ʒi.
Sulphuratum oleum, gt. x to ʒss.
Sulphuris trochisci, ʒi to iij.
Swieteniæ mahagoni cortex, ℈i to ij.
    febrifugæ cortex, ℈i to ij.
Tamarindi indicæ fructus, ℥ss to ℥ii.
    infusum cum cassia senna, ℥ij to iv.
Tanaceti vulgaris herba, ʒss to i.
Teucrii maris herba, gr. x to ʒss.
    scordii herba, ℈i to ʒi.
Toluiferi balsami balsamum, gt. v to ʒss.
    syrupus, ʒi to iij.
    tinctura, ʒss to ij.
Tormentillæ erectæ radix, ℈i to ij.
Tussilaginis farfaræ herba, ʒss to ʒi: ℥ij to iv *of the expressed juice.*
Ulmi campestris cortex interior, ℈i to ʒi.
    decoctum, ℥iv to ℔ss.
Urticæ dioicæ herba, ℥i to ij *of the expressed juice.*
Valerianæ officinalis radix, ℈i to ʒi.
    tinctura, ʒi to ʒij.
        ammoniata, ʒss to ʒi.
    extractum, gr. x to ℈i.
Veratri albi radix, gr. iij to gr. x.
    tinctura, gt. v to x.
Vinum, gt. v to x.
Veronicæ beccabungæ herba, ℥ij to iv *of the juice daily.*
Violæ odoratæ syrupus, ʒi to ij.
Winteræ aromaticæ cortex, gr. x to ℈i.
Zinci carbonas, gt. x to ʒi.
    oxydum, gr. iij to x.
    sulphas, gr. to ʒss.

N. B. These are in general the doses for adults from twenty to sixty, but they may be diminished for children, and people past the prime of life, nearly in the following proportions.

Ages.		Proportionate doses.
Months	2	$\frac{1}{13}$
	7	$\frac{1}{12}$
	14	$\frac{1}{8}$
	28	$\frac{1}{5}$
Years	3	$\frac{1}{4}$
	5	$\frac{1}{3}$
	7	$\frac{1}{2}$
	14	$\frac{2}{3}$
	63	$\frac{11}{12}$
	77	$\frac{5}{6}$
	100	$\frac{4}{6}$

The practice of administering active fluids by drops has long been known to be inaccurate; but the extent of the evil has been only lately ascertained, by the accurate experiments of Mr. Shuttleworth, surgeon, of Liverpool. Not only do the drops of different fluids from the same vessel, and of the same fluids from different vessels, differ much in size; but it appears that the drops of the same fluid differ, even to the extent of a third, from different parts of the lip of the same vessel. The custom of dropping active fluids should, therefore, be abolished entirely; and, as weighing is too troublesome and difficult for general use, we must have recourse to small measures, accurately graduated, in the manner of Lane's *drop* measure, and the grain measure recommended by the Edinburgh college; but we must not be misled by their names; for they are measures of bulk, not of drops or of grains.

In the following table, the first column shows the weight, the second the number of drops, and the third the weight of the extract, in a measured drachm of several active fluids, in circumstances as nearly similar as possible, as ascertained by Mr. Shuttleworth; the last column shows the number of drops in a drachm of different fluids, according to Dr. Niemann.

	Grains.	Drops.	Grains.	Drops.
Distilled water weighed,	60	60		60—80
Dr. Fowler's solution of arsenic,	$60\frac{3}{4}$	60		
White wine,	$58\frac{1}{4}$	94		
Ipecacuanha wine,	$59\frac{3}{4}$	84	$2\frac{1}{2}$	
Antimonial wine,	$59\frac{3}{4}$	84		
Rectified spirits of wine,	$51\frac{1}{2}$	$151\frac{1}{2}$		
Proof spirit,	$55\frac{1}{4}$	140		
Laudanum,	$59\frac{1}{2}$	134	$2\frac{3}{4}$	90—110
Tincture of foxglove,	58	144		

	Drops.
Balsam of copaiva,	60—70
Spring water,	60—70
Diluted mineral acid,	60—80
Water of ammonia,	100—120
Spirit of sulphuric æther,	120—140
Tinctures,	140—180
Æther,	140—180

A tea cup commonly contains three or four ounces of an infusion, decoction, or mixture; a wine glass about an ounce and a half; a table spoon about half an ounce of watery fluids, and two or three drachms of alcoholic; a tea spoon from half a scruple to a scruple of a light powder, such as magnesia, from half a drachm to two scruples of a heavier powder, as sulphur, and from one drachm to four scruples of a metallic oxyd; from one scruple to half a drachm of alcoholic fluids, from half a drachm to two scruples of watery fluids; from two scruples to two drachms of tinctures and syrups, and from one to two drachms of electuaries. But all this is very uncertain.

TABLE OF SYNONIMES *of the Medicines, simple and compound, in the Pharmacopœias of London, Dublin and Edinburgh.*

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
ACIDUM ACETOSUM	Acetum vini	Acetum	Acidum aceticum impurum
distillatum	distillatum	Acidum aceticum	
forte	Acidum aceticum		Acetum radicale; Spiritus aceti
camphoratum	camphoratum		
syrupus			Syrupus acetosus
Acetum aromaticum			Acetum prophylacticum
Acidum benzoicum	Acidum benzoicum	Acidum benzoicum	Flores benzoini, seu benzoes
Acidum citricum	Acidum citricum crystallis concretum	Acidum citricum	Acidum limonum
Acidum muriaticum	Acidum muriaticum	Acidum muriaticum	Spiritus salis Glauberi, seu fumans
	dilutum		Spiritus salis communis acidus
Acidum oxymuriaticum	Aqua oxymuriatica		Chlorine
Acidum nitricum		Acidum nitricum	
nitrosum	Acidum nitrosum		Spiritus nitri Glauberi, seu fumans
dilutum	dilutum	Acidum nitricum dilutum	Aqua fortis simplex
unguentum	unguentum		
Acidum succinicum	Acidum succinicum		
sulphuricum	Acidum sulphuricum	Acidum sulphuricum	Oleum vitrioli
dilutum	dilutum	Acidum sulphuricum dilutum	Spiritus vitrioli tenuis
aromaticum			Elixir vitrioli aromaticum
Acipenser huso, &c.	Ichthyocolla		Colla piscium
Aconitum Napellus; folium	Aconitum	Aconiti folia	Aconitum Neomontanum
succus spissatus		Extractum aconiti	
Acorus calamus; radix	Acorus	Calami radix	Acorus verus
Æsculus Hippocastanum; semen	Æsulus Hippocastanum		Hippocastanum
cortex			
Agrimonia Eupatoria	Agrimonia		

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Æther nitrosus	Æther nitrosus		Naphtha nitri
Ætheris nitrosi spiritus	Spiritus aethereus nitrosus	Spiritus aetheris nitrici	Spiritus nitri dulcis
Æther sulphuricus	Æther sulphuricus	Æther sulphuricus	Naphtha vitrioli
		Æther rectificatus	
cum alcohole	Liquor Æthereus sulphuricus	Spiritus aetheris sulphurici	Spiritus vitrioli dulcis
		Oleum aethereum	Oleum vini
	Liquor aethereus oleosus	Spiritus aetheris comp. sulphurici	Liquor anodynus Hoffmanni
aromaticus		aromaticus	Elixir vitrioli dulce
Alcohol Chemicorum	Alcohol	Alcohol	Spiritus vini rectificatissimus
Alcohol	Spiritus vinosus rectificatus	Spiritus rectificatus	
dilutum	Spiritus vinosus tenuior	tenuior	*Proof spirit*
ammoniatum	Spiritus ammoniae	ammoniae	Spiritus salis ammoniaci dulcis
aromaticum	aromaticus	aromaticus	Spiritus volatilis oleosus
fœtidum	fœtidus	fœtidus	fœtidus
		succinatus	*Eau de luce*
Allium cepa	Cepa		
Allium sativum; radix	Allium	Allii radix	
	syrupus		
Allium porrum		Porri radix	
Aloe perfoliata; gummi resina			
a Aloe hepatica	Aloe hepatica	Aloes vulgaris extractum	Aloe vulgaris, *Lond.* Aloe sinuata, *Dub.*
b Aloe socotorina	socotorina	spicatae extractum	Aloe spicata, *Lond. Dub.*
		Extractum aloes purificatum	
		Decoctum aloes compositum	*Baume de vie*
		Extractum aloes	
pilulae	cum zingibere pilulae	Pilulae aloes compositae	
et assae fœtidae pilulae			
cum colocynthide pilulae	Colocynthidis pilulae compositae		Pilulae cocciae
et myrrhae pilulae	Aloes cum myrrha pilulae	Pilulae aloes cum myrrha	Pilulae Rufi
	cum canella pulvis		Hiera piera; Pilulae aromaticae

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
	Aloes cum guaiaco pulvis	Pulvis aloes compositus	Pilulae eccophraticae
Aloes tinctura	tinctura	Tinctura aloes	Essentia aloes
aetherea			Elixir proprietatis vitriolicum
et myrrhae tinctura	tinctura composita	Tinctura aloes composita	Elixir proprietatis
vinum	vinum	Vinum aloes	Tinctura sacra. Tinctura Hierae
Althaea officinalis; folium		Althaeae folia	Bismalva
radix		radix	
syrupus		Syrupus althaeae	
decoctum			
Aluminae sulphas	Alumen, supersulphas argillae alcalisatae	Alumen	Supersulphas aluminae et potassae
exsiccatus	Alumen ustum	Alumen exsiccatum	Pulvis stypticus
pulvis compositus		Liquor aluminis compositus	Aqua aluminosa Bateana
Ammoniacum; gummi resina	Ammoniacum	Ammoniacum	Heracleum gummiferum. *Lond.*
	lac	Mistura ammoniaci	
		Emplastrum ammoniaci	
	cum hydrargyro emplas.	cum hydrargyro	Emp. ex ammoniaco cum mercurio
Ammoniae aqua	Aqua ammoniae causticae	Liquor ammoniae	Spiritus salis ammoniaci cum calce
Oleum ammoniatum	Ammoniae linimentum	Linimentum ammoniae fortius	
Ammoniae carbonas	Carbonas ammoniae	Ammoniae subcarbonas	Sal volatile salis ammoniaci
carbonatis aqua	Aqua carbonatis ammoniae Liquor volatilis cornu cervi	Liquor ammoniae subcarbonatis	Spiritus salis ammoniaci Spiritus cornu cervi
		Linimentum ammoniae subcarbonatis	Linimentum volatile.
Amomum repens; semen	Cardamomum minus	Cardamomi semina	Amomum cardamomum. *Dub.* Elettari cardamomum. *Lond.*
tinctura	tinctura	Tinctura cardamomi	Tinctura stomachica; *Usquebach.*
	composita	composita	
zingiber; radix siccata	Zingiber	Zingiberis radix	Zingiber officinale. *Lond.*
radix condita			

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
	Zingiber; tinctura	Tinctura zingiberis	
Amomum syrupus	syrupus	Syrupus zingiberis	
Amomum zedoaria	Zedoaria		
Ammoniae acetis aqua	Aqua acetatis ammoniae	Liquor ammoniae acetatis	Spiritus Mindereri
murias	Sal ammoniacum; Murias ammoni	Ammoniae murias	Ammonia muriata
	Aqua sulphureti ammoniae		
Ammoniae hydrosulphuretum	Hydrosulphuretum ammoniae		
Amygdalus communis; nucleus	Amygdalae dulces	Amygdalae dulces	
		amarae	
oleum	Oleum amygdalarum	Oleum amygdalarum	
		Confectio amygdalarum	
emulsio	Amygdalae lac	Mistura amygdalarum	Emulsio communis
Amyris Gileadensis; resina liquida			Balsamum Gileadense
Amyris elemifera; resina	Elemi	Elemi	
	unguentum	Unguentum elemi compositum	Balsamum Arcaei
Anchusa tinctoria; radix	Anchusa		
Anethum fœniculum; semen	Fœniculum dulce	Fœniculi semina	
radix			
	oleum essentiale		
	aqua	Aqua fœniculi	
Anethum graveolens		Anethi semina	
		Aqua anethi	Aqua seminum anethi
Angelica archangelica; radix			Angelica sativa
folium			
semen			
Angustura; cortex	Angustura	Cuspariae cortex	Bonplandia trifoliata. *Wild.* Cusparia febrifuga. *Lond.*
	tinctura	Infusum cuspariae	
Anthemis nobilis; flos	Chamaemelum	Anthemidis flores	
extractum	extractum	Extractum anthemidis	
		Oleum anthemidis	Oleum chamaemelinum

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
		Infusum anthemidis	
Anthemis decoctum	Chamaemelum decoctum compositum	Decoctum malvae compositum	Decoctum commune pro clystere
	Enema catharticum		
pyrethrum; radix	Pyrethrum	Pyrethri radix	
Antimonii sulphuretum	Sulphuretum antimonii	Antimonii sulphuretum	Stibium
praeparatum	praeparatum		Antimonium praeparatum
praecipitatum	Sulphur antimoniatum fuscum	Antim. sulphuretum praecipitatum	Sulphur aurat. antim Kermes minerale
oxidum cum sulph. vitrif.			Vitrum antimonii
vitrificatum cum cera			ceratum
per nitrat. potassae			Crocus metallorum
cum phosphate calcis	Pulvis antimonialis	Pulvis antimonialis	Pulvis Jacobi
murias			Butyrum ant. Causticum ant.
	Oxydum antimonii nitromuriaticum	Antimonii oxydum	Pulvis Algarothi
tartris	Tartarum antimoniatum	Antimonium tartarizatum	Tartarus emeticus
vinum		Liquor antimonii tartarizati	Vinum antimoniale
Apium petroselinum; radix			
Aqua destillata	Aqua distillata	Aqua distillata	
Arbutus uva ursi; folium	Uva ursi	Uvae ursi folia	
Arcitum lappa; radix	Bardana		Lappa major
Argentum	Argentum	Argentum	
nitras	Nitras argenti	Argenti nitras	Causticum lunare
Aristolochia serpentaria; radix	Serpentaria virginiana	Serpentariae radix	
tinctura	tinctura	Tinctura serpentariae	
Arnica montana; flos	Arnica		Doronicum Germanicum
radix			
Aromaticum electuarium	Electuarium aromaticum	Confectio aromatica	Confectio cardiaca, sive Raleighana
Aromaticus pulvis	Pulvis aromaticus	Pulvis cinnamomi compositus	Species aromaticae
Arsenici oxidum	Arsenici oxydum album	Arsenici oxydum	Arsenicum album
		sublimatum	
	Arsenias kali		

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
		Liquor arsenicalis	Solutio mineralis Fowleri
Artemisia abrotanum	Abrotanum		
Artemesia absinthium; folium et summitas florens	Absinthium vulgare	Absinthium	
	extractum		
maritima	maritimum		
santonica; cacumen	Santonicum		Semen cinae, seu contra
Arum maculatum	Arum		Aron
Asarum Europaeum; folium	Asarum	Asaria folia	
pulvis compositus	pulvis compositus		Pulvis sternutatorius, *seu* cephalicus
Astragalus tragacantha; gummi	Tragacantha	Tragacantha	Astragalus verus. *Lond.*
mucilago	mucilago		
		Pulvis tragacanthae compositus	Species diatragacanthae frigidae
Atropa belladona; folia	Belladonna	Belladonna folia	Solanum lethale
succus spissatus		Extractum belladonnae	
Avena sativa; semen		Avenae semina	
Barytae carbonas			Barytes. Terra ponderosa
murias			
solutio			
sulphas			Terra pond. vitriol. Spathum pond.
Bitumen petroleum	Petroleum Barbadense	Petroleum	Oleum petrae
Boletus igniarius			Agaricus chirurgorum
Bubon galbanum; gummi resina	Galbanum	Galbani gummi resina	
	tinctura		
		Pilulae galbani compositae	Pilulae gummosae
Emplastrum gummosum	emplastrum	Emplastrum galbani compositum	Emplastrum commune cum gummi
Calx	Calx recens usta	Calx	Calx viva
a ex lapida calcareo			
b ex testis conchyliorum			
Calcis aqua	Aqua calcis	Liquor calcis	Aqua calcis simplex. Solutio calcis
linimentum	Linimentum calcis		Oleum lini cum calce

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Calcis carbonas *a* creta alba	Creta, carbonas calcis	Creta	Carbonas calcis friabilis
b marmor album		Lapis calcareus	Carbonas calcis dura
praeparatus	praeparata	Creta praeparata	
	praecipitata		
potio	mistura	Mistura cretae	Julepum e creta, Potio cretacea
trochisci			Tabellae cardialgicae
pulvis compositus		Pulvis cretae compositus cum opio	Pulvis e bolo comp. Pulv. cretaceus cum opio
muriatis solutio	Aqua muriatis calcis	Liquor calcis muriatis	
		Calcis murias	
Cancer pagurus et astacus; chelae lapilli	Cancer		Cancrorum oculi
Canella alba; cortex	Canella alba	Canellæ cortex	Costus corticosus
Capsicum annuum; fructus	Capsicum	Capsici baccae	Piper Indicum
		Tinctura capsici	
Carbo ligni	Carbo ligni	Carbo ligni	
Cardamine pratensis; petalum	Cardamine	Cardamines flores	
folium			
Carum carui; semen	Caruon	Carui semina	Carvi
spiritus	spiritus	Spiritus carui	Aqua carvi spirituosa
	oleum essentiale	Oleum carui	
		Aqua carui	
Caryophyllusaromaticus; florisgermen	Caryophyllus aromatica	Caryophylli	Eugenia caryophyllata. *Dub. Lond.*
oleum volatile		Caryophyllorum oleum	
		Infusum caryophyllorum	
Cassia fistula; fructus	Cassia fistularis	Cassiae pulpa	Diacasia
electuarium	electuarium	Confectio cassiae	Electuarium e cassia
senna; folium	Senna	Sennae folia	
tinctura composita	tinctura	Tinctura sennae	Elixir salutis

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Cassia fistula electuarium	Senna electuarium	Confectio sennae	Electuarium lenitivum
extractum			
	syrupus	Syrupus sennae	
	infusum	Infusum sennae	Infusum sennae commune
		Pulvis sennae compositus	Pulvis diasenae
Castor fiber; castoreum	Castoreum Rossicum	Castoreum	
tinctura	tinctura	Tinctura castorei	
composita			
	Castoreum Canadense		
	tinctura		
Centaurea benedicta; herba	Carduus benedictus		Acanthus Germanicus
Cera alba	Cera alba	Cera alba	Apis mellifica. *Dub.*
Linimentum simplex			
Unguentum simplex	unguentum		Unguentum album
Cera flava	flava	Cera flava	
	purificata		
	unguentum	Ceratum simplex	
		Emplastrum cerae	Emplastrum attrahens
Cervus elaphus; cornu	Cornu cervinum	Cornua	
		Cornu ustum	Phosphas calcis
	cervini usti pulvis	Mistura cornu usti	Decoctum album
		Pulvis cum usti cum opio	Pulvis opiatus
	decoctum		
	liquor volatilis		Spiritus cornu cervi
	oleum		Oleum cornu cervi fœtidum
	rectificatum		e cornibus
Chironia centaurium; summitasflorens	Centaureum minus	Centaurii cacumina	
Cinara scolymus; folium			Cinara hortensis
Cinchona carribaea; cortex			

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Cinchona officinalis *a* communis		Cinchonae lancifoliae cortex	Cortex pallidus. Cortex Peruvianus
b flavus		cordifoliae cortex	flavus
c ruber		oblongifoliae cortex	ruber
extractum	extractum	Extractum cinchonae molle	
		durum	
	rubrae extractum resinosum	resinosum	
decoctum	decoctum	Decoctum cinchonae	Decoctum corticis Peruviani
infusum	infusum sine calore	Infusum cinchonae	
tinctura	tinctura	Tinctura cinchonae	Tinctura corticis Peruviani
	composita	composita	Elixir antihypochondriacum
		ammoniata	
Citrus aurantium; fructus succus	Aurantium Hispalense	Aurantii baccae	Mala aurantia
fructus cortex exterior		cortex	
aqua distillata			
		Infusum aurantii compositum	
conserva	conserva	Confectio aurantiorum	Conserva flavedinis cort. aur.
	tinctura	Tinctura aurantii	Tinctura corticis aurantii
syrupus	syrupus	Syrupus aurantiorum	Syrupus e corticibus aurantiorum
Citrus medica; fructus	Limon	Limones	
		Limonum oleum	
		cortex	
aqua distillata			
syrupus	syrupus	Syrupus limonum	Syrupus e succo citriorum
Coccus cacti	Coccinella	Coccus	
Cochlearia armoracia; radix	Raphanus rusticanus	Armoraciae radix	
	spiritus compositus	Spiritus armoraciae compositus	Aqua raphani composita
		Infusum armoraciae compositum	
officinalis; herba	Cochlearia		Succi ad scorbuticos
succus compositus			

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Cocos butyracea; nucis oleum fixum			Oleum palmae
Colchicum autumnale; radix	Colchicum	Colchici radix	
	oxymel		
syrupus			
		Acetum colchici	
Colomba; radix	Colombo	Calumbae radix	
		Infusum calumbae	
tinctura	tinctura	Tinctura calumbae	
Conium maculatum; folium	Cicuta	Conii folia	
semen			
succus spissatus	succus spissatus	Extractum conii	
Convolvulus scammonia; gummi-resina	Scamonium	Scammoneae gummi resina	Diagrydium
pulvis compositus		Pulvis scammoneae comp.	Pulvis comitis Warwicensis
	electuarium	Confectio scammoneae	Electuarium caryocostinum
jalapæ; radix	Jalapa	Jalapa	Mechoacanna nigra
Convolvuli jalapae extractum	Jalapae extractum	Extractum jalapae	Extractum jalapii
	resinosum		
tinctura	tinctura	Tinctura jalapae	Tinctura jalapii
pulvis compositus			
Copaifera officinalis, resina liquida	Balsamum copaibae	Copaiba	Balsamum Brasiliense
Coriandrum sativum; semen	Coriandrum	Coriandri semina	
Crocus sativus; floris stigma	Crocus	Croci stigmata	Crocus Anglicus
		Syrupus croci	
tinctura	tinctura		
Croton eleutheria; cortex	Cascarilla	Cascarillae cortex	Corton cascarilla. *Dub. Lond.* Clutia eleutheria. *Linn.*
	tinctura	Tinctura cascarillae	
	extractum resinosum	Infusum cascarillae	

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Cucumis colocynthis; fructus	Colocynthis	Colocynthidis pulpa	
	extractum compositum	Extractum colocynthidis comp.	Extractum catharticum. Pil. rudii
Cuminum cyminum		Cumini semina	
		Emplastrum cumini	Emplastrum e cymino
Cuprum	Cuprum		Aes
subacetis	Ærugo, subacetas cupri	Ærugo	Viride aeris
	praeparata		
	oxymel	Linimentum aeruginis	Mel Ægyptiacum
unguentum	unguentum		
ammoniaretum	Cuprum ammoniatum	Cuprum ammoniatum	Cuprum ammoniacum
pilulae			
	aqua	Liquor cupri ammoniati	Aqua saphirina
sulphas	Sulphas cupri	Cupri sulphas	Cuprum vitriol. Vitr. coeruleum
solutio composita			Aqua styptica
Daphne mezereum; radicis cortex	Mezereum	Mezerei cortex	Laureola; Cocognidium
Daphnes mezerei decoctum			
Datura stramonium; herba	Stramonium		
Daucus carota; semen	Daucus sylvestris	Dauci semina	Carota
		Dauci radix	
Delphinium staphisagria; semen	Staphisagria	Staphisagriae semina	
Dianthus caryophyllus; flos	Caryophyllum rubrum		Caryophylla rubra
syrupus	syrupus		
Digitalis purpurea; folium	Digitalis	Digitalis folia	
	decoctum		
tinctura	tinctura	Tinctura digitalis	
infusum		Infusum digitalis	
Dolichos pruriens; leguminis pubes rigida	Dolichos	Dolichi pubes	
Dorstenia contrajerva; radix		Contrajervae radix	
		Pulvis contrajervae comp.	Lapis contrayervae

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Eryngium maritimum	Eryngium		
Euphorbii officinalis gummi resina		Euphorbiae gummi resina	
Ferrum; limatura, squamae	Ferrum	Ferrum	Chalybs
limatura purificata			Ferrum alcoholisatum
carbonas praeparatus	Rubigo		Chalybis rubigo praeparata
praecipitatus	Carbonas ferri	Ferri subcarbonas	
		Mistura ferri composita	Mistura myrrhae Griffiths
		Pilulae ferri compositae	
oxidum nigrum purificatum	Oxydum ferri nigrum		Squamae ferri purificatae
sulphas	Sulphas ferri	Ferri sulphas	Sal martis. Vitr. viride. Sal chalybis
exsiccatus	exsiccatum		Vitriolum calcinatum
oxidum rubrum	Oxydum ferri rubrum		Colcothar vitrioli
emplastrum	Emplastrum thuris		Emplastrum roborans
muriatis tinctura	Tinctura muriatis ferri	Tinctura ferri muriatis	Tinctura martis in spiritu salis
	cum oxydo rubro		Tinctura martis aurea
et ammoniae murias	Murias ammoniae et ferri	Ferrum ammoniatum	Flores martiales. Ens veneris
		Tinctura ferri ammoniati	Tinctura martis. Mynsichti
	tartarum ferri	Ferrum tartarizatum	Mars solubilis. Tartarus martialis
	Vinum ferri	Vinum ferri	Vinum chalybeatum. Vin. martis
	Acetas ferri		Extractum martis
	Tinctura acetatis ferri		
	cum alcohol		
	Sulphuretum ferri		
		Liquor ferri alkalini	Tinctura martis alkalina
Ferula assa fœtida; gummi resina	Assa fœtida	Assae fœtidæ gummi resina	
	lac	Mistura assafœtidæ	
tinctura	tinctura	Tinctura assafœtidæ	Tinctura fœtida
	Enema fœtidum		
pilulae compositae	Pilulae myrrhae compositae		Pilulae gummosae

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Ferula assa fœtida; emplastrum			Emp. antihystericum
Ficus carica; fructus	Carica	Caricae fructus	
Fucus vesiculosus	Quercus marina	Fucus	
	pulvis		Æthiops vegetabilis
Fraxinus ornus; Manna	Manna	Manna	Manna calabrina
Gambogia; gummi resina	Gambogia	Gambogia	{ Stalagmitis gambogioides. *L. D.*
		Pilulae gambogiae comp.	{ Gummi guttae
Gentiana lutea; radix	Gentiana	Gentianae radix	Gentiana rubra
extractum	extractum	Extractum gentianae	
infusum	infusum compositum	Infusum gentianae compositum	Infusum amarum simplex
tinctura composita	tinctura composita	Tinctura gentianae comp.	Tinctura amara, Elixir stomachicum
vinum compositum			Vinum amarum
Geoffraea inermis; cortex	Geoffrœa		Geoffroya inermis. *Dub.*
decoctum			
Geum urbanum	Geum urbanum		Caryophyllata
Glycyrrhiza glabra; radix	Glycyrrhiza	Glycyrrhizae radix	Radix liquiritiæ
extractum	extractum	Extractum glycyrrhizae	Succus liquiritiæ depuratus
Glycyrrhizæ glabræ trochisci			Trochisci becchici nigri
cum opio			
Gratiola officinalis	Gratiola		
Guaiacum officinale; lignum	Guaiacum	Guaiaci lignum	Lignum sanctum
Guaiaci officinalis resina		resina	
tinctura	tinctura	Tinctura guaiaci	Elixir guaiacinum
ammoniata	ammoniata	ammoniata	volatile
decoctum comp.	Aqua calcis compositum		Decoctum lignorum
		Mistura guaiaci	Lac guaiaci
Hæmatoxylum campechianum; lignum	Hæmatoxylum	Hæmatoxyli lignum	Lignum Campechense
extractum	extractum	Extractum hæmatoxyli	Extractum ligni Campechensis
Helleborus niger; radix	Helleborus niger; melampodium	Hellebori nigri radix	Melampodium

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EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Helleborus niger extractum	Helleborus niger extractum		Extractum melampodii
tinctura	tinctura	Tinctura hellebori nigri	Tinctura melampodii
Helleborus fœtidus	Helleboraster	Hellebori fœtidi folia	
Hirudo medicinalis	Hirudo medicinalis		
Hordeum distichon; semen	Hordeum distichum	Hordei semina	
decoctum	decoctum	Decoctum hordei	Aqua hordeata
	compositum	compositum	Decoctum pectorale
		Cerevisiae fermentum	
		Cataplasma fermenti	
Humulus lupulus		Humuli strobili	
		Extractum humuli	Extractum lupuli
		Tinctura humuli	
Hydrargyrus	Hydrargyrum	Hydrargyrum	Argentum vivum; Mercurius
purificatus	purificatum	purificatum	
pilulae	pilulae	Pilulae hydrargyri	Pilulae cœruleae
Hydrargyri emplastrum		Emplastrum hydrargyri	Emp. lithargyri cum hydrarg.
unguentum	Hydrargyri unguentum	Unguentum hydrargyri fortius	Unguentum cœruleum fortius
	mitius	mitius	mitius
		Linimentum hydrargyri	
	Hydrargyrum cum magnesia		
	creta	Hydrargyrum cum creta	Mercurius alkalisatus
acetis	Acetas hydrargyri		
murias	Murias hydrargyri corrosivum	Hydrargyri oxymurias	Mercurius corrosivus sublimatus
		Liquor hydrargyri oxymuriatis	Liquor Bellostii
submurias	Submurias hydrargyri sublimatum	Hydrargyri submurias	Calomelas, Panacea merc.
		Pilulae hydrargyri submuriatis comp.	Pilulae Plummeri
praecipitatus	praecipitatum		Hydrargyrus praecipitatus dulcis
	ammoniatum	Hydrargyrum praecipitatum album	Mercurius cosmeticus
	unguentum	Unguent. hydrargyri praecipitati albi	Unguent. e mercurio praecip.
oxidum cinereum	Pulvis hydrargyri cinereus	Hydrargyri oxydum cinereum	Mercurius solubilis

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Hydrargyri oxidi cinerei unguentum			
rubrum per acidum nitricum	Oxydum hydrargyri nitricum	Hydrargyri oxydum rubrum nitrico-oxydum	Mercurius calcinatus praecipitatus ruber
rubri unguentum	Subnitratis hydrargyri unguentum	Unguentum hydrargyri nitrico-oxydi nitratis	
nitratis ung fortius	Supernitratis hydrargyri unguent.		Unguentum citrinum
ung. mitius			
subsulphas flavus	Oxydum hydrargyri sulphuricum		Turpethum miner. Merc. emet. flav.
sulphuretum nigrum	Sulphuretum hydrargyri nigrum	Hydrargyri sulphuretum nigrum	Æthiops mineralis; Pulv. hypnoticus
rubrum	rubrum	rubrum	Cinnabaris factitia
Hyosciamus niger; herba; semen	Hyosciamus	Hyosciami folia et semina	
succus spissatus	succus spissatus	Extractum hyosciami	
tinctura	tinctura	Tinctura hyosciami	
Hyssopus officinalis; herba	Hyssopus		
Inula helenium	Enula campana		
Ipecacuanha; radix	Ipecacuanha	Ipecacuanhae radix	Calicocca *or* Cephaëlis ipecacuanha
Ipecacuanhae et opii pulvis	Ipecacuanhae pulvis compositus	Pulvis ipecacuanhae comp.	Pulvis Doveri
vinum	vinum	Vinum ipecacuanhae	
Iris Florentina; radix			Orris
Juniperi spiritus compositus	Juniperi spiritus compositus	Spiritus juniperi compositus	Aqua juniperi composita
oleum volatile	oleum essentiale	Oleum juniperi	
Juniperus communis; bacca	Juniperus	Juniperi baccae	
		cacumina	
lycia; resina	Olibanum	Olibanum	Thus
sabina; folium	Sabina	Sabinae folia	
oleum volatile	oleum essentiale		
	extractum		
	unguentum	Ceratum sabinae	

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Kino; succus concretus	Kino	Kino	{ Eucalyptus resinifera. *Ed.*
tinctura	tinctura	Tinctura kino	{ Butea frondosa. *Dub.*
		Pulvis kino comp.	
Lactuca virosa; folium			Lactuca sylvestris
succus spissatus			
Lavandula spica; spica florens	Lavandula	Lavandulae flores	
spiritus	spiritus	Spiritus lavandulae	Spiritus lavand. simp.
compositus	compositus	compositus	
oleum volatile	oleum essentiale	Oleum lavandulae	Oleum spicae
Laurus camphora; Camphora	Camphora	Camphora	
Tinctura camphorae	Spiritus camphoratus	Spiritus camphorae	Spiritus vinosus camphoratus
Emulsio camphorata	Mistura camphorata	Mistura camphorae	Julepum e camphora
Oleum camphoratum	Oleum camphoratum	Linimentum camphorae comp.	Linimentum camphorae
		Tinctura camphorae comp.	Tinctura opii camphorata. *Dub.*
Laurus cassia; cortex	Cassia lignea		Xylocassia. Can. Malab.
flos nondum explicitus			
aqua destillata			
Laurus cinnamomum; cortex	Cinnamomum	Cinnamomi cortex	Canella
aqua destillata	aqua	Aqua cinnamomi	Aqua cinnamomi simplex
		Cinnamomi oleum	
spiritus	spiritus	Spiritus cinnamomi	Aqua cinnamomi spirituosa
tinctura	tinctura	Tinctura cinnamomi	
composita	composita	composita	Tinctura aromatica
Laurus nobilis; bacca		Lauri baccae	
folium		folia	
oleum fixum			
sassafras; lignum, radix, cortex	Sassafras	Sassafras lignum et radix	
oleum volatile	oleum essentiale		

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Leontodon taraxacum; radix, herba.	Taraxacum	Taraxaci radix	Dens leonis
	extractum	Extractum taraxaci	
Lichen Islandicis	Lichen Islandicus	Lichen	Muscus Islandicus
	decoctum	Decoctum lichenis	
Lichen rocella	Litmus		Lacmus tinctorius
Linum usitatissimum; semen	Linum	Lini usitatissimi semina	
oleum	oleum	Oleum lini	
		Infusum lini	
Linum catharticum	catharticum	Linum catharticum	
Lobelia syphilitica; radix			
Lythrum salicaria	Lythrum salicaria		
Magnesia	Magnesia usta	Magnesia	
carbonas	Magnesia	Magnesiæ carbonas	
sulphas	Sulphas magnesia	sulphas	Sal catharticum amarum
Malva sylvestris; herba, flos		Malva	
		Decoctum malvae composit.	Anthemidis nobilis decoctum, *Ed.*
			Decoctum commune pro clystere
Manganesium	Manganesium		Magnesia vitriariorum
Mel	Mel	Mel	
	despumatum	despumatum	
	Oxymel	Oxymel simplex	
Marrubium vulgare; herba	Marrubium album	Marrubium	
Melaleucae leucadendri oleum volat.	Oleum cajeput	Cajuputi oleum	Melaleuca cajuputi. *Lond.*
Melissa officinalis; folium			
Meloe vesicatorius	Cantharis	Lytta	Lytta vesicatoria. *Lond.*
tinctura	tinctura	Tinctura lyttae	
pulveris unguent.	unguentum	Ceratum lyttae	Unguentum epispasticum fortius
infusi unguentum		Unguentum lyttae	mitius
emplastrum	Cantharidis emplastrum	Emplastrum lyttae	Emplastrum vesicatorium
emplast. comp.			

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
	Emplastrum calefaciens		
Mentha piperita; herba	Mentha piperitis	Mentha piperita	
aqua destillata	aqua	Aqua menthae piperitae	Aqua menth. pip. simplex
spiritus		Spiritus menthae piperitae	spirituosa
oleum volatile	oleum essentiale	Oleum menthae piperitae	
Mentha pulegium; herba	Pulegium	Pulegium	
aqua destillata	aqua	Aqua pulegii	
	oleum essentiale	Oleum pulegii	
		Spiritus pulegii	
Mentha viridis	Mentha sativa	Mentha viridis	
	oleum essentiale	Oleum menthae viridis	Aqua menthae vulgaris simplex
	aqua	Spiritus menthae viridis	spirituosa
	infusum compositum		
Menyanthes trifoliata; folium	Trifolium paludosum	Menyanthes	Trifolium palustre
Mimosa catechu; ligni extractum	Catechu	Catechu extractum	Acacia catechu, *L.* Terra Japonica
electuarium	electuarium compositum		Confectio Japonica
tinctura	tinctura	Tinctura catechu	Tinctura Japonica
infusum		Infusum catechu	Infusum Japonicum
Mimosa nilotica; gummi	Gummi arabicum	Acaciae gummi	Acacia vera, *L.* Gummi Senegal
mucilago	mucilago	Mucilago acaciae	
emulsio	Emulsio arabica		
Momordica elaterium	Cucumis agrestis	Elaterii poma	
succus spissatus	Elaterium	Extractum elaterii	
Morus nigra		Morus	
		Syrupus mori	
Moschus moschiferus; Moschus	Moschus	Moschus	
	tinctura		
		Mistura moschi	Julepum e moscho
Myristica moschata; fructus nucleus	Nux moschata	Myristicae nuclei	
Macis			

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Macis oleum volatile			
Myristicae moschatae spiritus	Nux moschata; spiritus	Spiritus myristicae	Aqua nucis moschatae spirituosa
Myroxylon Peruiferum; balsamum	Balsamum Peruvianum	Balsamum Peruvianum	Balsamum Indicum nigrum
Myrrhae gummi resina	Myrrha	Myrrha	
tinctura	tinctura	Tinctura myrrhae	
Myrtus pimenta; fructus	Pimento; Piper Jamaicense	Pimentae baccae	Piper Jamaicense
aqua destillata	aqua	Aqua pimentae	Aqua pimentae simplex
spiritus	spiritus	Spiritus pimentae	spirituosa
oleum volatile	oleum essentiale	Oleum pimentae	
Nicotiana tabacum; folium	Nicotiana	Tabaci folia	
vinum		Infusum tabaci	
Oleae Europaeae fructus; fixum oleum	Oleum olivarum	Olivae oleum	
Oniscus asellus	Millepedae		
Opium	Opium	Opium	
	extractum aquosum	Extractum opii	Extract. thebaicum. Opium colatum
	purificatum		
tinctura	tinctura	Tinctura opii	Tinctura thebaica. Laudan. liquidum
ammoniata			Elixir paregoricum. *Ed.*
	tinctura camphorata	camphorae composita	paregoricum. *Lond. Dub.*
	syrupus		
		Emplastrum opii	
		Vinum opii	Laudanum liquidum Sydenhami
Electuarium opiatum		Confectio opii	Philonium Londinense
Pilulae opiatae	Pilulae e styrace	Pilulae saponis cum opio	Pilulae thebaicae
Pulvis opiatus			
Origanum majorana; herba	Majorana		
Origanum vulgare	Origanum	Origanum	
	Origani oleum essentiale	Oleum origani	

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Ostrea edulis	Ostrearum testae praeparatae	Testae praeparatae	
Oxalis acetosella		Acetosella	Lujula
Ovis aries; adeps	Sevum ovillum	Sevum praeparatum	
Papaver somniferum; capsula	Papaver album	Papaveris capsulae	
extractum		Extractum papaveris	
syrupus	syrupus	Syrupus papaveris	Syrupus diacodion; Syr. e meconio
		Decoctum papaveris	D. pro fomento. Fotus communis.
Papaver rhœas	erraticum	Rhoeados petalla	
	syrupus	Syrupus rhoeados	
Pastinacae opoponacis gummi resina		Opoponacis gummi resina	
Phasianus gallus	Ovorum testae praeparatae	Ovum	
Pimpinella anisum; semen	Anisum	Anisi semina	
oleum volatile	oleum essentiale	Oleum anisi	
	spiritus compositus	Spiritus anisi	
Pinus abies; resina sponte concreta	Pix Burgundica	Pix arida	
		Picis aridae unguentum	Unguentum basilicum nigrum
		Emplastrum picis compositum	Emplastrum picis Burgundicae cephalicum
	Emplastrum aromaticum		
		Abietis resina	Thus
balsamea; resina liquida	Balsamum Canadense	Terebinthina Canadensis	
larix; resina liquida	Terebinthina Veneta		
oleum volatile			
sylvestris; resinaempyreumatica	Pix liquida	Pix liquida	*Tar*
Picis unguentum	unguentum	Unguentum picis liquidae	
	Picis liquidæ unguentum	Resina nigra	*Pitch*
		Unguentum resinae nigrae	

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
	Terebinthina vulgaris	Terebinthina vulgaris	
		Linimentum terebinthinae	
Pini oleum volatile	Oleum terebinthinae	Terebinthinae oleum	
purissimum	rectificatum	Oleum terebinthinae rectificatum	Oleum tereb. aethereum.
Pini resina	Resina flava; resina alba	Resina flava	Resina alba, *Ed* Colophonium
Emplastrum simplex		Emplastrum cerae	Emp. cereum. Cerat. citrin.
Unguentum resinosum	Unguentum resinae albae	Ceratum resinae	Ungt. basilicum flavum
Emplastrum resinosum	Litharg. emp. cum resina	Emplastrum resinae	Emplastrum adhaesivum
Piper longum; fructus	Piper longum	Piperis longi fructus	
nigrum; fructus	nigrum	nigri baccae	
	unguentum		
Pistacia terebinthus		Terebinthina Chia	
Pistacia lentiscus; resina		Mastiche	
Plumbum			
oxydum album	Cerussa; subacetas plumbi	Plumbi subcarbonas	Subcarbonas plumbi
unguentum	sive subacetatis plumbi unguentum		Unguentum album
oxydum semi-vitreum	Lithargyrum	oxydum semi-vitreum	Plumbum ustum
emplastrum	Lythargyri emplastrum	Emplastrum plumbi	Diachylon simplex
	Liquor subacetatis lithargyri	Liquor plumbi subacetatis dilutus	Extractum saturni
		Ceratum plumbi comp.	
	Lithargyri subacetatis liquor comp.		
acetis	Acetas plumbi	Plumbi superacetas	Saccharum saturni
acetitis unguentum	Acetitis plumbi unguentum	Ceratum plumbi superacetatis	Unguentum saturninum
oxydum rubrum			Plumbum ustum rubrum
Polygala senega; radix	Seneka	Senegae radix	
decoctum		Decoctum senegae	

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Polygonum bistorta; radix	Bistorta	Bistortae radix	
Polypodium filix mas; radix	Filix mas	Filicis radix	Aspidium filix mas *Lond.*
Potassa	Kali causticum	Potassa fusa	Lapis infernalis sive septicus
cum calce	cum calce	cum calce	Causticum commune mitius
aqua	aqua	Liquor potassae	Lixivium saponarium causticum
carbonas	subcarbonas	Potassae subcarbonatis	Sal absinthii
purissimus	e tartaro	ex tartaro	tartari
impurus	Cineres clavellati: kali impurum	Potassa impura	Alk. fix. vegt. Subcarb. pot. imp.
	Aqua subcarbonatis kali	Liquor potassae subcarbonas	Oleum tartari per deliquium
supercarbonatis aqua		Potassae carbonas	
acetis	Kali acetas	acetas	Sal diureticus
sulphas	sulphas	sulphas	de duobus. Arcanum duplicatum
cum sulphure		supersulphas	polychrestus Glaseri
sulphuretum	sulphuretum	sulphuretum	Hepar sulphuris
	aqua		
tartris	tartaras	tartras	Tartarum solubile
et sodæ tartris	Tartaras sodæ et kali	Soda tartarizata	Sal rupellensis. Sal polych. Seignette
supertartris	Crystalli tartari	Potassæ supertartras	Tartarus purificatus
impurus	Tartarum	Tartarum	crudus
nitras	Nitrum, nitras kali	Potassæ nitras	Nitrum prismaticum
trochisci			
	Aqua alkalina oxymuriatica		Aqua oxymuriatis potassæ
Prunus domestica; fructus	Prunus Gallica	Pruna (drupae siccatae)	
Pterocarpus draco; resina			Sanguis draconis
santalinus; lignum	Santalum rubrum	Pterocarpi lignum	
Punica granatum; fructus cortex	Granatum	Granati cortex	
flos plenus			

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Pyrus cydonia		Cydoniæ semina	Cotonea
		Decoctum cydoniæ	Mucilago cydoniorum
Quassia excelsa; lignum	Quassia	Quassiæ lignum	
	tinctura		
		Infusum quassiae	
Quassia simaruba; cortex	Simarouba	Simaroubae cortex	
		Infusum simaroubae	
Quercus cerris; cyniphis nidus, Galla	Gallæ	Galla	Cynipidum nidi. Cynips quercus folii
	tinctura		
rubor; cortex	Quercus	Quercus cortex	Quercus pedunculata. *Lond.*
		Decoctum quercus	
	extractum		
Rhamnus catharticus; baccae succus	Rhamnus catharticus	Rhamni baccae	Spina cervina
syrupus		Syrupus rhamni	Syrupus domesticus
Rheum palmatum; radix	Rheum	Rhei radix	Rhabarbarum
tinctura	tinctura	Tinctura rhei	Tinctura rhabarbari spirituosa
et aloes tinctura			Elixir sacrum
et gentianæ tinctura			Tinctura rhœi amara
		Tinctura rhei composita	
infusum		Infusum rhei	
vinum			rhabarbari vinosa
pilulæ compositæ			Pilulae stomachicae
		Extractum rhei	Extractum rhei aquosum
Rheum undulatum	Rheum undulatum		
Rhododendron chrysanthum; folium			
Rhus toxicodendron; folium		Toxicodendri folia	Toxicodendron
Ricinis communis; semen	Ricinus	Ricini semina	Palma christi. Cataputia major
oleum fixum		Oleum ricini	Oleum de kerva. Ol palmae liquidum
Rosa canina; fructus recens		Rosae caninae pulpa	Cynosbatus
conserva		Confectio rosae caninae	Conserva fructus cynosbati

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Rosa centifolia; petalum	Rosa damascena	Rosae centifoliae petala	Rosa pallida
aqua destillata	aqua	Aqua rosae	
syrupus		syrupus rosae	Syrupus rosarum solutivus
Gallica; petalum	rubra	Rosae Gallicae petala	
	mel	Mel rosae	Mel rosaceum
conserva	conserva	Confectio Rosae Gallicae	
infusum	infusum	Infusum rosae	Tinctura rosarum
syrupus			
Rosmarinus officinalis; summitas florens	Rosmarinus	Rosmarini cacumina	
spiritus	spiritus	Spiritus rosmarini	
oleum volatile	oleum essentiale	Oleum rosmarini	
Rubia tinctorium; radix	Rubia	Rubia radix	
Rumex aquaticus	Rumex aquaticus		Britannica; Hydolapathum
acetosa; folium		Acetosae folia	
Ruta graveolens; herba	Ruta		
extractum	extractum		
	oleum essentiale	Confectio rutea	Oleum rutae aethereum
Saccharum officinarum	Saccharum	Saccharum	Electuarium e baccis lauri
non purificatum		purificatum	
purificatum			
Syrupus simplex	Syrupus simplex	Syrupus simplex	Syrupus communis
Sagapenum; gummi resina	Sagapenum	Sagapenum	Serapinum
Salix alba	Salix		
fragilis	fragilis		
caprea		Salicis cortex	
Salvia officinalis; folium	Salvia		Herba salviae minoris
Sambucus nigra; flos	Sambucus	Sambuci flores	
bacca			

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Sambucus nigra; cortex	Sambucus unguentum	Sambuci unguentum	
succus spissatus	succus spissatus		Rob baccarum sambuci
Sapo albus Hispanus	Sapo durus Hispanicus	Sapo durus	Sapo ex olivae oleo et soda confectus
		Ceratum saponis	
tinctura	Saponis linimentum	Linimentum saponis compositum	Balsamum saponaceum anodynum
et opii tinctura			
Emplastrum saponaceum	emplastrum	Emplastrum saponis	Emplastrum e sapone
		Sapo mollis	Sapo ex oleo et potassa confectus
Scilla maritima; radix	Scilla	Scillae radix	Squilla
exsiccata	Scillae pulvis		Scilla praeparata
acetum	aacetum	Acetum scillae	Acetum scilliticum
syrupus	oxymel	Oxymel scillae	Oxymel scilliticum
	tinctura	Tinctura scillae	Essentia squillae
Pilulae scilliticae	cum zingibere pilulae	Pilulae scillae comp.	
Scrophulario nodosa	Scrophularia		
Sium nodiflorum	Sium		
Sinapis alba; semen	Sinapi	Sinapis semina	Sinapis nigra
	cataplasma	Cataplasma sinapis	Sinapismus
Sisymbrium nasturtium; herba			Nasturtium aquaticum
Smilax sarsaparilla; radix	Sarsaparilla	Sarsaparillae radix	
decoctum	decoctum	Decoctum sarsaparillae	
	compositum	compositum	
		Extractum sarsaparillae	
Sodae carbonas impurus	Barilla, soda impura	Soda impura	Natron impurum
carbonas	Sodae carbonas	Sodae subcarbonas	Sal sodae. Alcali minerale aeratum
	siccatum	exsiccata	
supercarbonatis aqua		carbonas	
phosphas	phosphas		
sulphas	sulphas	sulphas	Sal catharticus Glauberi

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Sodae murias	Sal commune; murias sodae Murias sodae siccatum	Sodae murias	Muria; sal commune
boras	Borax, sub-boras sodae	Sodae sub-boras Mel boracis	
Solanum dulcamara	Dulcamara	Dulcamarae caulis Decoctum dulcamarae	Solanum scandens
Solidago virga aurea	Virga aurea		
Spartium scoparium; summitas	Genista extractum	Spartii cacumina	
Spigelia Marilandica; radix	Spigelia	Spigeliae radix	
Spermaceti	Sperma ceti Spermatis ceti unguentum	Cetaceum Unguentum cetacei	Physeter macrocephalus Linimentum album
Ceratum simplex		Ceratum cetacei	Ceratum album
Spongia officinalis	Spongia ustae pulvis	Spongia usta	
Stannum; limatura pulvis	Stannum pulvis	Stannum	
Styrax Benzoin; Balsamum tinctura composita	Benzoe tinctura composita	Benzoinum Tinctura benzoini composita	Assa dulcis Balsamum traumaticum
officinalis; Balsamum	Styrax calamita purificata	Styracis balsamum	
Succinum oleum purissimum	Succinum oleum rectificatum	Succinum Oleum succini	Electrum, Carabe
Sulphur sublimatum lotum	Sulphur sublimatum lotum	Sulphur sublimatum lotum praecipitatum	Flores sulphuris
unguentum	unguentum	Unguentum sulphuris composit.	Unguentum antipsoricum

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Sulphur oleum sulphuratum		Oleum sulphuratum	Balsamum sulphuris
Sus scrofa; adeps	Adeps suillus	Adeps	Axungia
praeparata	praeparatus	praeparata	
Swietenia febrifuga; cortex	Swietenia febrifuga		
mahagoni; cortex			
Tamarindus Indica; fructus conditus	Tamarindus	Tamarindi pulpa	
infusum cum senna	Infusum sennae cum tamarindis		
Tanacetum vulgare; folium, flos	Tanacetum		
Teucrium chamædrys	Chamaedrys		
marum	Marum syriacum		
Toluiferae balsami; Balsamum	Balsamum Tolutanum	Balsamum Tolutanum	Balsamum de carthagena
tinctura	tinctura		
syrupus		Syrupus Tolutanus	Syrupus balsamicus
Tormentilla erecta; radix	Tormentilla	Tormentillae radix	Tormentilla officinalis. *Lond.*
Triticum hybernum; amylum	Amylum	Amylum	
Mucilago amyli	Mucilago amyli	Mucilago amyli	
Trochisci gummosi			Trochisci becchici albi
Farina		Farina	
		Cerevisiae fermentum	
		Cataplasma fermenti	
Tussilago farfara; folium, flos	Tussilago	Tussilago	
Valeriana officinalis; radix	Valeriana	Valerianae radix	
	tinctura	Tinctura valerianae	
	ammoniata	ammoniata	Tinctura valerianae volat.
	extractum		
	infusum		
Veratrum album; radix	Helleborus albus	Veratri radix	
		Decoctum veratri	
		Vinum veratri	
	unguentum	Unguentum veratri	

EDINBURGH.	DUBLIN.	LONDON.	VARIOUS.
Veratrum album; tinctura			
Veronica beccabunga	Beccabunga		
Vinum album Hispanum		Vinum (Sherry)	
Viola odorata; flos	Viola		Viola martialis
syrupus	syrupus		
Vitis vinifera; fructus siccatus	Uvae passae sole siccatae	Uvae passae	
Ulmus campestris	Ulmus	Ulmi cortex	
	decoctum	Decoctum ulmi	
Wintera aromatica			Winteranus cortex
Zincum	Zincum	Zincum	
oxidum	Oxydum zinci	Zinci oxydum	Flores zinci
unguentum	unguentum	Unguentum zinci	
impurum	Tutia		
praeparatum			
unguentum	Unguentum tutiae		
carbonas impurus	Calaminaris	Calamina	Cadmia fossilis
praeparatus	Lapis calaminaris praeparatus	praeparata	
ceratum	unguentum	Ceratum calaminae	Ceratum epuloticum
sulphas	Sulphas zinci	Zinci sulphas	Sal vitrioli; Calcanthum album
solutio			Aqua vitriolica
acetitis solutio	Tinctura acetatis zinci		

Note.—The articles in italics in the first column are the scientific names of articles not in the Edinburgh Pharmacopœia.

TABLE OF NAMES CHANGED

IN THE LAST EDITION

OF THE

LONDON PHARMACOPŒIA.

Names Changed.	*New Names.*
A.	
ACETUM scilliticum	ACETUM scillæ
Æthiops mineralis	Hydrargyrus cum sulphure
Aqua aluminosa bateana	Aqua aluminis composita
calcis simplex	calcis
cinnamomi simplex	cinnamomi
spirituosa	Spiritus cinnamomi
fortis	Acidum nitrosum dilutum
hordeata	Decoctum hordei
juniperi composita	Spiritus juniperi compositus
menthæ piperitidis simplex	Aqua menthæ piperitidis
spirituosa	Spiritus menthæ piperitidis
vulgaris simplex	Aqua menthæ sativæ
spirituosa	Spiritus menthæ sativæ
nucis moschatæ	nuclei fructus myristicæ *sive* nucis moschatæ
piperis Jamaicensis	Aqua pimento
pulegii simplex	pulegii
spirituosa	Spiritus pulegii
raphani composita	raphani compositus
rosarum damascenarum	Aqua rosæ
sapphirina	cupri ammoniati
seminum anethi	anethi
anisi composita	Spiritus anisi compositus
carui	carui
vitriolica camphorata	Aqua zinci vitriolati cum camphora
Argenti vivi purificatio	Hydrargyri purificatio
Axungiæ porcinæ curatio	Adipis suillæ præparatio

Names changed.	*New Names.*
B.	
Balsamum sulphuris barbadense	Petroleum sulphuratum
simplex	Oleum sulphuratum
traumaticum	Tinctura benzoës composita
C.	
Calx antimonii	Antimonium calcinatum
Cataplasma e cymino	Cataplasma cumini
Causticum antimoniale	Antimonium muriatum
commune fortius	Calx cum kali puro
lunare	Argentum nitratum
Ceratum album	Ceratum spermatis ceti
citrinum	resinæ flavæ
epuloticum	lapidis calaminaris
Chalybis rubigo præparata	Ferri rubigo
Cinnabaris factitia	Hydrargyrus sulphuratus ruber
Coagulum aluminosum	Cataplasma aluminis
Confectio cardiaca	Confectio aromatica
Cornu cervi calcinatio	Cornu cervi ustio
D.	
Decoctum album	Decoctum cornu cervi
commune pro clystere	pro enemate
corticis peruviani	cinchonæ sive corticis peruviani
pectorale	hordei compositum
E.	
Electuarium lenitivum	Electuarium sennæ
Elixir aloës	Tinctura aloës composita
myrrhæ compositum	sabinæ composita
paregoricum	opii camphorata
Emplastrum ex ammoniaco cum mercurio	Emplastrum ammoniaci cum hydrargyro
Emplastrum attrahens	Emplastrum ceræ compositum
cephalicum	picis burgundicæ compositum
commune	lithargyri
adhæsivum	cum resina
commune cum gummi	lithargyri compositum
commune cum mercurio	lithargyri cum hydrargyro
e cymino	cumini
roborans	thuris compositum
e sapone	saponis
stomachicum	ladani compositum
vesicatorium	cantharidis
Emulsio communis	Lac amygdalæ

Names changed.	*New Names.*
Extractum catharticum	Extractum colocynthidis compositum
ligni campechensis	hæmatoxyli sive ligni campechiani
corticis peruviani	cinchonæ sive corticis peruviani
thebäicum sive opium colatum	Opium purificatum
F.	
Flores benzöini	Flores benzoës
martiales	Ferrum ammoniacale
Fotus communis	Decoctum pro fomento
H.	
Hiera picra	Pulvis aloës cum canella
I.	
Infusum amarum simplex	Infusum gentianæ compositum
sennæ communis	sennæ tartarisatum
Julepum e camphora	Mistura camphorata
e creta	cretacea
e moscho	moschata
L.	
Linimentum album	Unguentum spermatis ceti
saponaceum	Linimentum saponis
volatile	ammoniæ
Lixivium saponarium	Aqua kali puri
tartari	kali præparati
M.	
Mel ægyptiacum	Oxymel æruginis
rosaceum	Mel rosæ
Mercurius calcinatus	Hydrargyrus calcinatus
corrosivus sublimatus	muriatus
ruber	nitratus ruber
dulcis sublimatus	Calomelas
emeticus flavus	Hydrargyrus vitriolatus
præcipitatus albus	Calx hydrargyri alba
N.	
Nitrum vitriolatum	Kali vitriolatum
O.	
Oleum petrolei barbadensis	Oleum petrolei
terebinthinæ æthereum	terebinthinæ rectificatum
Opium colatum	Opium purificatum
Oxymel scilliticum	Oxymel scillæ
simplex	Mel acetatum

Names changed.	*New Names.*
P.	
Philonium Londinense	Confectio opiata
Pilulæ aromaticæ	Pulvis aloeticus cum guaiaco
ecphracticæ	aloës cum ferro
gummosæ	Pilulæ Galbani compositæ
rufi	aloës cum myrrha
Pulvis e bolo compositus	Pulvis cretæ compositus
cum opio	cum opi
e cerussa compositus	cerussæ
e chelis cancrorum compositus	cancri chelarum compositus
sternutatorius	asari compositus
R.	
Rob baccarum sambuci	Succus baccæ sambuci spissatus
S.	
Saccharum saturni	Cerussa acetata
Sal absinthii	Kali præparatum
catharticus amarus	Magnesia vitriolata
glauberi	Natron vitriolatum
diureticus	Kali acetatum
martis	Ferrum vitriolatum
tartari	Kali præparatum
vitrioli	Zincum vitriolatum
volatilis salis ammoniaci	Ammonia præparata
Species aromaticæ	Pulvis aromaticus
Spiritus cornu cervi	Liquor volatilis cornu cervi
lavendulæ simplex	Spiritus lavendulæ
nitri dulcis	ætheris nitrosi
glauberi	Acidum nitrosum
salis ammoniaci	Aqua ammoniæ
salis ammoniaci dulcis	Spiritus ammoniæ
salis marini glauberi	Acidum muriaticum
vinosus camphoratus	Spiritus camphoratus
vitrioli dulcis	ætheris vitriolici
volatilis aromaticus	ammoniæ compositus
fœtidus	fœtidus
Succi scorbutici	Succus cochleariæ compositus
Syrupus ex althæa	Syrupus althææ
e corticibus aurantiorum	corticis aurantii
balsamicus	tolutanus
e meconio	papaveris albi
rosarum solutivus	rosæ
T.	
Tabellæ cardialgicæ	Trochisci cretæ
Tartarum emeticum	Antimonium tartarisatum
solubile	Kali tartarisatum

Names changed.	*New Names.*
Tartarum vitriolatum	Kali vitriolatum
Tinctura amara	Tinctura gentianæ composita
aromatica	cinnamomi composita
corticis peruviani simplex	cinchonæ sive corticis peruviani
corticis peruviani volatilis	cinchonæ, sive corticis peruviani ammoniata
fœtida	assæ fœtidæ
florum martialium	ferri ammoniacalis
guaiacina volatilis	guaiaci
japonica	catechu
martis in spiritu salis	ferri muriati
melampodii	hellebori nigri
rhabarbari spirituosa	rhabarbari
vinosa	Vinum rhabarbari
rosarum	Infusum rosæ
sacra	Vinum aloës
stomachica	Tinctura cardamomi composita
thebaïca	opii
valerianæ volatilis	valerianæ ammoniata
Trochisci bechici albi	Trochisci amyli
nigri	glycyrrhizæ
V.	
Vinum antimoniale	Vinum antimonii
chalybeatum	ferri
Unguentum album	Unguentum ceræ
basilicum flavum	resinæ flavæ
cæruleum fortius	hydrargyri fortius
mitius	mitius
e gummi elemi	elemi compositum
e mercurio præcipitato	calcis hydrargyri albæ
saturninum	cerussæ acetatæ
simplex	adipis suillæ
ad vesicatoria	cantharidis

TABLE OF NAMES CHANGED,

AND OF SOME SYNONIMES,

IN THE LAST EDITION OF THE

EDINBURGH PHARMACOPŒIA.

Names changed	*New Names.*
A.	
ABSINTHIUM	ARTEMISIA absinthium
Acetosa	Rumex acetosa
Acetum vini	Acidum acetosum
Acidum vitriolicum	sulphuricum
vitrioli aromaticum	aromaticum
Ærugo	Sub-Acetis cupri
Æther vitriolicus	Æther sulphuricus
Æthiops mineralis	Sulphuretum hydrargyri nigrum
Agaricus	Boletus igniarius
Alkali causticum	Potassa
fixum fossile	Carbonas sodæ
vegetabile	potassæ impurus
volatile	ammoniæ
Alumen	Sulphas aluminæ
ustum	exsiccatus
Ammonia muriata	Murias ammoniæ
præparata	Carbonas ammoniæ
Amygdala dulcis	Amygdalus communis
Angelica sativa	Angelica Archangelica
Anisum	Pimpinella anisum
Antimonium	Sulphuretum antimonii
calcareo-phosphoratum	Oxydum antimonii cum phosphate calcis
muriatum	Murias antimonii
tartarisatum	Tartris antimonii
Aqua ammoniæ	Aqua carbonatis ammoniæ
acetatæ	acetitis ammoniæ
causticæ	ammoniæ
cupri vitriolati composita, *vel* aqua styptica	Solutio sulphatis cupri composita
lixiviæ causticæ	Aqua potassæ
zinci vitriolati	Solutio sulphatis zinci
Arabicum gummi	Gummi mimosæ niloticæ
Argentum nitratum	Nitras argenti
Arsenicum	Oxydum arsenici

Names changed.	*New Names.*
Assa fœtida	Gummi-resina ferulæ assæ fœtidæ
Aurantium Hispalense	Citrûs aurantium
B.	
Balsamum Canadense	Resina pini balsameæ
Copaibæ	copaiferæ officinalis
Gileadense	amyridis Gileadensis
Peruvianum	Balsamum myroxyli peruiferi
Tolutanum	toluiferæ balsami
traumaticum	Tinctura benzoës composita
Bardana	Arctium lappa
Barilla	Carbonas sodæ impurus
Barytes	barytæ
Belladonna	Atropa belladonna
Benzoinum	Balsamum styracis benzoës
Bistorta	Polygonum bistorta
Borax	Boras sodæ
Butyrum antimonii	Murias antimonii
C.	
Cajeputa	Melaleuca leucadendron
Calamus aromaticus	Acorus calamus
Calomelas	Sub-murias Hydrargyri
Calx viva	Calx
Cancrorum lapilli	Carbonas calcis præparatus
Cantharis	Meloë vesicatorius
Cardamomum minus	Amomum repens
Carduus benedictus	Centaurea benedicta
Carica	Fructus ficus caricæ
Carvi	Carum carvi
Caryophylla aromatica	Caryophyllus aromaticus
rubra	Dianthus caryophyllus
Cascarilla	Croton eleutheria
Cassia fistularis	Cassia fistula
lignea	Laurus cassia
Catechu	Extractum mimosæ catechu
Causticum commune acerrimum	Potassa
mitius	cum calce
lunare	Nitras argenti
Centaurium minus	Gentiana centaurium
Cerussa	Oxydum plumbi album
acetata	Acetis plumbi
Chamæmelum	Anthemis nobilis
Cicuta	Conium maculatum
Cinnabaris factitia	Sulphuretum hydrargyri rubrum
Cinara hortensis	Cinara Scolymus
Cineres clavellati	Carbonas potassæ impurus
Cinnamomum	Laurus cinnamomum
Coccinella	Coccus cacti
Colocynthis	Cucumis colocynthis

Names Changed.	*New Names.*
Confectio Japonica	Electuarium catechu
Contrayerva	Dorstenia contrayerva
Cortex peruvianus	Cortex cinchonæ officinalis
Creta alba	Carbonas calcis
Crocus antimonii metallorum	Oxydum antimonii cum sulphure per nitratem potassæ
Crystalli tartari	Super-Tartris potassæ
Cucumis agrestis	Fructus recens momordicæ elaterii
Cuprum ammoniacum	Ammoniaretum cupri
vitriolatum	Sulphas cupri
Cynosbatos	Fructus recens rosæ caninæ
D.	
Daucus sylvestris	Daucus carota
Decoctum chamæmeli *vel* commune	Decoctum anthemidis nobilis
lignorum	guaiaci officinalis compositum
Dens leonis	Leontodon taraxacum
E.	
Elaterium	Succus spissatus momordicæ elaterii
Electuarium lenitivum	Electuarium cassiæ sennæ
Elixir paregoricum	Tinctura opii ammoniata
sacrum	rhei cum aloë
salutis	cassiæ sennæ composita
stomachicum	gentianæ composita
Emplastrum adhæsivum	Emplastrum resinosum
cereum	simplex
lithargyri *vel* commune	oxydi plumbi semivitrei
lithargyri compositum *vel* roborans	oxydi ferri rubri
vesicatorium	meloës vesicatorii
Emulsio communis	Emulsio amygdalæ communis
F.	
Ferri rubigo	Carbonas ferri
squamæ purificatæ præparatæ	Ferri oxydum nigrum purificat. præparat.
Ferrum ammoniatum	Murias ammoniæ et ferri
vitriolatum	Sulphas ferri
ustum	Oxydum ferri rubrum
Filix mas	Polypodium filix mas
Flores martiales	Murias ammoniæ et ferri
sulphuris	Sulphur sublimatum
zinci	Oxydum zinci
Fœniculum dulce	Anethum fœniculum

Names changed.	*New Names.*
G.	
Galbanum	Gummi-resina bubonis galbani
Genista	Spartium scoparium
Granata malus	Punica granatum
H.	
Helleborus albus	Veratrum album
Hepar sulphuris	Sulphuretum potassæ
Hippocastanum	Æsculus hippocastanum
Hydrargyrus acetatus	Acetis hydrargyri
muriatus corrosivus	Murias hydrargyri
mitis	Sub-murias hydragyri
præcipitatus	præcipitatus
nitratus ruber	Oxydum hydrargyri rubrum per acidum nitricum
præcipitat. cinereus	Oxydum hydrargyri cinereum
sulphuratus niger	Sulphuretum hydrargyri nigrum
vitriolatus flavus	Sub-sulphas hydrargyri flavus
I.	
Infusum amarum	Infusum gentianæ luteæ compositum
rosarum	rosæ Gallicæ
J.	
Jalapa	Convolvulus jalapa
L.	
Lapis calaminaris	Carbonas zinci impurus
Lavendula	Lavandula spica
Laudanum liquidum	Tinctura opii
Lignum Campechense	Lignum Hæmatoxyli Campechiani
Limon	Fructus citri medicæ
Linimentum anodynum *vel* opiatum	Tinctura saponis cum opio
aquæ calcis	Oleum lini cum calce
saponaceum	Tinctura saponis
volatile	Oleum ammoniatum
Lithargyrus	Oxydum plumbi semivitreum
Lixivia acetata	Acetis potassæ
e tartaro	Carbonas potassæ purissimus
purificata	Carbonas potassæ
tartarisata	Tartris potassæ
vitriolata	Sulphas potassæ
sulphurea	cum sulphure
Lixivium causticum	Aqua potassæ

Names changed.	*New Names.*
M.	
Magnesia alba	Carbonas magnesiæ
usta	Magnesia
vitriolata	Sulphas magnesiæ
Majorana	Origanum majorana
Manna	Succus concretus fraxini orni
Mastiche	Resina pistachiæ lentisci
Melampodium	Helleborus niger
Mercurius	Hydrargyrus
præcipitatus ruber	Oxydum hydrargyri rubrum
sublimatus corrosivus	Murias hydrargyri
Mezereum	Daphne mezereum
Minium	Oxydum plumbi rubrum
Muria	Murias sodæ
N.	
Nasturtium aquaticum	Sysimbrium nasturtium
Nitrum	Nitras potassæ
Nux moschata	Nucleus fructus myristicæ moschatæ
O.	
Olea stillatitia	Olea volatilia
Oleum succini rectificatum	Oleum succini purissimum
terebinthinæ rectificatum	terebinthinæ volatile purissimum
Olibanum	Gummi resina juniperi
Oliva	Olea Europæa
P.	
Palma	Cocos butyracea
Petroleum Barbadense	Bitumen petroleum
Petroselinum	Apium petroselinum
Pilulæ cupri	Pilulæ ammoniareti cupri
thebaicæ	opiatæ
Pimento *vel* piper Jamaicensis	Myrtus pimenta
Piper Indicum	Capsicum annuum
Pix Burgundica	Resina pini abietis
Plumbum ustum	Oxydum plumbi semivitreum
Potio cretacea	Potio carbonatis calcis
Prunus Gallica	Prunus domestica
Pulegium	Mentha pulegium
Pulvis antimonialis	Oxydum antimonii cum phosphat calcis
cretaceus	Pulvis carbonatis calcis compositus
Doveri	ipecacuanhæ et opii
Pyrethrum	Anthemis pyrethrum

Names changed.	*New Names.*
R.	
Raphanus rusticanus	Cochlearia armoracia
Resina alba	Resina pini
Rhabarbarum	Rheum palmatum
Rosa pallida	Rosa centifolia
rubra	Gallica
Rubigo ferri præparata	Carbonas ferri præparatus
S.	
Sabina	Juniperus sabina
Saccharum saturni	Acetis plumbi
Sal alkalinus fixus fossilis	Carbonas sodæ
vegetabilis	potassæ
ammoniacus	Murias ammoniæ
catharticus amarus	Sulphas magnesiæ
cornu cervi	Carbonas ammoniæ
Glauberi	Sulphas sodæ
marinus Hispanus	Murias sodæ
polychrestus	Sulphas potassæ cum sulphure
Rupellensis	Tartris potassæ et sodæ
succini	Acidum succinicum
tartari	Carbonas potassæ purissimus
Sanguis draconis	Resina pterocarpi draconis
Santalum rubrum	Pterocarpus santalinus
Santonicum	Artemisia santonicum
Sarsaparilla	Smilax sarsaparilla
Sassafras	Laurus sassafras
Scammonium	Gummi-resina convolvuli scammoniæ
Seneka	Polygala senega
Senna	Cassia senna
Serpentaria Virginiana	Aristolochia serpentaria
Simarouba	Quassia simaruba
Sinapi album	Sinapis alba
Soda	Carbonas sodæ
muriata	Murias sodæ
phosphorata	Phosphas sodæ
tartarisata	Tartris potassæ et sodæ
vitriolata	Sulphas sodæ
Spiritus ætheris vitriolici	Æther sulphuricus cum alcohole
ammoniæ	Alcohol ammoniatum
aromaticus	aromaticum
fœtidus	fœtidum
cornu cervi	Aqua carbonatis ammoniæ
Mindereri	acetitis ammoniæ
vinosus rectificatus	Alcohol
tenuior	dilutum
camphoratus	Tinctura camphoræ

Names changed.	*New Names.*
Staphisagria	Delphinium staphisagria
Stramonium	Datura stramonium
Sulphur antimonii præcipitat. auratum antimonii	Sulphuretum antimonii præcipitatum
Syrupus balsamicus *vel* Tolutanus	Syrupus toluiferæ balsami
papaveris albi	papaveris somniferi
T.	
Taraxacum	Leontodon taraxacum
Tartarus crudus	Super-Tartris potassæ impurus
Tartari crystalli	potassæ
Tartarum solubile	Tartris potassæ
vitriolatum	Sulphas potassæ
Tartarus emeticus	Tartris antimonii
Terebinthina Veneta	Resina pini laricis
Terra Japonica	Extractum mimosæ catechu
Tinctura aloës vitriolata	Tinctura aloës ætherea
aromatica	lauri cinnamomi composita
ferri	muriatis ferri
cantharidum	meloës vesicatorii
Japonica	mimosæ catechu
rhei amara	rhei cum gentiana
Tolutana	toluiferæ balsami
sacra	Vinum aloës socotorinæ
Toxicodendron	Rhus toxicodendron
Tragacantha	Gummi astragali tragacanthæ
Trifolium	Menyanthes trifoliata
Trochisci Arabici	Trochisci gummosi
Turpethum minerale	Sub-sulphas hydrargyri flavus
Tutia	Oxydum zinci impurum
U.	
Unguentum album *vel* cerussæ	Unguentum oxydi plumbi albi
æruginis	sub-Acetitis cupri
cœruleum	hydrargyri
citrinum	nitratis hydrargyri
epispasticum fortius	pulveris meloës vesicatorii
mitius	infusi meloës vesicatorii
saturninum	acetitis plumbi
tutiæ	oxydi zinci impuri
Uva passa	Fructus siccatus vitis viniferi
ursi	Arbutus uva ursi
V.	
Valeriana sylvestris	Valeriana officinalis
Vinum amarum	Vinum gentianæ compositum

Names changed.	*New Names.*
Vinum antimoniale	Vinum tartritis antimonii
Vitriolium album	Sulphas zinci
cœruleum	cupri
viride	ferri
Vitrum antimonii	Oxydum antimonii cum sulphure vitrificatum
ceratum	antimonii vitrificatum cum cera
W.	
Winteranus cortex	Cortex Winteræ aromaticæ
Z.	
Zincum ustum	Oxydum zinci
vitriolatum	Sulphas zinci
Zingiber	Amomum zingiber

NOTE.—(*Edin.*) In these Indexes of changed names, fearing lest they might become too long, and satisfied if every possible error might be avoided, we have only introduced those simples of which we have changed the principal and common names, called in natural history Generic Names; such as anethum fœniculum for fœniculum, Anthemis nobilis for Chamæmelum, Gentiana centaureum for Centaurium minus; but we have omitted all those simples, whose former generic names remain, and to which we have only added their specific or trivial names, such as Digitalis purpurea, Rheum palmatum, Papaver somniferum.

For the same reason, we have thought it sufficient to introduce into these Indexes the changed name of every simple, having generally omitted the titles of the preparations and compositions which are formed of them. Thus, we have mentioned that Laurus cinnamomum is to be used in place of cinnamomum; but we have omitted the Aqua, Spiritus, and Tinctura Lauri Cinnamomi, trusting that their new names cannot be a source of doubt or error to any person.

ENGLISH INDEX.

LATIN INDEX.

DIRECTIONS FOR THE PLATES.