Pharmacologia, or, The history of medicinal substances : with a view to establish the art of prescribing and of composing extemporaneous formulæ upon fixed and scientific principles ; illustrated by formulæ, in which the intention of each element is designated by key letters / by John Ayrton Paris.

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PHARMACOLOGIA;

OR THE

HISTORY OF MEDICINAL SUBSTANCES,

WITH A VIEW TO ESTABLISH

The Art of Prescribing

AND OF

COMPOSING EXTEMPORANEOUS FORMULÆ

UPON

FIXED AND SCIENTIFIC PRINCIPLES;

ILLUSTRATED BY FORMULÆ,
IN WHICH THE INTENTION OF EACH ELEMENT
IS DESIGNATED BY KEY LETTERS.

BY

JOHN AYRTON PARIS, M.D. F.L.S. M.R.I.
Fellow of the Royal College of Physicians of London;
Honorary Member of the Board of Agriculture;
Fellow of the Philosophical Society of Cambridge; and of the Royal Medical Society of Edinburgh;
and late Senior Physician to the Westminster Hospital.
&c. &c. &c.

Quis Pharmacopœo dabit leges, ignarus ipse agendorum?----Vix profecto dici potest, quantum hæc ignorantia rei medicæ inferat detrimentum.

GAUB: METHOD: CONCINN: FORMUL.

Fourth Edition, much enlarged.

LONDON:
PRINTED AND PUBLISHED BY W. PHILLIPS,
George Yard, Lombard Street;
SOLD ALSO BY BURGESS & HILL, GREAT WINDMILL STREET;
W. & C. TAIT, EDINBURGH; AND OTHER BOOKSELLERS.

1820.

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TO

WILLIAM GEORGE MATON, M.D. F.R.S.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS,

VICE-PRESIDENT OF THE LINNÆAN SOCIETY,

&c. &c. &c.

My dear Sir,

There is not an individual in the whole circle of the profession, to whom I could with greater satisfaction, or with so much propriety, dedicate this work, as to yourself.

Ardent and zealous in the advancement of our science, you must deeply deplore the prejudices that retard its progress;—eminently enlightened in Natural History, you can justly appreciate the importance of its applications to Medicine; while your well known earnestness in upholding the dignity, and in encouraging the legitimate exercise of our profession, marks you as the most proper patron of a work, the aim of which is to extinguish the false lights of empiricism, and to substitute a steady beacon on the solid and permanent basis of truth and science: at the same time, the extensive practice which your talents and urbanity

so justly command in this metropolis, must long since have taught you the full extent of that empiricism which it has been my endeavour to expose, and the practical mischief of that ignorance which it has been my object to enlighten.

Nor let me omit to mention the claims of that friendship which has for many years subsisted between us; be assured that I am gratefully sensible of those personal obligations which so fully justify this public avowal of them; confidently trusting that you will not measure the gratitude which your kindness has inspired, by the merits of the offering by which it is acknowledged, but rather by the truth and sincerity of the Dedication, by which I am enabled to express

My respect for your talents;

esteem for your virtues;

and wishes for your happiness;

JOHN AYRTON PARIS.

Dover Street,
October, 1820.

ADVERTISEMENT

TO THE

FOURTH EDITION.

The Third Edition of this work having been disposed of in less than three months, I have been called upon to resume the labours of the press, after an interval of repose much shorter than could possibly have been anticipated; still, however, no opportunity has been lost, nor have any pains been spared, to render the work more worthy of the liberal patronage which it has received. The substance of the Lectures delivered before the College of Physicians during the present year, has been embodied in the *First Part* of the Pharmacologia, by which the subject of Medicinal Combination has been materially extended in its views, and, as I trust, at the same time, increased in practical utility by a farther developement and illustration of its principles; some alterations have on this account necessarily taken place with regard to the arrangement of the several subjects, in order to render their bearings and mutual relations more distinct and apparent. *The Second Part* of the Pharmacologia, comprehending the particular history of each medicinal substance has been enriched by the addition of some interesting discoveries that have taken place during the interval.

J. A. P.

PREFACE TO THE THIRD EDITION.

The Public are already in possession of many pharmaceutical compendiums and epitomes of plausible pretensions, composed with the view of directing the practice of the junior, and of relieving the occasional embarrassments of the more experienced practitioner. Nothing is farther from my intention than to disparage their several merits, or to question their claims to professional utility; but in truth and justice it must be confessed that, as far as these works relate to the art of composing scientific prescriptions, their authors have not escaped the too common error of supposing that the reader is already grounded in the first principles of the science; or, to borrow the figurative illustration of a popular writer, *that while they are in the ship of science, they forget the disciple cannot arrive without a boat.* I am not acquainted with any book that is calculated to furnish such assistance, or which professes to teach the Grammar, and ground work of this important branch of medical knowledge. Numerous are the works which present us with the detail, but no one with the philosophy of the subject. We have copious catalogues of formal recipes, and many of unexceptionable propriety, but the compilers do not discuss the principles upon which they were constructed, nor do they explain the part which each ingredient is supposed to perform in the general scheme of the formula; they cannot therefore lead to any useful generalization, and the young practitioner, without a beacon that can direct his

course in safety, is abandoned to the alternative of two great evils—a feeble and servile routine, on one hand, or a wild and lawless empiricism, on the other. The present volume is an attempt to supply this deficiency: and while I am anxious to 'catch the ideas which lead from ignorance to knowledge,' it is not without hope that I may also be able to suggest the means by which our already acquired knowledge may be more widely and usefully extended; and, by offering a collective and arranged view of the objects and resources of medicinal combination, to establish its practice upon the basis of science, and thereby to render its future career of improvement, progressive with that of the other branches of medicine; or, to follow up the figurative illustration already introduced, *to furnish a boat, which may not only convey the disciple to the ship, but which may also assist in piloting the ship herself from her shallow and treacherous moorings.* That the design however of the present work may not be mistaken, it is essential to remark that it is elementary only in reference to the art of prescribing, for it is presumed that the student is already acquainted with the common manipulations of pharmacy, and with the first principles of chemistry. When any allusions are made to the processes of the Pharmacopœia, they are to be understood as being only supplementary, or as explanatory of their nature, in reference to the application or medicinal powers of the substance in question. The term PHARMACOLOGIA, as applied to the present work, may therefore be considered as contradistinctive to that of PHARMACOPŒIA; for while the latter denotes the processes for *preparing*, the former comprehends the scientific methods of *administering* medicinal bodies, and explains the objects and theory of

their operation. The articles of the Materia Medica have been arranged in alphabetical order, not only as being that best calculated for reference, but one which, in an elementary work at least, is less likely to mislead, than any arrangement founded on their medicinal powers; for in consequence of the difficulty of discriminating in every case between the primary and secondary effects of a medicine, substances very dissimilar in their nature, have been enlisted into the same artificial group, and when several of such bodies have, from a reliance upon their unity of action, been associated together in a medicinal mixture, it has too often happened that, like the armed men of Cadmus, they have opposed and destroyed each other. The object and application of the red marginal letters, to which the name of *Key Letters* has been given, are fully explained in the First Part of the work, and it is hoped, that the scheme possesses a more substantial claim to notice than that of mere novelty: it will be perceived that in the enumeration of the officinal formulæ these letters are also occasionally introduced, to express the manner in which the particular substance, under the head of which it stands, operates in the combination. If any apology be necessary for the introduction of the medicinal formulæ, it may be offered in the words of Quintillian, who very justly observes, "*In omnibus fere minus valent præcepta quam exempla;* or in the language of Seneca, "*Longum est iter per præcepta, breve et efficax per exempla.*" Under the history of each article, I have endeavoured to concentrate all that is required to be known for its efficacious administration, such as, 1. *Its sensible qualities.* 2. *Its chemical composition*, or the constituents in which its medicinal activity resides. 2. *Its relative solubility in different menstrua, and the*

proportions in which it should be mixed, or combined with different bodies, in order to produce suspension, or saturation. 4. *The Incompatible Substances*, that is to say, those substances which are capable of destroying its properties, or of rendering its flavour or aspect, unpleasant or disgusting. 5. *The most eligible forms in which it can be exhibited.* 6. *Its specific doses.* 7. *Its Medicinal Uses, and Effects.* 8. *Its Preparations, Officinal* as well as *Extemporaneous.* 9. *Its Adulterations.* That such information is indispensable for the elegant and successful exhibition of a remedy, must be sufficiently apparent; the injurious changes and modifications which substances undergo when they are improperly combined by the ignorant practitioner, are not as some have supposed imaginary, the mere *deliramenta doctrinæ*, or the whimsical suggestions of theoretical refinement, but they are really such as to render their powers unavailing, or to impart a dangerous violence to their operation. "*Unda dabit flammas et dabit ignis aquas.*"

In the history of the different medicinal preparations, the pharmacopœia of the London College is the standard to which I have always referred, although it will be perceived that I have frequently availed myself of the resources with which the pharmacopœias of Edinburgh and Dublin abound. To a knowledge of the numerous adulterations to which each article is so shamefully exposed, too much importance can be scarcely attached, and under this palpable source of medicinal fallacy and failure, may be very fairly included those secret and illegitimate deviations from the acknowledged modes of preparation, as laid down in the pharmacopœia, whether practised as expedients to obtain a lucrative notoriety, or from a conceit of their being improvements upon the ordinary

processes; for instance, we have lately heard of a wholesale chemist who professes to supply a syrup of roses of very superior beauty, and who for this purpose substitutes the petals of the *red* (rosa gallica) for those of the *damask* rose (rosa centifolia); we need not be told, that a preparation of more exquisite colour may be thus afforded, but allow me to ask if this *underhanded* substitution be not a manifest act of injustice to the medical practitioner, who instead of a laxative syrup, receives one which is marked by the opposite character of astringency. These observations will not apply, of course, to those articles which are *avowedly* prepared by a new process; for in that case the practitioner is enabled to make his election, and either to adopt or refuse them at his discretion. Thus, since the article *Extracta* in this work has been printed off, Mr. Barry has applied his ingenious patent apparatus for boiling *in vacuo*, to the purpose of making Extracts; we might almost say *a priori*, that the results must be more active than those obtained in the ordinary way, but they must pass the ordeal of experience before they can be admitted into practice. As a brief notice of the most notorious *Quack Medicines* may be acceptable, the formulæ for their preparation have been appended in notes, each being placed at the foot of the particular article which constitutes its prominent ingredient; indeed it is essential that the practitioner should be acquainted with their composition, for although he would refuse to superintend the operation of a boasted *panacea*, it is but too probable that he may be called upon to counteract its baneful influence.

From what has been thus stated, it will appear that the volume now presented to the public has been so enlarged in its bulk and extended in its views,

that it rather merits the appellation of a new work, than that of a renewed edition of a former one.

The *Historical Introduction*, comprehending the substance of two of the lectures, which were delivered in the last year, before the Royal College of Physicians of London, from the recently established chair of Materia Medica, has been prefixed to the work, at the desire of several of the auditors; and I confess my readiness to comply with this request, as it enabled me at once to obviate any misconception or unjust representation of those remarks which I felt it my bounden duty to offer to the College.

It will be observed that the work itself is divided into two separate and very distinct parts, the *First* comprehending the principles of the art of combination,—the *Second*, the medicinal history, and chemical habitudes of the bodies which are the subjects of such combination. These comprise every legitimate source of instruction, and to the young and industrious student, they are at once the LOOM and the RAW MATERIAL. Let him therefore abandon those flimsy and ill adapted textures, that are kept ready fabricated for the service of ignorance and indolence, and by actuating the machinery himself, weave the materials with which he is here presented into the forms and objects that may best fulfil his intentions, and meet the various exigencies of each particular occasion.

J. A. P.

Dover-street, January, 1820.

HISTORICAL INTRODUCTION.

COMPREHENDING

THE

SUBSTANCE OF THE LECTURES

DELIVERED BY THE AUTHOR

BEFORE THE

ROYAL COLLEGE OF PHYSICIANS,

FROM THE

CHAIR OF MATERIA MEDICA.

"*It has been very justly observed that there is a certain maturity of the human mind acquired from generation to generation, in the* MASS, *as there is in the different stages of life in the* INDIVIDUAL *man; — What is history when thus philosophically studied, but the faithful record of this progress? pointing out for our instruction the various causes which have retarded or accelerated it in different ages and countries.*"

Historical Introduction, p. 3.

HISTORICAL INTRODUCTION.

AN ANALYTICAL INQUIRY INTO THE MORE REMARKABLE CAUSES WHICH HAVE, IN DIFFERENT AGES, AND COUNTRIES, OPERATED IN PRODUCING THE REVOLUTIONS THAT CHARACTERISE THE HISTORY OF MEDICINAL SUBSTANCES.

[*This, and the succeeding Essay, on the subject of Medicinal combinations, comprehend the substance of Four Lectures, delivered by the Author before the Royal College of Physicians, on the Philosophy of the Materia Medica, in June,* 1819.]

BEFORE I proceed to discuss the particular views which I am prepared to submit to the College, on the important but obscure subject of medicinal combination, I propose to take a sweeping and rapid sketch of the different moral and physical causes which have operated in producing the extraordinary vicissitudes, which so eminently characterize the history of Materia Medica. Such an introduction is naturally suggested by the first glance at the extensive and motley assem-

blage of substances, with which our cabinets * are overwhelmed. It is impossible to cast our eyes over such multiplied groups, without being forcibly struck with the palpable absurdity of some—the disgusting and loathsome nature of others—the total want of activity in many—and the uncertain and precarious reputation of all—or, without feeling an eager curiosity to inquire, from the combination of what causes it can have happened, that substances, at one period in the highest esteem, and of generally acknowledged utility, have fallen into total neglect and disrepute;—why others, of humble pretensions, and little significance, have maintained their ground for so many centuries; and on what account, materials, of no energy whatever, have received the indisputable sanction, and unqualified support, of the best and wisest practitioners of the age. That such fluctuations in opinion and versatility in practice, should have produced, even in the most candid and learned observers, an unfavourable impression with regard to the general efficacy of medicines, can hardly excite our astonishment, much less our indignation; nor can we be surprised to find, that another portion of mankind has at once arraigned Physic as a fallacious art, or derided it as a composition of error and fraud. They ask—and it must be confessed that they ask with reason—

* The College of Physicians may now be said to possess one of the most complete collections of Materia Medica in Europe. That, collected by Dr. Burges, and presented to the College after his death by Mr. Brande, to whom it was bequeathed, has lately been collated with the cabinet of Dr. Coombe, purchased for that purpose. Its arrangement has been directed by a feeling of convenience for reference, rather than by any theoretical views relative to the natural, chemical, and medicinal histories of its constituent parts. Under proper regulations, it is accessible to the studious and respectable members of the profession.

what pledge can be afforded them, that the boasted remedies of the present day will not, like their predecessors, fall into disrepute, and, in their turn, serve only as humiliating memorials of the credulity and infatuation of the physicians who commended, and prescribed them? There is surely no question connected with our subject, which can be more interesting and important, no one which requires a more cool and dispassionate inquiry, and certainly not any which can be more appropriate for a lecture, introductory to the history of Materia Medica. I shall therefore proceed to examine with some attention the revolutions which have thus taken place in the opinions and belief of mankind, with regard to the efficacy and powers of different medicinal agents; such an inquiry, by referring them to causes capable of a philosophical investigation, is calculated to remove many of the unjust prejudices which have been excited, to quiet the doubts and alarms which have been so industriously propagated, and, at the same time, to obviate the recurrence of several sources of error and disappointment.

This moral view of events, without any regard to chronological minutiæ, may be denominated the PHILOSOPHY OF HISTORY, and should be carefully distinguished from that technical and barren erudition, which consists in a mere knowledge of *names* and *dates*. It has been very justly observed, that there is a certain maturity of the human mind, acquired from generation to generation, in the *mass*, as there is in the different stages of life, in the *individual* man; what is history, when thus philosophically studied, but the faithful record of this progress? pointing out for our instruction the various causes

which have retarded or accelerated its progress in different ages and countries.

In tracing the history of the Materia Medica to its earliest periods, we shall find that its progress towards its present advanced state, has been very slow and unequal, very unlike the steady, and successive improvement, which has attended other branches of natural knowledge; we shall perceive even that its advancement has been continually arrested and often entirely subverted, by the caprices, prejudices, superstitions and knavery of mankind; unlike too the other branches of science, it is incapable of successful generalization; in the progress of the history of remedies, when we are able to produce a discovery or improvement, which has been the result of that happy combination of Observation, Analogy, and Experiment, which has so eminently rewarded the labours of modern science? Thus, OBSERVATION led Newton to discover, that the refractive power of transparent substances was, in general, in the ratio of their density, but, that of substances of equal density, those which possessed the refractive power in a higher degree were inflammable. ANALOGY induced him to conclude that, on this account, water even must contain an inflammable principle, and EXPERIMENT enabled Cavendish and Lavoisier to demonstrate the surprising truth of Newton's induction, in their immortal discovery of the chemical composition of this fluid; but it is clear that such principles of research, and combination of methods, can rarely be applied in the investigation of remedies, for every problem which involves the phenomena of life is unavoidably embarassed by circumstances, so complicated in their nature, and fluctuating in their operation, as to set at

defiance every attempt to appreciate their influence; thus an observation or experiment upon the effects of a medicine, is liable to a thousand fallacies, unless it be carefully repeated under the various circumstances of health and disease, in different climates, and on different constitutions. We all know how very differently opium, or mercury, will act upon different individuals, or even upon the same individual, at different times, or under different circumstances; the effect of a stimulant upon the living body is not in the ratio of the intensity of its impulse, but in proportion to the degree of excitement, or vital susceptibility of the individual, to whom it is applied: this is illustrated in a clear and familiar manner, by the very different sensations of heat which the same temperature will produce under different circumstances: in the road over the Andes, at about half way, between the foot and the summit, there is a cottage in which the ascending and descending travellers meet; the former, who have just quitted the sultry vallies at the base, are so relaxed, that the sudden diminution of temperature produces in them the feeling of intense cold, whilst the latter, who have left the frozen summits of the mountain, are overcome by the distressing sensation of extreme heat. But we need not climb the Andes for an illustration; if we plunge one hand into a basin of hot, and the other into one of cold water, and then mix the contents of each vessel, and replace both hands in the mixture, we shall experience the sensation of heat and cold, from one and the same medium; the hand, that had been previously in the hot, will feel cold, whilst that which had been immersed in the cold water, will experience a sensation of heat. Upon the same principle, ardent spirits will produce very opposite effects upon different constitu-

tions and temperaments, and we are enabled to reconcile the conflicting testimonies respecting the powers of opium in the cure of fever: aliments, also, which under ordinary circumstances would occasion but little effect, may in certain conditions of the system act as powerful stimulants; a fact which is well exemplified by the history of persons who have been enclosed in coal mines for several days without food, from the accidental falling in of the surrounding strata, when they have been as much intoxicated by a basin of broth, as a person, in common circumstances would have been by two or three bottles of wine.* Many instances will suggest themselves to the practitioner in farther illustration of these views, and I shall have occasion to recur to the subject at a future time.

To such causes we must attribute the barren labours of the ancient empirics, who saw without discerning, administered without discriminating, and concluded without reasoning; nor should we be surprised at the very imperfect state of the materia medica, as far as it depends upon what is commonly called experience. John Ray attempted to enumerate the virtues of plants from *experience*, and the system serves only to commemorate his failure: Vogel likewise professed to assign to substances, those powers which had been learnt from accumulated experience; and he speaks of *roasted toad* as a specific for the pains of gout, and asserts that a person may secure himself for the whole year from angina, by eating a roasted swallow!

* Mrs. Elizabeth Woodcock, who was buried in the Snow, for the space of eight days, in the neighbourhood of Cambridge, and whom I frequently visited, died in consequence of the stimulants which she could not resist, and which in her peculiar state of excitement she was unable to bear.

Such must ever be the case, when medicines derive their origin from false experience, and their reputation from blind credulity.

ANALOGY has undoubtedly been a powerful instrument in the improvement, extension, and correction of the materia medica, but it has been chiefly confined to modern times; for in the earlier ages, Chemistry had not so far unfolded the composition of bodies, as to furnish any just idea of their relations to each other, nor had the science of Botany taught us the value and importance of the natural affinities which exist in the vegetable kingdom.

With respect to the fallacies to which such analogies are exposed, I shall hereafter speak at some length, and examine the pretensions of those *ultra* chemists of the present day, who have, upon every occasion, arraigned, at their self constituted tribunal, the propriety of our medicinal combinations, and the validity of our national pharmacopœias.

In addition to the obstacles already enumerated, the progress of our knowledge respecting the virtues of medicines, has met with others of a moral character, which have deprived us in a great degree of another obvious method of research, and rendered our dependance upon testimony uncertain, and often entirely fallacious. The human understanding, as Lord Bacon justly remarks, is not a mere faculty of apprehension, but is affected, more or less, by the will and the passions; what man wishes to be true, that he too easily believes to be so, and I conceive that physic has, of all the sciences, the least pretensions to proclaim itself independent of the empire of the passions.

In our researches to discover and fix the period when remedies were first employed for the alleviation of bodily suffering, we are soon lost in conjecture,

or involved in fable; we are unable to reach the period in any country, when the inhabitants were destitute of medical resources, and we find among the most uncultivated tribes, that medicine is cherished as a blessing, and practised as an art, as by the inhabitants of New Holland and New Zealand, by those of Lapland and Greenland, of North America, and of the interior of Africa. The personal feelings of the sufferer, and the anxiety of those about him, must, in the rudest state of society, have incited a spirit of industry and research to procure alleviation, the modification of heat and cold, of moisture and dryness; and the regulation and change of diet and habit, must have intuitively suggested themselves for the relief of pain, and when these resources failed, charms and amulets were the natural expedients of the barbarian ever more inclined to indulge the delusive hope of superstition, than to listen to the voice of sober reason. Traces of amulets may be discovered in very early history. The learned Dr. Warburton is evidently wrong, when he assigns the origin of these magical instruments to the age of the Ptolomies, which was not more than 300 years before Christ; this is at once refuted by the testimony of Galen, who tells us that the Egyptian king, Nechepsus, who lived 630 years before the Christian era, had written, that a green jasper cut into the form of a dragon surrounded with rays, if applied externally, would strengthen the stomach and organs of digestion. We have moreover the authority of the Scriptures in support of this opinion; for what were the ear-rings which Jacob buried under the oak of Sechem, as related in Genesis, but amulets? Nor were such means confined to dark and barbarous ages; Theophrastus pronounced Pericles to be insane, because he

discovered that he wore an amulet about his neck; and, in the declining æra of the Roman empire, we find that this superstitious custom was so general, that the Emperor Caracalla was induced to make a public edict ordaining that no man should wear any superstitious amulets about his person.

In the progress of civilization, various fortuitous incidents,* and even errors in the choice and preparation of aliments, must have gradually unfolded the remedial powers of many natural substances; these were recorded, and the authentic history of medicine may date its commencement from the period when such records began. The Chaldeans and Babylonians, we are told by Herodotus, carried their sick to the public roads and markets, that travellers might converse with them, and communicate any remedies, which had been successfully used in similar cases: this custom continued during many ages in Assyria; and Strabo states that it prevailed also amongst the ancient Lusitanians, or Portuguese: in this manner however the results of experience descended only by oral tradition; it was in the temple of Esculapius in Greece, that medical information was first recorded; diseases and cures were there registered on durable tablets of marble; the priests† and priestesses, who

* Let the tradition respecting the discovery of the virtues of the Bark serve as an illustration. We are told, that an Indian being ill of a fever, quenched his thirst at a pool of water, strongly impregnated with the bark, from some trees having accidentally fallen into it, and that he was in consequence cured.

† As these persons were ambitious to pass for the descendants of Esculapius, they assumed the name of The Asclepiades. The writings of Pausanius, Philostratus, and Plutarch, abound with the artifices of those early physicians. Aristophanes describes in a truly comic manner the craft and pious avarice of these godly men, and mentions the dexterity and promptitude with which they collected, and put into their

were the guardians of the temple, prepared the remedies and directed their application, and thus commenced the profession of physic. With respect to the actual nature of these remedies, it is useless to enquire; the lapse of ages, loss of records, change of language, and ambiguity of description, have rendered every learned research unsatisfactory; indeed we are in doubt with regard to many of the medicines which even Hippocrates employed. It is however clearly shewn by the earliest records, that the ancients were in the possession of many powerful remedies; thus Melampus of Argos, the most ancient Greek physician with whom we are acquainted, is said to have cured one of the Argonauts of sterility, by administering the rust of iron in wine for ten days; and the same physician used hellebore, as a purge, on the daughters of king Prætus, who were afflicted with melancholy. Venesection was also a remedy of very early origin, for Podalirius, on his return from the Trojan war, cured the daughter of Damethus, who had fallen from a height, by bleeding her in both arms. Opium, or a preparation of the poppy, was certainly known in the earliest ages; it was probably opium that Helen mixed with wine, and gave to the guests of Menelaus, under the expressive name of *nepenthe*,* to drive away their cares, and increase their hilarity; and this conjecture receives much support from the fact,

bags, the offerings on the altar. The patients, during this period, reposed on the skins of sacrificed rams, in order that they might procure celestial visions. As soon as they were believed to be asleep, a priest, clothed in the dress of Esculapius, imitating his manners, and accompanied by the daughters of the god, that is, by young actresses, thoroughly instructed in their parts, entered, and delivered a medical opinion.

* Odyss. Δ.

that the *nepenthe* of Homer was obtained from Thebes* in Egypt.

The sedative powers of the *Lactucarium*, or Lettuce,§ were known also in the earliest times; among the fables of antiquity, we read that after the death of Adonis, Venus threw herself on a bed of lettuces, to lull her grief, and repress her desires. The sea onion or *Squill*, was administered in cases of dropsy by the Egyptians, under the mystic title of the *Eye of Typhon*. The practices of incision and scarification were employed in the camp of the Greeks before Troy, and the application of spirit to wounds was also understood, for we find the experienced Nestor applying a cataplasm, composed of cheese, onion, and meal, mixed up with the wine of Pramnos, to the wounds of Machaon.‡

The revolutions and vicissitudes which remedies have undergone, in medical as well as popular opinion, from the ignorance of some ages, the learning of others, the superstitions of the weak, and the designs of the crafty, afford an ample subject for philosophical reflection; some of these revolutions I shall proceed to investigate, classing them under the prominent causes which have produced them, viz. Superstition —Credulity — Scepticism—False Theory —Devotion to Authority, and Established Routine—The assigning to Art that which was the effect of unassisted Nature—The assigning to peculiar substances Properties, deduced from Experiments made on inferior Animals—Ambiguity of Nomenclature—The progress of Bota-

* Hence, the Tincture of Opium has been called *Thebaic* Tincture.

§ Allusions to this plant frequently occur in the medical writings of antiquity; we are told that Galen, in the decline of life, suffered much from morbid vigilance, until he had recourse to eating a lettuce every evening, which cured him.

‡ Iliad Δ.

nical Science—The application, and misapplication of Chemical Philosophy—The influence of Climate and Season on Diseases, as well as on the properties, and operations of their Remedies—The ignorant Preparation, or fraudulent Adulteration of Medicines. The unseasonable collection of those remedies which are of vegetable origin; and, The obscurity which has attended the operation of compound medicines.

SUPERSTITION.

A belief in the interposition of supernatural powers in the direction of earthly events, has prevailed in every age and country, in an inverse ratio with its state of civilization, or, in the exact proportion to its want of knowledge. "In the opinion of the ignorant multitude," says Lord Bacon, "witches and impostors have always held a competition with physicians." Galen also complains of this circumstance, and observes that his patients were more obedient to the oracle in the temple of Esculapius, or to their own dreams, than they were to his prescriptions. The same popular imbecility is evidenly allegorized in the mythology of the ancient poets, when they made both Esculapius and Circe the children of Apollo; in truth, there is an unaccountable propensity in the human mind, unless subjected to a very long course of discipline, to indulge in the belief of what is improbable and supernatural; and this is perhaps more conspicuous with respect to physic than to any other affair of common life, both because the nature of diseases and the art of curing them are more obscure, and because disease necessarily awakens fear, and fear and ignorance are the natural parents of superstition; every disease therefore, the origin and cause of which did not immediately strike the senses, has in all ages

been attributed by the ignorant to the wrath of heaven, to the resentment of some invisible demon, or to some malignant aspect of the stars;* and hence the introduction of a rabble of superstitious remedies, not a few of which were rather intended as expiations at the shrines of these offended spirits, than as natural agents possessing medicinal powers. The introduction of precious stones into the materia medica, arose from an Arabian superstition of this kind; indeed De Boot, who has written extensively upon the subject, does not pretend to account for the virtues of gems, upon any philosophical principle, but from their being the residence of spirits, and he adds that such substances, from their beauty, splendour, and value, are well adapted as receptacles for *good* spirits!

Every substance whose origin is involved in mystery, has at different times been eagerly applied to the purposes of medicine: not long since, one of those showers which are now known to consist of the excrement of insects, fell in the north of Italy; the inhabitants regarded it as Manna, or some supernatural panacea, and they swallowed it with such avidity, that it was only by extreme address, that a small quantity was obtained for a chemical examination. A propensity to attribute every ordinary and natural effect to some extraordinary and un-

* The Plague of London was supposed to have arisen from such a cause, as we learn from the writers of that period. I shall quote a passage from a pamphlet by W. Kemp, M. A. dedicated to Charles the Second. "One cause of breeding the pestilence is that corruption of the air, which is occasioned by the influence of the Stars, by the aspects, conjunctions, and oppositions of the Planets, by the eclipses of the Sun and Moon, and by the consequences of Comets. *Astra regunt homines, sed regit astra Deus.*" Hippocrates advises his son Thessalus to study numbers and geometry, (*Epist. ad Thessalum.*) because, says he, the rising and setting of the Stars have a great effect upon Distempers.

natural cause, is one of the striking peculiarities of medical superstition; it seeks also explanations from the most preposterous agents, when obvious and natural ones are in readiness to solve the problem. Soranus, for instance, who was cotemporary with Galen, and wrote the life of Hippocrates,* tells us that honey proved an easy remedy for the aphthæ of children, but instead of at once referring the fact to the medical qualities of the honey, he very gravely explains it, from its having been taken from bees that hived near the tomb of Hippocrates! And even those salutary virtues which many herbs possess, were, in these times of superstitious delusion, attributed rather to the planet under whose ascendency they were collected, or prepared, than to any natural and intrinsic properties in the plants themselves;† indeed such was the supposed importance of planetary influence, that it was usual to prefix to receipts a symbol of the planet under whose reign the ingredients were to be collected, and it is not perhaps generally known, that the character which we at this day place at the head of our prescriptions, and which is under-

* It was this historian who said, that Medicine was invented by Apollo, improved by Esculapius, and brought to perfection by the physician of Cos.

† The Druids of Gaul and Britain, who were both priests and physicians, gathered and cut the *Misseltoe* with a golden knife, only when *the moon was six days old*, and being afterwards consecrated by certain forms, it was considered as an antidote to poisons, and a preventive of sterility. *Plinii. Lib.* xvi. c. 44.

The *Vervain*, *(Verbena Officinalis,)*, after libations of honey, was to be gathered at the rising of the dog-star, when neither sun nor moon shone, with the left hand only; when thus prepared, it was said to vanquish fevers and other distempers, was an antidote to the bite of serpents, and a charm to conciliate friendship. *Plin. Lib.* xxv. c. 9. I shall however hereafter shew that the medicinal reputation of this herb derived its origin from a more ancient source than that of Druidism.

stood, and supposed to mean *Recipe*, is a relict of the astrological symbol of Jupiter, as may be seen in many of the older works on pharmacy, although it is at present so disguised by the addition of the down stroke, which converts it into the letter ℞, that were it not for its *cloven* foot, we might be led to question the fact of its superstitious origin.

A knowledge of this ancient and popular belief in sideral influence, will enable us to explain many superstitions in Physic; the custom, for instance, of administering cathartic medicines at stated periods and seasons, originated in an impression of their being more active at particular stages of the moon, or at certain conjunctions of the planets: a remnant of this superstition still exists to a considerable extent in Germany; and the practice of bleeding at 'spring and fall,' so long observed in this country, owed its existence to a similar belief. It was in consequence of the same superstition, that the metals

were first distinguished by the names and signs of the planets; and as the latter were supposed to hold dominion over time, so were astrologers led to believe that some, more than others, had an influence on certain days of the week; and, moreover, that they could impart to the corresponding metals considerable efficacy upon the particular days which were devoted to them; from the same belief, some bodies were only prepared on certain days in the year; the celebrated earth of Lemnos, was, as Galen describes, periodically dug with great ceremony, and it continued for many ages to be highly esteemed for its virtues; even at this day, the pit in which the clay is found is annually opened, with solemn rites by the priests, on the sixth day of August, six hours after sun rising, when a quantity is taken out, washed, dried, and then sealed with the grand Signior's seal, and sent to Constantinople. Formerly it was death to open the pit, or to seal the earth, on any other day in the year. In the botanical history of the middle ages, as more especially developed in Macer's Herbal, there was not a plant of medicinal use, that was not placed under the dominion of some planet, and must neither be gathered nor applied, but with observances that savoured of the most absurd superstition, and which we find were preserved as late as the seventeenth century, by the astrological herbarists, Turner, Culpepper, and Lovel.

It is not the least extraordinary feature in the history of medical superstition, that it should so frequently involve in its trammels, persons who on every other occasion would resent with indignation any attempt to talk them out of their reason, and still more so, to persuade them out of their senses; and yet we have continual proofs of its extensive influence

over powerful and cultivated minds; we need only recal to our recollection the number of persons of superior rank and intelligence, who were actually persuaded to submit to the magnetising operations of Miss Prescott, and some of them were even induced to believe that a beneficial influence had been produced from the spells of this modern Circe.

Lord Bacon, with all his philosophy, betrayed a disposition to believe in the virtues of charms and amulets; and Boyle seriously recommends the thigh bone of an executed criminal, as a powerful remedy in dysentery. Amongst the remedies of Sir Theodore Mayerne, known to commentators as the Doctor Caius of Shakspeare, who was physician to three English Sovereigns, and who, by his personal authority, put an end to the distinctions of chemical and galenical practitioners in England, we shall find the secundines of a woman in her first labour with a male child; the bowels of a mole, cut open alive; mummy made of the lungs of a man who had died a violent death; with a variety of remedies, equally absurd, and alike disgusting.

It merits notice, that the medicinal celebrity of a substance has not unfrequently survived the tradition of its superstitious origin, in the same manner that many of our popular customs and rites have continued, through a series of years, to exact a respectful observance, although the circumstances which gave origin to them, have been obscured and lost in the gloom of unrecorded ages: the chorus of *derry down* is re-echoed by those who never heard of the Druids, or of the choral hymns with which their groves resounded, at the time of their gathering the missletoe, while many a medical practitioner continues to administer this sacred plant, (*Viscus Quercinus*) for the cure

of his epileptic patients, without the least suspicion that it owes its reputation to the same mysterious source of superstition and imposture; nor is this the only faint vestige of druidism which can be adduced. Mr. Lightfoot states, with much plausibility, that in the highlands of Scotland, evidence still exists in proof of the high esteem in which those ancient Magi held the Quicken Tree, or Mountain Ash, (*Sorbus Aucuparia*) for it is more frequently than any other found planted in the neighbourhood of druidical circles of stones, and it is a curious fact, that it should be still believed that a small part of this tree, carried about a person, is a charm against all bodily evils,—the dairy-maid drives the cattle with a switch of the *Roan* tree, for so it is called in the highlands; and in one part of Scotland, the sheep and lambs are, on the first of May, ever made to pass through a hoop of *Roan wood.*

It is also necessary to state, that many of the practices which superstition has at different times suggested, have not been alike absurd; nay, some of them have even possessed, by accident, natural powers of considerable efficacy, whilst others, although ridiculous in themselves, have actually led to results and discoveries of great practical importance. The most remarkable instance of this kind upon record, is that of the *Sympathetic* powder of Sir Kenelm Digby,* Knight of Montpellier. Whenever any

* See "Sir Kenelm Digby's Discourse upon the Cure by Sympathy, pronounced at Montpellier, before an assembly of Nobles and learned men. Translated into English, by R. White, Gentleman, and published in 1658." King James VI. obtained from Sir Kenelm the discovery of his secret, which he pretended had been taught him by a Carmelite Friar, who had learned it in America or Persia.

The *Sympathetic Powder* was, as we learn from cotemporary physicians, '*calcined green vitriol.*'

wound had been inflicted, this powder was applied to the weapon that had inflicted it, which was, moreover, covered with ointment, and dressed two or three times a day.* The wound itself in the mean time was directed to be brought together, and carefully bound up with clean linen rags, but, ABOVE ALL, TO BE LET ALONE for seven days; at the end of which period the bandages were removed, when the wound

* This superstitious practice is repeatedly alluded to by the poets: thus Sir Walter Scott, in the Lay of the Last Minstrel.

> " *But she has ta'en the broken lance,*
> " *Aud washed it from the clotted gore,*
> " *And salved the splinter o'er and o'er.*
> " *William of Deloraine, in trance,*
> " *Whene'er she turned it round and round,*
> " *Twisted, as if she galled his wound,*
> " *Then to her maidens she did say,*
> " *That he should be whole man and sound.*"
>
> Canto iii. St. xxiii.

Dryden has also introduced the same superstition in his Enchanted Island. Act v. Scene ii.

> Ariel. *Anoint the sword which pierced him with this*
> *Weapon salve, and wrap it close from air*
> *Till I have time to visit it again.—*

Again, in scene 4th, Miranda enters with Hippolito's sword, wrapt up.

> Hip. *O my wounds pain me,*
> (She unwraps the sword)
> Mir. *I am come to ease you.*
> Hip. *Alas I feel the cold air come to me;*
> *My wound shoots worse than ever.*
> Mir. *Does it still grieve you?*
> (She wipes and anoints the sword)
> Hip. *Now, methinks, there's something laid just upon it:*
> Mir. *Do you find no ease?*
> Hip. *Yes, yes; upon the sudden all this pain*
> *Is leaving me—Sweet heaven, how I am eased!*

was generally found perfectly united; the triumph of the cure was decreed to the mysterious agency of the sympathetic powder which had been so assiduously applied to the weapon, whereas, it is hardly necessary to observe, that the promptness of the cure depended upon the total exclusion of air from the wound, and upon the sanative operations of nature not having received any disturbance from the officious interference of art; the result, beyond all doubt, furnished the first hint, which led surgeons to the improved practice of healing wounds by what is technically called the *first intention.*

The rust of the spear of Telephus, mentioned in Homer as a cure for the wounds which that weapon inflicted, was probably *Verdegris,* and led to the discovery of its use as a surgical application.

The inoculation of the small-pox in India, Turkey, and Wales, observes Sir Gilbert Blane, was practised on a superstitious principle, long before it was introduced as a rational practice into this country. The superstition consisted in buying it—for the efficacy of the operation, in giving safety, was supposed to depend upon a piece of money being left by the person who took it for insertion. The members of the National Vaccine Establishment, during the period I had a seat at the board, received from Mr. Dubois a Missionary in India, a very interesting account of the services, derived from superstitious influence, in propagating the practice of vaccination through that uncivilized part of the globe. It appears from this document, that the greatest obstacle which vaccination encountered, was a belief that the natural small-pox was a dispensation of a mischievous deity among them, whom they called MAH-RY UMMA, or rather, that this disease was an incarnation of the dire God-

dess herself, into the person who was infected with it; the fear of irritating her, and of exposing themselves to her resentment, necessarily rendered the natives of the East decidedly averse to vaccination, until a superstitious impression, equally powerful, with respect to the new practice, was happily effected; this was no other than a belief, that the Goddess MAH-RY UMMA had spontaneously chosen this new and milder mode of manifesting herself to her votaries, and that she might be worshipped with equal respect under this new shape.

HYDROMANCY is another superstition, which has incidentally led to the discovery of the medicinal virtues of many mineral waters; a belief in the divining nature of certain springs and fountains, is perhaps the most ancient and universal of all superstitions. The Castalian fountain, and many others amongst the Græcians, were supposed to be of a prophetic nature; by dipping a fair mirror into a well, the Patræans of Greece received, as they imagined, some notice of ensuing sickness or health; at this very day, the sick and lame are attracted to various hallowed springs; and to this practice, which has been observed for so many ages and in such different countries, we are no doubt indebted for a knowledge of the sanative powers of many mineral waters. There can be no doubt, moreover, but that in many cases, by affording encouragement and confidence to a dejected patient, and serenity to his mind, whether by the aid of reason or the influence of superstition, much benefit may arise; for the salutary and curative efforts of nature, in such a state of mind, must be much more likely to succeed; equally evident is it, that the most powerful effects may be induced by the administration of remedies, which, from their disgusting nature, are

calculated to excite strong and painful sensations of the mind. Celsus mentions, with confidence, several medicines of this kind for the cure of Epilepsy, as *the warm blood of a recently slain Gladiator*, or a certain portion of *human*, or *horse flesh!* and we find that remedies of this description were actually exhibited, and with success, by Boerhaave, in the cure of the Epileptics in the poor-house at Haerlem. The powerful influence of confidence, in the cure and prevention of disease, was well understood by the sages of antiquity; the Romans, in times of pestilence, elected a dictator with great solemnity, for the sole purpose of driving a nail into the wall of the temple of Jupiter—the effect was generally instantaneous—"*Audacia pro muro est*," and thus imagining that they propitiated an offended god, they in truth only appeased their own fears. Nor are there wanting in modern times, striking examples of the progress of an epidemic disease having been suddenly arrested by some exhilarating impression made upon the mass of the population.

Amongst the numerous instances which have been cited to shew the power of faith over disease, or of the mind over the body, the *cures performed by Royal Touch* have been generally selected; but it would appear, upon the authority of Wiseman, that the cures which were thus effected, were in reality produced by a very different cause; for he states that part of the duty of the Royal Physicians and Serjeant Surgeons, was to select such patients afflicted with scrophula as evinced a tendency towards recovery, and that they took especial care to choose those who approached the age of puberty; in short, those only were produced whom nature had shewn a disposition to cure; and as the touch of the king, like the

sympathetic powder of Digby, secured the patient from the mischievous importunities of art, so were the efforts of nature left free and uncontrolled, and the cure of the disease was not retarded, or opposed by the operation of adverse remedies. The wonderful cures of Valentine Greatracks, performed in 1666, which were witnessed by cotemporary prelates, members of parliament, and fellows of the royal society, amongst whom was the celebrated Mr. Boyle, would probably upon investigation admit of a similar explanation; it deserves, however, to be noticed, that in all records of extraordinary cures performed by mysterious agents, there is a great desire to conceal the remedies and other curative means, which were simultaneously administered with them: thus Oribasius commends in high terms, a necklace of *Pœony root*, for the cure of Epilepsy; but we learn that he always took care to accompany its use with copious evacuations, although he assigns to them no share of credit in the cure. In later times, we have a good specimen of this species of deception, presented to us in a work on Scrofula by Mr. Morley, written, as we are informed, for the sole purpose of restoring the much injured character and use of the *Vervain;* in which the author directs the root of this plant to be tied with a *yard of white satin ribband*, around the neck, where it is to remain until the patient is cured; but mark,—during this interval he calls to his aid the most active medicines in the materia medica!

The advantages which I have stated to have occasionally arisen from superstitious influence, must be understood as being generally accidental; indeed, in the history of superstitious practices, we do not find that their application was exclusively commended in cases likely to be influenced by the powers of faith

or of the imagination, but, on the contrary, that they were as frequently directed in affections that were entirely placed beyond the control of the mind. Homer tells us, for instance, that the bleeding of Ulysses was stopped by a charm;* and Cato, the censor, has favoured us with an incantation, for the reduction of a dislocated limb.

I shall conclude these observations by remarking, that in the history of religious ceremonials we sometimes discover, that they were intended to preserve useful customs or to conceal important truths, which, had they not been thus embalmed by superstition, could never have been perpetuated for the use and advantage of posterity. I shall illustrate this assertion by one example,—whenever the ancients proposed to build a town or to pitch a camp, a sacrifice was offered to the gods, and the Soothsayer declared, *from the appearance of the entrails,* whether they were propitious or not to the design. What was this but a physiological inquiry into the salubrity of the situation, and the purity of the waters that supplied it? for we well know that in unwholesome districts,

* This superstitious notion is not confined to the ancients, but is even cherished at this day, in some of the more remote districts of the kingdom; and we find frequent allusions to it in the popular poetry of the seventeenth century.

> "Tom Pots was but a serving man,
> But yet he was a doctor good;
> He bound his 'kerchief on the wound,
> And *with some kind words* he staunch'd the blood."

Sir Walter Scott, in his "Lay of the last Minstrel"—

> "She drew the splinter from the wound,
> And with a *charm* she staunch'd the blood."

The reader will also find the enumeration of several charms for this purpose, in Reginald Scot's Discoverie of Witchcraft, p. 278.

especially when swampy, the cattle will uniformly present an appearance of disease in the viscera, which an experienced eye can readily detect; and when we reflect upon the age, and climate, in which these ceremonies were performed, we cannot but believe that their instruction was suggested by principles of wise and useful policy.

CREDULITY;

Although it is nearly allied to Superstition, yet it differs very widely from it. Credulity is an unbounded belief in what is possible, although destitute of proof and perhaps of probability; but Superstition is a belief in what is wholly repugnant to the laws of the physical and moral world; thus, if we believe that an inert plant possesses any remedial power, we are *credulous*, but if we were to fancy that, by carrying it about with us, we should become invulnerable, we should in that case be *superstitious*. Credulity is a far greater source of error than Superstition; for the latter must be always more limited in its influence, and can exist only, to any considerable extent, in the most ignorant portion of society; whereas the former diffuses itself through the minds of all classes, by which the rank and dignity of science are degraded, its valuable labours confounded with the vain pretensions of empiricism, and ignorance is enabled to claim for itself the prescriptive right of delivering oracles, amidst all the triumphs of truth, and the progress of philosophy. This is very lamentable; and yet, if it were even possible to remove the film that thus obscures the public discernment, I question whether the adoption of such a plan would not be outvoted by the majority of our own profession. In Chili, says Zimmerman,

the physicians blow around the beds of their patients to drive away diseases, and as the people in that country believe that physic consists wholly in this wind, their doctors would take it very ill of any person who should attempt to make the method of cure more difficult—*they think they know enough, when they know how to blow.*

But this mental imbecility is not characteristic of any age or country. England has, indeed, by a late continental writer,* been accused of possessing a larger share of credulity than its neighbours, and it has been emphatically called, "*The Paradise of Quacks,*" but with as little truth as candour. If we refer to the works of Ætius, written more than 1300 years ago, we shall discover the existence of a similar infirmity with regard to physic; this author has collected a multitude of receipts, particularly those that had been celebrated, or used as *Nostrums*, many of which he mentions with no other view than to expose their folly, and to inform us at what an extravagant price they were purchased; we accordingly learn from him that the collyrium of Danaus was sold at Constantinople for 120 numismata, and the cholical antidote of Nicostratus for two talents; in short, we shall find an unbounded credulity with respect to the powers of inert medicines, from the elixir and *alkahest* of Paracelsus and Van-Helmont, to the tar water of bishop Berkley, the metallic tractors of Perkins, the animal magnetism of Miss Prescott, and may I not add, with equal justice, to the nitro-muriatic acid bath of Dr. Scott? The description of Thessalus, the Roman empiric in the reign of Nero, as drawn by Galen, applies with equal fidelity and

* See a Tour through England by Dr. Nemnich of Hamburgh.

force to the medical Charlatan of the present day; and, if we examine the writings of Scribonius Largus, we shall obtain ample evidence that the same ungenerous selfishness* of keeping medicines secret, prevailed in ancient no less than in modern times; while we have only to read the sacred orations of Aristides to be satisfied, that the flagrant conduct of the Asclepiades, from which he so severely suffered,† was the very prototype of the cruel and remorseless frauds, so wickedly practised by the unprincipled Quack Doctors and advertizing "*Medical Boards*" of our own times: and I challenge the apologist of ancient purity to produce a more glaring instance of empirical effrontery and success, in the annals of the 19th century, than that of the sacred impostor described in the Alexander of Lucian, who established himself in the deserted temple of Esculapius, and entrapped in his snares some of the most eminent of the Roman senators.

SCEPTICISM.

Credulity has been justly defined, *Belief without Reason.* Scepticism is its opposite, *Reason without Belief.*

* *Nostrum*, (our own.) This word, as its original meaning implies, is very significant of this characteristic attribute of quackery.

† Aristides was the dupe and victim of the Asclepiades for ten successive years; he was alternately purged, vomited, and blistered; made to walk bare-footed, under a burning sun in summer, and in winter he was doomed to seek for the return of health, by bathing his feeble and emaciated body in the river. All this severity, he was made to believe, was exercised towards him by the express directions of Esculapius himself, with whom he was persuaded to fancy that he conversed in his dreams, and frequently beheld in nocturnal visions. Upon one occasion, the God fatigued with the importunities of his votary, ordered him to lose 120lbs. of blood; the unhappy man not having so much in his body, *wisely* took the liberty of interpreting the oracle in his own way, and parted with no more than he could conveniently spare.

and is the natural and invariable consequence of credulity; for it may be generally observed, that men who believe without reason, are succeeded by others whom no reasoning can convince; a fact which has occasioned many extraordinary and violent revolutions in the *Materia Medica*, and a knowledge of it will enable us to explain the otherwise unaccountable rise and fall of many useless, as well as important articles. It will also suggest to the reflecting practitioner, a caution of great moment, to avoid the dangerous fault imputed by Galen to Dioscorides, of ascribing too many and too great virtues to one and the same medicine. By bestowing unworthy and extravagant praise upon a remedy, we in reality do but detract from its reputation, and run the risk of banishing it from practice; for when the sober practitioner discovers by experience that a medicine falls so far short of the efficacy ascribed to it, he abandons its use in disgust, and is even unwilling to concede to it that degree of merit, to which in truth and justice it may be entitled; the inflated eulogiums bestowed upon the operation of *digitalis* in pulmonary diseases, excited, for some time, a very unfair impression against its use; and the injudicious manner in which the anti-siphylitic powers of *Nitric Acid* have been aggrandised, had very nearly exploded a valuable auxiliary from modern practice. It is well known with what avidity the public embraced the expectations given by Stöerck of Vienna in 1760, with respect to the efficacy of *Hemlock;* every body, says Dr. Fothergill, made the extract, and every body prescribed it, but finding that it would not perform the wonders ascribed to it, and that a multitude of discordant diseases refused to yield, as it was asserted they would, to its narcotic powers, practioners fell into the opposite extreme

of adsurdity, and declaring that it could do nothing at all, dismissed it at once as inert and useless. May we not then predict the fate of the *Cubebs*, which has been lately restored to notice, with such extravagant praise, and unqualified approbation?

There are, moreover, those who cherish a spirit of scepticism, from an idea that it denotes the exercise of a superior intellect; it must be admitted, that at that period in the history of Europe, when reason first began to throw off the yoke of authority, it required superiority of understanding as well as intrepidity of conduct, to resist the powers of that superstition which had so long held it in captivity; but in the present age, observes Mr. Dugald Stewart, "*unlimited scepticism is as much the child of imbecility as implicit credulity.*" "He who at the end of the eighteenth century," says Rousseau, has brought himself to abandon all his early principles, without discrimination, would probably have been a bigot in the days of the league."

FALSE THEORIES, AND ABSURD CONCEITS.

He who is governed by preconceived opinions, may be compared to a spectator who views the surrounding objects through coloured glasses, each assuming a tinge similar to that of the glass employed; thus have crowds of inert and insignificant drugs been indebted to an ephemeral popularity, from the prevalence of a false theory; the celebrated hypothesis of Galen, respecting the virtues and operation of medicines, may serve as an example; it is a web of philosophical fiction, which was never surpassed in absurdity. He conceives that the properties of all medicines are

derived from what he calls their elementary or *cardinal* qualities, HEAT, COLD, MOISTURE, and DRYNESS. Each of which qualities is again sub-divided into four degrees, and a plant or medicine, according to his notion, is cold, or hot, in the first, second, third, or fourth gradation; if the disease be hot, or cold in any of these four stages, a medicine possessed of a contrary quality, and in the same proportionate degree of elementary heat or cold, must be prescribed. Saltness, bitterness, and acridness depend, in his idea, upon the relative degrees of heat and dryness in different bodies. It will be easily seen how a belief in such an hypothesis must have multiplied the list of inert articles in the materia medica, and have corrupted the practice of physic. The variety of seeds derived its origin from this source, and until lately, medical writers, in the true jargon of Galen, spoke of the *four* greater and lesser *hot* and *cold* seeds; and in the London Dispensatory of 1721, we find the powders of *hot* and *cold* precious stones, and those of the *hot* and *cold* compound powders of pearl.

THE METHODIC SECT, which was founded by the Roman physician Themison,* a disciple of Asclepiades, as they conceived all diseases to depend upon *over-bracing*, or *relaxation*, so did they class all medicines under the head of *relaxing* and *bracing* remedies; and although this theory has been long since banished from the schools, yet it continues at this day to exert a secret influence on medical practice, and to preserve from neglect some unimportant medicines.

* The practice of this Physician does not appear to have been very successful, if we may credit Juvenal.—

"Quot Themison ægros autumno occiderit uno."

THE STAHLIANS, under the impression of their ideal system, introduced *Archæal* remedies, and many of a superstitious and inert kind, whilst, as they on all occasions trusted to the constant attention and wisdom of nature, so have they zealously opposed the use of some of the most efficacious instruments of art, as the Peruvian *bark;* and few physicians were so reserved in the use of general remedies, as bleeding, vomiting, and the like; their practice was therefore imbecile, and it has been aptly enough denominated, "*a meditation upon death.*" They were however vigilant in observation and acute in discernment, and we are indebted to them for some faithful and minute descriptions.

THE MECHANICAL THEORY, which recognised "*lentor and morbid viscidity of the blood*" as the principal cause of all diseases, introduced attenuant and diluent medicines, or substances endued with some mechanical force; thus Fourcroy explained the operation of mercury by its specific gravity, and the advocates of this doctrine favoured the general introduction of the preparations of iron, especially in schirrus of the spleen or liver, upon the same hypothetical principle; for, say they, whatever is most forcible in removing the obstruction, must be the most proper instrument of cure; such is *Steel*, which, besides the attenuating power with which it is furnished, has still a greater force in this case from the *gravity* of its particles, which, being seven times specifically heavier than any vegetable, acts in proportion with a stronger impulse, and therefore is a more powerful deobstruent. This may be taken as a specimen of the style in which these mechanical physicians reasoned and practised.

THE CHEMISTS, as they acknowledged no source of disease, but the presence of some hostile acid or alkali, or some deranged condition in the chemical composition of the fluid, or solid parts, so they conceived all remedies must act by producing chemical changes in the body; we find Tournefort busily engaged in testing every vegetable juice, in order to discover in it some traces of an acid or alkaline ingredient, which might confer upon it medicinal activity. The fatal errors into which such an hypothesis was liable to betray the practitioner, receive an awful illustration in the history of the memorable fever that raged at Leyden in the year 1699, and which consigned two thirds of the population of that city to an untimely grave; an event which in a great measure depended upon the Professor Sylvius de la Boe, who having just embraced the chemical doctrines of Van Helmont, assigned the origin of the distemper to a prevailing acid, and declared that its cure could alone be effected by the copious administration of absorbent and testaceous medicines.

Unlike the mechanical physicians, they explain the beneficial operation of iron by supposing that it increases the proportion of red globules in the blood, on the erroneous* hypothesis that iron constitutes the principal element of these bodies. Thus has iron, from its acknowledged powers, been enlisted into the service of every prevailing hypothesis; and it is not a little singular, as a late writer has justly observed,

* The animal nature of the colouring matter of the blood was first pointed out by Dr. Wells, but Fourcroy and Vauquelin considered it to be owing to *subphosphate of iron*. Mr. Brande, in 1812, demonstrated the fallacy of this opinion, and proved, by satisfactory experiments, its title to be considered as a peculiar animal principle; the subsequent experiments of M. Vauquelin have confirmed Mr. Brande's results.

that theories however different, and even adverse, do nevertheless often coincide in matters of practice, as well with each other as with long established empirical usages, each bending as it were, and conforming, in order to do homage to truth and experience. And yet iron, whose medicinal virtues have been so genefally allowed, has not escaped those vicissitudes in reputation which almost every valuable remedy has been doomed to suffer; at one period the ancients imagined that wounds inflicted by iron instruments were never disposed to heal, for which reason Porsenna, after the expulsion of the Tarquins, actually stipulated with the Romans that they should not use iron, except in agriculture; and Avicenna was so alarmed at the idea of its internal use as a remedy, when given in substance, that he seriously advised the exhibition of a magnet after it to prevent any direful consequences. The fame even of Peruvian bark has been occasionally obscured by the clouds of false theory; some condemned its use altogether, "because it did not evacuate the morbific matter," others, "because it bred obstructions in the viscera," others again, "because it only bound up the spirits, and stopped the paroxysms for a time, and favoured the translation of the peccant matter into the more noble parts." It was sold first by the Jesuits for its weight in silver; and Condamine relates that in 1690, about thirty years afterwards, several thousand pounds of it lay at Piura and Payta for want of a purchaser.

Nor has Sugar escaped the venom of fanciful hypothesis. Dr. Willis raised a popular outcry against its domestic use, declaring, that "it contained within its particles, a secret acid,—a dangerous sharpness,—

which caused scurvys, consumptions, and other dreadful diseases." *

Although I profess to offer merely a few illustrations of those doctrines, whose perverted applications have influenced the history of the Materia Medica, I cannot pass over in silence that of John Brown, "the child of genius and misfortune." As he generalized diseases, and brought all within the compass of two grand classes, thoss of *increased* and *diminished* excitement, so did he abridge our remedies, maintaining, that every agent which could operate on the human body was a *Stimulant*, having an identity of action, and differing only in the degree of its force; so that according to his views, the lancet and the brandy bottle were but the opposite extremes of one and the same class: the mischievous tendency of such a doctrine is too obvious to require a comment..

But the most absurd and preposterous hypothesis that has disgraced the annals of medicine, and bestowed medicinal reputation upon substances of no intrinsic worth, is that of the DOCTRINE OF SIGNATURES, as it has been called, which is no less than a belief that *every natural substance which possesses any medicinal virtue, indicates by an obvious and well-marked external character, the disease for which it is a remedy, or the object for which it should be employed!* § This extraordinary monster of the fancy has been principally adopted and cherished, by Paracelsus, Baptista Porta, and Crollius, although traces of its existence

* This produced a pamphlet from Dr. Slare, entitled "A Vindication of Sugars against the Charge of Dr. *Willis* and others: *dedicated to the Ladies.*" 1715.

§ This conceit did not escape the notice of the metaphysical poets of the seventeenth century; Cowley frequently availed himself of it to embellish his verse.

may be certainly discovered in more ancient authors; the supposed virtues of the *Lapis Ætites*, or *Eagle* stone,* described by Dioscorides, Ætius, and Pliny, who assert, that if tied to the arm it will prevent abortion, and if fixed to the thigh forward delivery, were, as we learn from ancient authority, solely suggested by the manner in which the nodule contained within the stone moves and rattles, whenever it is shaken. "*Ætites lapis agitatus, sonitum edit, velut ex altero lapide prægnans.*" The conceit however did not assume the importance of a theory until the end of the fourteenth century, at which period we find several authors engaged in the support of its truth, and it will not be unamusing to offer a specimen of their sophistry; they affirm, that since man is the lord of the creation, all other creatures are designed for his use, and *therefore*, that their beneficial qualities and excellencies must be expressed by such characters as can be seen and understood by every one; and as man discovers his reason by speech, and brutes their sensations by various sounds, motions, and gestures, so the vast variety and diversity of figures, colours, and consistencies, observable in inanimate creatures, is certainly designed for some wise purpose. It *must be*, in order to manifest these peculiar qualities and excellencies, which could not be so effectually done in any other way, not even by speech, since no language is universal. Thus, the lungs of a fox must be a specific for asthma, *because* that animal is remarkable for its strong powers of respiration. *Turmeric* has a brilliant yellow colour, which indicates

* This mineral derives its name from the ancient belief that it was found in the nests of the eagle. It is a variety of iron ore, which is commonly met with in the argillaceous iron mines of this country.

that it has the power of curing the jaundice; for the same reason, *Poppies* must relieve diseases of the head; *Agaricus* those of the bladder; *Cassia fistula* the affections of the intestines, and *Aristolochia* the disorders of the uterus: the polished surface and stony hardness which so eminently characterise the seeds of the *Lithospermum Officinale* (Common Gromwell) were deemed a certain indication of their efficacy in calculous, and gravelly disorders; for a similar reason the roots of the *Saxifraga Granulata* (White Saxifrage) gained reputation, in the cure of the same disease; and the *Euphrasia* (Eye-bright) acquired fame, as an application in complaints of the eye, because it exhibits a black spot in its corolla resembling the pupil.

The blood-stone, the *Heliotropium* of the ancients, from the occasional small specks or points of a blood red colour exhibited on its green surface, is even at this day employed in many parts of England and Scotland, to stop a bleeding from the nose; and nettle tea continues a popular remedy for the cure of *Urticaria.* It is also asserted that some substances bear the SIGNATURES of the humours, as the petals of the red rose that of the blood, and the roots of rhubarb, and the flowers of saffron, that of the bile. *

I apprehend that John of Gaddesden, in the fourteenth century, celebrated by Chaucer, must have been directed by some remote analogy of this kind, when he ordered the son of Edward the First, who was dangerously ill with the small-pox, to be wrapped in scarlet cloth, as well as all those who attended upon him, or came into his presence, and even the bed and room in which he was laid were covered with

* For a farther account of this conceit, see Crollius in a work appended to his BASILICA CHYMICA," entitled, "*De Signaturis internis rerum, de vera et vira Anatomia majoris et minoris mundi.*"

the same substance, and so completely did it answer, say the credulous historians of that day, that the Prince was cured without having so much as a single mark left upon him.

In enumerating the conceits of Physic, as relating to the Materia Medica, we must not pass over the idea, so prevalent at one period, that *All poisonous substances possessed a powerful and mutual elective attraction for each other*, and that consequently, if a substance of this kind were suspended around the neck, it would, by intercepting and absorbing every noxious particle, preserve the body from the virulence of contagious matter. Angelus Sala, accordingly, gives us a formula for what he terms his *Magnes Arsenicalis*, which he asserts will not only defend the body from the influence of poison, but will from its powers of attraction, draw out the venom from an infected person. In the celebrated plague of London, we are informed that amulets of arsenic were upon this principle suspended over the region of the heart, as a preservative against infection.

DEVOTION TO AUTHORITY, AND ESTABLISHED ROUTINE.

This has always been the means of opposing the progress of reason—the advancement of natural truths—and the prosecution of new discoveries; whilst, with effects no less baneful, has it perpetuated many of the stupendous errors, which have been already enumerated, as well as others no less weighty, and which are reserved for future discussion.

To give general currency to an hypothetical opinion, or medicinal reputation to an inert substance,

requires only the talismanic aid of a few great names; when once established upon such a basis, ingenuity, argument, and even experiment, may open their ineffectual batteries. It is an instinct in our nature, to follow the track pointed out by a few leaders; we are gregarious animals, in a moral as well as physical sense, and we are addicted to routine, because it is always easier to follow the opinions of others than to reason and judge for ourselves. "The mass of mankind," as Dr. Paley observes, "act more from habit than reflection." What, but such a temper could have upheld the preposterous system of Galen for more than thirteen centuries? and have enabled it to give universal laws in medicine to Europe—Africa—and part of Asia? What, but authority, could have inspired a general belief, that the sooty washings of rosin * would act as an universal remedy? What, but a blind devotion to authority, or an insuperable attachment to established custom and routine, could have so long preserved from oblivion the absurd medicines which abound in our earlier dispensatories? for example, the *Decoctum ad Ictericos*," of the Edinburgh College, which never had any other foundation than the doctrine of signatures, in favour of the *Curcuma* and *Chelidonium Majus*; ‡ and it is only within a few years, that the

* This practice of Bishop Berkley has been ridiculed with great point and effect, in a pamphlet entitled, "*A Cure for the Epidemical Madness of drinking Tar Water*," by Mr. Reeve; in which, addressing the Bishop, he says, "thus, in your younger days, my Lord, you made the surprising discovery of the unreality of matter, and now in your riper age, you have undertaken to prove the reality of a universal remedy; an attempt to talk men out of their reason, did of right, belong to that author who had first tried to persuade them out of their senses."

‡ The *Euphrasia Officinalis*, or *Eye-bright*, which is indebted for its celebrity to the doctrine of Signatures, as before stated, is actually employed at this time in cases of dimness of sight.

Theriaca Andromachi, in its ancient absurd form, has been dismissed from the British Pharmacopœiæ. The CODEX-MEDICAMENTARIUS of Paris, recently edited, still cherishes this many-headed * monster of

* This preparation contains 72 ingredients, which are arranged under 13 heads - viz. ACRIA, of which there are 5 species. AMARA, of which there are 8. STYPTICA vulgo ASTRINGENTIA, 5 in number. AROMATICA EXOTICA, 14. AROMATICA INDIGENA, 10. AROMATICA EX UMBELLIFERIS, 7 RESINOSA ET BALSAMA, 8. GRAVE-OLENTIA, 6. VIROSA, *seu quæ Narcosin inducunt*, there is under this head but one species, which is Opium. TERREA INSIPIDA ET INERTIA; this comprises only the *Lemnian Earth*. GUMMOSA, AMYLACEA. &c. 4 species. DULCIA, *liquorice and honey*. VINUM, *Spanish*.

Upon no principle of combination can this heterogeneous farrago be vindicated. It has, however, enjoyed the confidence of physicians for many ages, and is therefore entitled to some notice. It was supposed to have been invented by Mithridates, the famous king of Pontus, the receipt for which was said to have been found among his papers, after his defeat by Pompey, at which time it was published in Rome, under his title of "*Antidotum Mithridatium*," but the probability is, says Dr. Heberden, that Mithridates was as much a stranger to his own antidote as several eminent physicians have since been to the medicines that are daily advertised under their names. It was asserted, that whoever took a proper quantity in the morning, was insured from poison during the whole of that day, (*Galen de Antidot. Lib.* 1.) and it was farther stated, that Mithridates himself was so fortified against all baneful drugs, that none would produce any effect when he attempted to destroy himself. (*Celsus* lib. 5. c. 23.) In the course of ages it has undergone numerous alterations. According to Celsus, who first described it, it contained only 35 simples; Andromachus, Physician to Nero, added vipers and increased the number of ingredients to 75; and when thus *reformed*, he called it ϛαλήνη—but in Trajan's time it obtained the name of *Theriaca*, either from the vipers in it, or from its supposed effects in curing the bites of venomous animals. Damocrates gave a receipt for it in Greek Iambics, which has been preserved by Galen. It appears then that its composition has hardly remained the same for a hundred years; it is, says Dr. Heberden, a farrago, that has no better title to the name of Mithridates than as it so well resembles the numerous undisciplined forces of a barbarous king, made up of a dissonant crowd collected from different countries, mighty in appearance, but in reality, an ineffective multitude, that only hinder each other. ΑΝΤΙΘΗΡΙΑΚΑ, by W. Heberden, M.D. 1745.

pharmacy, in all its pristine deformity, under the appropriate title of "*Electuarium Opiatum Polupharmacum.*"

It is, however, evidently indebted for this unexpected rescue from oblivion, to a cause very remote from that which may be at first imagined; not from any belief in its powers or reliance upon its efficacy, but from a disinclination to oppose the torrent of popular prejudice, and to reject what has been established by authority and sanctioned by time; for the same reason, and in violation of their better judgment, the editors have retained the absurd formula of Diest for the preparation of an extract of opium, which, after directing various successive operations, concludes by ordering the decoction to be boiled incessantly for six months, supplying the waste of water at intervals! Many of the compound formulæ in this new CODEX, it is frankly allowed, possess an unnecessary and unmeaning, if not an injurious complexity, and yet, such force has habit, and so paramount are the *verba magistri*, that the editors rest satisfied in distinguishing the more important ingredients by printing them in *Italics*, leaving the rest to be supplied at the whim and caprice of the dispenser, and thus are the grand objects and use of a national Pharmacopœia defeated, which should above all things insure uniformity in the strength and composition of its officinal preparations.

The same devotion to authority, which induces us to retain an accustomed remedy with pertinacity, will always oppose the introduction of a novel practice with asperity, unless indeed it be supported by authority of still greater weight and consideration. The history of various articles of diet and medicine will prove in a striking manner, how greatly their repu-

tation and fate have depended upon authority. It was not until many years after *Ipecacuan* had been imported into Europe, that Helvetius, under the patronage of Louis XIV, succeeded in introducing it into practice: and to the eulogy of Katharine, queen of Charles II, we are indebted for the general introduction of Tea into England.

That most extraordinary plant, *Tobacco*, notwithstanding its powers of fascination, has suffered romantic vicissitudes in its fame and character: it has been successively opposed, and commended by physicians—condemned, and eulogised by priests and kings—and proscribed, and protected by governments; whilst at length this once insignificant production of a little island or an obscure district, has succeeded in diffusing itself through every climate, and in subjecting the inhabitants of every country to its dominion; the Arab cultivates it in the burning desert—the Laplander and Esquimaux risk their lives to procure a refreshment so delicious in their wintry solitude—the Seaman, grant him but this luxury, and he will endure with cheerfulness every other privation, and defy the fury of the raging elements; and in the higher walks of civilized society, at the shrine of fashion, in the palace, and in the cottage, the fascinating influence of this singular plant commands an equal tribute of devotion and attachment. The history of the Potatoe is perhaps not less extraordinary, and is strikingly illustrative of the omnipotent influence of authority; the introduction of this valuable plant received, for more than two centuries, an unexampled opposition from vulgar prejudice, which all the philosophy of the age was unable to dissipate, until Louis the XVth wore a bunch of the flowers of the potatoe in the midst of his court, on a

day of festivity; the people then for the first time obsequiously acknowledged its utility, and began to express their astonishment at the apathy which had so long prevailed with regard to its general cultivation; that which authority thus established, time and experience have fully ratified, and scientific research has extended the numerous resources which this plant is so wonderfully calculated to furnish; thus, its stalk, considered as a textile plant, produces in Austria a cottony flax—in Sweden, sugar is extracted from its root—by combustion, its different parts yield a very considerable quantity of potass,—its apples, when ripe, ferment and yield vinegar by exposure or spirit by distillation—its tubercles made into a pulp, are a substitute for soap in bleaching,—cooked by steam, the potatoe is the most wholesome and nutritious, and at the same time, the most economical of all vegetable aliments,—by different manipulations it furnishes two kinds of flour, a gruel, and a parenchyma, which in times of scarcity may be made into bread, or applied to increase the bulk of bread made from grain,—to the invalid it furnishes both aliment and medicine: its starch is not in the least inferior to the Indian arrow root, and our worthy President has lately shewn that an extract may be prepared from its leaves and flowers, which possesses valuable properties as an anodyne remedy.

The history of the warm bath presents us with a curious instance of the vicissitudes to which the reputation of our valuable resources are so universally exposed; that which for so many ages was esteemed the greatest luxury in health, and the most efficacious remedy in disease, fell into total disrepute in the reign of Augustus, for no other reason than because Antonius Musa had cured the Emperor of a dangerous malady by the use of the *cold* bath. The most frigid water

that could be procured, was in consequence recommended on every occasion, thus Horace in his epistle to Vala, exclaims—

"— *Caput ac stomachum supponere fontibus audent*
Clusinis, gabiosque petunt, et frigida rura."
Epist. xv. *Lib.* 1.

This practice, however, was doomed but to an ephemeral popularity, for although it had restored the Emperor to health, it shortly afterwards killed his nephew and son in law, Marcellus; an event which at once deprived the remedy of its credit, and the physician of his popularity.

Thus there exists a fashion in medicine as in the other affairs of life, regulated by the caprice and supported by the authority of a few leading practitioners, which has been frequently the occasion of dismissing from practice valuable medicines, and of substituting others less certain in their effects and more questionable in their nature. As years and fashions revolve, so have these neglected remedies, each in its turn, risen again into favour and notice, whilst old receipts, like old almanacks, are abandoned until the period may arrive, that will once more adapt them to the spirit and fashion of the times; thus it happens that most of our *New Discoveries* in the Materia Medica have turned out to be no more than the revival and adaptation of ancient practices. In the last century, the root of the *Asphidium Filix*, the Male Fern, was retailed as a secret nostrum by Madame Nouffleur, a French empiric, for the cure of tape worm; the secret was purchased for a considerable sum of money by Louis XV. and the physicians then discovered that the same remedy had been administered in that complaint by Galen.*

* Madame Nouffleur's Receipt is as follows.—"Three drachms of the root of the *Male Fern*, reduced to a fine powder, and mixed with

The history of popular medicines for the cure of gout, will also furnish us with ample matter for the illustration of this subject. The celebrated Duke of Portland's Powder was no other than the *Diacentaureon* of Cælius Aurelianus, or the *Antidotos ex duobus Centaureæ generibus* of Ætius,* the receipt for which a friend of his Grace brought from Switzerland; into which country it had been probably introduced by the early medical writers, who had transcribed it from the Greek volumes soon after their arrival into the western parts of Europe. The active ingredient of a no less celebrated remedy for the same disease, the *Eau Medicinale*,‡ has been discovered to be the *Colchicum Autumnale* or Meadow Saffron; upon investigating the properties of this medicine, it was observed that similar effects in the cure of the gout were ascribed to a certain plant, called *Hermadactyllus*‖ by Oribasius and Ætius, but more particularly by Alexander of Tralles, a physician of Asia Minor, in the fourth century; an inquiry was accordingly instituted after this unknown plant, and upon procuring a specimen of it from Constantinople, it was actually found to be a species of *Colchicum*.

The use of Prussic acid in the cure of Pthisis,

water—this constitutes one dose. Two hours after taking the powder, a bolus of Calomel, Scammony, and Gamboge, is to be administered.

* Duke of Portland's Powder for the Gout.—Equal quantities of the roots of *Gentian*, and Birthwort (*Aristolochia Rotunda*), the tops and leaves of Germander (*Chemadrys*), Ground Pine (*Chamæpitys*), and lesser Centaury (*Chironea Centaurium*,) powdered and mixed together. As this is a combination of bitters, it will, without doubt, be serviceable in certain cases of Gout.

‡ This medicine was brought into vogue by M. Husson, a military officer in the service of France, about fifty years ago.

‖ So popular was this plant that it acquired the title of "*Anima Articulorum*. It formed the basis of the *Dia Articulorum*—the *Pulvis Arthriticus Turneri*, and *The Vienna Gout Decoction*.

which has been lately proposed by Dr. Majendie, and introduced into the *Codex Medicamentarius* Paris, is little else than the revival of the Dutch practice in this complaint; for Linnæus informs us, in the fourth volume of his *Amœnitates Academicæ*," that distilled Laurel water was frequently used in Holland for the cure of pulmonary consumption.

The celebrated fever powder of Dr. James was evidently not his original composition, but an Italian nostrum invented by a person of the name of Lisle, a receipt for the preparation of which is to be found at length in *Colborne's Complete English Dispensatory for the year* 1756.

The various secret preparations of Opium, which have been extolled as the inventions of modern times, may be recognized in the works of ancient authors; for instance, Wedelius in his *Opiotogia* describes an acetic solution; and the *Magisterium* of Ludovicus, as noticed by Etmuller, was a preparation made by dissolving Opium in vinegar, and precipitating with Salt of Tartar:* Van Helmont recommends a preparation, similar to the black drop, under the title of *Laudanum Cydoniatum:* then again we have Langelott's Laudanum, and Le Mort's "*Extract out of Rain water*," preparations which owe their mildness to the abstraction of the resinous element of opium.

The works of Glauber contain accounts of many discoveries that have been claimed by the chemists of our own day; he recommends the use of muriatic acid in sea scurvy, and describes an apparatus for its preparation exactly similar to that which has been extolled as the invention of Woolf; he also notices the production of *Pyro-acetic Acid.*

* *Magisterium Opii* fit solvendo Opii in aceto, et præcipitando cum sale tartari.

THE ASSIGNING TO ART THAT WHICH WAS THE EFFECT OF UNASSISTED NATURE, OR THE CONSEQUENCE OF INCIDENTAL CHANGES OF HABIT, DIET, &c.

Our inability upon all occasions to appreciate the efforts of nature in the cure of disease, must always render our notions, with respect to the powers of art, liable to numerous errors and multiplied deceptions. Nothing is more natural, and at the same time more erroneous, than to attribute the cure of a disease to the last medicine that had been employed; the advocates of amulets and charms have even been thus enabled to appeal to the testimony of what they call experience, in justification of their superstitions; and cases which in truth and justice ought to be considered most lucky escapes, have been triumphantly pronounced as skilful cures; and thus have medicines and practitioners alike acquired unmerited praise or unjust censure. Upon Mrs. Stephens offering her remedy for the stone to Parliament,* a committee of professional men was nominated to ascertain its efficacy; a patient with stone was selected, and he took the remedy; his sufferings were soon relieved, and upon examining the bladder in the usual way, no stone could be felt, it was therefore agreed that the patient had been cured, and that the stone had been dissolved; sometime afterwards this patient died, and on being opened, a large stone was found in a pouch, formed by a part of the bladder, and which communicated with it. When the yellow fever raged in America, the practitioners trusted exclusively to the copious use of mercury; at first, this plan was deemed so

* The Grant of £5000 to Joanna Stephens, *for her discovery of certain medicines for the cure of the Stone* is notified in the London Gazette of June, A.D. 1739. See *Liquor Calcis*.

universally efficacious, that in the enthusiasm of the moment, it was triumphantly proclaimed that death never took place after the mercury had evinced its effects upon the system: this was very true, but it furnished no proof of the efficacy of that metal, since the disease, in its aggravated form, was so rapid in its career, that it swept away its victims long before the system could be brought under mercurial influence, while, in its milder shape, it passed off equally well without any assistance from art. Let us then, before we decree the honours of a cure to a favourite medicine, carefully and candidly ascertain the exact circumstances under which it was exhibited, or we shall rapidly accumulate examples of the fallacies to which our art is exposed: what has been more common than to attribute to the efficacy of a mineral water, those fortunate changes of constitution that have entirely or in great measure arisen from salubrity of situation, hilarity of mind, exercise of body, and regularity of habits, which have incidentally accompanied its potation. The ancient physicians duly appreciated the influence of such agents; their temples, like our watering places, were the resort of those whom medicine could not cure, and we are expressly told by Plutarch that these temples, especially that of Esculapius, were erected on elevated spots, with the most congenial aspects; a circumstance which when aided by the invigorating effects of hope, by the diversions which the patient experienced in his journey, and perhaps by the exercise to which he had been unaccustomed, certainly performed many cures. It follows then that in the recommendation of a *watering place*, something more than the composition of the mineral spring is to direct our choice,—the chemist will tell us, that the springs of Hampstead and Islington rival

those of Tunbridge and Malvern, that the waters of Bagnigge Wells, as a chalybeate purgative, might supersede those of Cheltenham and Scarborough, and than an invalid would frequent the spring in the vicinity of the Dog and Duck, in St. George's Fields, with as much advantage, as the celebrated Spa at Leamington; but the physician is well aware that by the adoption of such advice, he would deprive his patient of those most powerful auxiliaries to which I have alluded, and above all, lose the advantages of the "*Medicina Mentis.*" On the other hand, the recommendation of change of air and habits will, never inspire confidence, unless it be associated with some medicinal treatment; a truth which it is more easy and satisfactory to elucidate and enforce by examples than by precept—let the following story by Voltaire serve as an illustration.—"Ogul, a voluptuary who could be managed but with difficulty by his physician, on finding himself extremely ill from indolence and intemperance, requested advice:—'Eat a Basilisk, stewed in rose water,' replied the physician. In vain did the slaves search for a *Basilisk*, until they met with Zadig, who, approaching Ogul, exclaimed, 'Behold that which thou desirest;' 'but, my Lord,' continued he, 'it is not to be eaten; all its virtues must enter through thy pores, I have therefore enclosed it in a little ball, blown up, and covered with a fine skin; thou must strike this ball with all thy might, and I must strike it back again, for a considerable time, and by observing this regimen, and taking no other drink than rose water for a few days, thou wilt see, and acknowledge the effect of my art.' The first day Ogul was out of breath, and thought he should have died from fatigue; the second he was less fa-

tigued, and slept better: in eight days he recovered all his strength; Zadig then said to him 'There is no such thing in nature as a Basilisk! but *thou hast taken exercise and been temperate, and hast therefore recovered thy health!*'

AMBIGUITY OF NOMENCLATURE.

It has been already stated that we are to a great degree ignorant of the Simples used by the ancient Physicians; we are often quite unable to determine what the plants are of which Dioscorides treats. It does not appear that out of the 700 plants of which his Materia Medica consists, that more than 400 are correctly ascertained; and yet no labour has been spared to clear the subject of its difficulties; Cullen even laments that so much pains should have been bestowed upon so barren an occasion.* The early history of botany presents us with such a chaos of nomenclature, that it must have been impossible for the herbarist and physician to have communicated their mutual lights; every one was occupied with disputes

* Soon after the invention of the art of Printing, the works of Dioscorides, Theophrastus, and Pliny, were published in various forms, and Commentators swarmed like locusts. The eagerness with which this branch of knowledge was cultivated may be conceived, when it is stated that the Commentary of Matthiolus on Dioscorides, which was first printed in 1554, passed through seventeen editions, and that 32,000 copies had been sold before the year 1561; and he tells us in this work, that he received in its execution the assistance and reward of Emperors, —Kings, —Electors of the Roman Empire,—Arch-dukes,—Cardinals,—Bishops, Dukes, and Princes, 'which,' says he, 'gives greater credit to our labours than any thing that could be said.' In very many cases, however, says Dr. Pultney, 'this learned Commentator mistook the road to truth, and did but perplex the science he so industriously laboured to enlighten.'

upon words and names, and every useful inquiry was suspended, from an inability to decide what plant each author intended; thus, for instance, the *Herba Britannica* of Dioscorides and Pliny, so celebrated for the cure of the soldiers of Julius Cæsar on the Rhine of a disease called '*Scelotyrbe*,' and supposed to resemble our sea scurvy, remains quite unknown, notwithstanding the labours of our most intelligent commentators.* It seems also very doubtful whether the plant which we denominate *Hemlock* was the poison usually administered at the Athenian executions,† and which deprived Socrates and Phocion of life. Pliny informs us that the word *Cicuta*, amongst the ancients, was not indicative of any particular species of plant, but of vegetable poisons in general; this is a circumstance to which I am particularly anxious to fix your attention; it is by no means uncommon to find a word which is used to express general characters, subsequently become the name of a specific substance in which such characters are predominant; and we shall find that some important anomalies in nomenclature may be thus explained. The term 'Αρσενικον,' from which the word *Arsenic* is derived, was an ancient epithet, applied to those natural substances which possessed strong and acrimonious properties,

* Turner, the Father of English Botany, was of opinion, that it was the *Polygonum Bistorta*; Munting, a Dutch physician, that it was the *Hydrolapathum Magnum*, or *Rumex Aquaticus* or Great Water-Dock, an opinion which received the sanction of Ray. Others have supposed it to have been *Polygonum Persicaria*, and some have considered it as the *Primula Auriculà*. This one example is adduced to shew the mortifying uncertainty that involves the history of ancient plants.

† Meade thinks that the Athenian poison was *a combination of active Substances*,—perhaps that described by Theophrastus as the invention of Thrasyas, which, it was said, would cause death without pain, and into which *Cicuta* and *Poppy* entered as ingredients.

and as the poisonous quality of arsenic was found to be remarkably powerful, the term was especially applied to Orpiment, the form in which this metal more usually occurred. So the term *Verbena* (quasi *Herbena*) originally denoted *all those* herbs that were held sacred on account of their being employed in the rites of sacrifice, as we learn from the poets; * but as *one* herb was usually adopted upon these occasions, the word *Verbena* came to denote that particular herb *only*, and it is transmitted to us to this day under the same title, viz. *Verbena*, or *Vervain*, and indeed until lately it enjoyed the medical reputation which its sacred origin conferred upon it, for it was worn suspended around the neck as an amulet. *Vitriol*, in the original application of the word, denoted *any* crystalline body with a certain degree of transparency (*Vitrum*); it is hardly necessary to observe that the term is now appropriated to a particular species: in the same manner, *Bark*, which is a general term, is applied to express *one* genus, and by way of eminence, it has the article, *The*, prefixed, as *The* Bark: the same observation will apply to the word *Opium*, which in its primitive sense signifies *any* juice (οπος *Succus*) while it now only denotes *one* species, viz. that of the Poppy. So again, *Elaterium* was used by Hippocrates, to signify various internal applications, especially purgatives, of a violent and drastic nature (from the word 'Ελαυνω,' *agito, moveo, stimulo*), but by succeeding authors it was *exclusively* applied

* "*Verbenasque adole pingues, et Mascula Thura.*" Virg. Eclog. viii.
"*Ex Ara hac sume Verbenas tibi.*" Terent. Andria.
"*ara castis*
vincta Verbenis."——Hor. Od. xi. Lib. iv.

It is a curious fact that in Tuscany the word *Vervena* is applied to denote *any* kind of slips, shoots, suckers or bundles of plants, at this very day.

to denote the active matter which subsides from the juice of the *wild cucumber*. The word *Fecula*, again, originally meant to imply *any* substance which was derived by spontaneous subsidence from a liquid, (from *fæx*, the grounds or settlement of *any* liquor); afterwards it was applied to *Starch*, which is deposited in this manner by agitating the flour of wheat in water; and lastly, it has been applied to a peculiar vegetable principle, which like *starch** is insoluble in cold, but completely soluble in boiling water, with which it forms a gelatinous solution; this indefinite meaning of the word *fecula* has created numerous mistakes in pharmaceutic chemistry; Elaterium, for instance, is said to be a *fecula*, and in the original sense of the word it is properly so called, inasmuch as it is procured from a vegetable juice by spontaneous subsidence, but in the limited and modern acceptation of the term, it conveys an erroneous idea; for instead of the active principle of the juice residing in *fecula*, it is a peculiar proximate principle, *sui generis*, to which I have ventured to bestow the name of *Elatin*. For the same reason, much doubt and obscurity involve the meaning of the word *Extract*, because it is applied *generally* to any substance obtained by the evaporation of a vegetable solution, and *specifically* to a peculiar proximate principle, possessed of certain characters, by which it is distinguished from every other elementary body. See *Extracta*.

Another source of Botanical ambiguity and error is the circumstance of certain plants having acquired the names of others very different in their nature,

* Amlyum, the *Starch* of wheat, originally denoted a powder that was obtained without the application of a mill, from α, not, and μυλος, a mill; thus Dioscorides "Αμυλον ὠνόμασται διὰ τὸ χωρὶς μυλου καταασκευαζεσθαι—i. e. *because it is prepared without a mill.*

but which are supposed to possess a similarity in external character; thus our POTATOE,* (*Solanum Tuberosum*) when it was first imported into England by the Colonists in the reign of Queen Elizabeth, gained its appellation from its supposed resemblance to an esculent vegetable at that time in common use, under the name of the Sweet Potatoe (*Convolvulus Battatas,*) and which like *Eringo root*, had the reputation of being able to restore decayed vigour, thus Falstaff—

"*Let the sky rain Potatoes;—hail kissing Comfits, and snow Eringoes.*"

Merry Wives of Windsor, Act. 5. *Scene* 5.

A similar instance is presented to us in the culinary vegetable well known under the name of the JERUSALEM ARTICHOKE, which derived its appellation in consequence of its flavour having been considered like that of the common artichoke; it is hardly necessary to observe that it has no botanic relation whatever to such a plant, it being an Heliotrope (*Heliotropium Tuberosum*), the epithet *Jerusalem* is a curious corruption of the Italian term *Gira-Sole*, that is, *turn-sun*, in English, or *Helio-trope* in Greek. This instance of verbal corruption is not solitary in medical botany; CASTOR OIL will suggest itself as another example; this oil, from its supposed efficacy in curing and assuaging the unnatural heat of the body, and in soothing the passions, was called by the French *Agnus Castus*, whence the inhabitants of St. Kitt's in the West Indies, who were formerly blended

* Gerard, in his Herbal (1597) denominates it, by way of distinction, Potatoe of *Virginia*, and he recommends it to be eaten as a *delicate* dish, not as common food; indeed it was some time after its introduction before it became general, and it was cultivated as an article of diet in Ireland for several years before it was common in England.

with the French in that Island, called it *Castor* oil. In some cases again, a plant has received a modern name, compounded of two ancient ones; it appears from Pliny that the *Assarum* was not uncommonly confounded with the *Baccharis*, an English name was accordingly bestowed upon it, which is a curious compromise of the question, for it is a compound of both, viz. *Assara-bacca*.

The advanced state of BOTANICAL SCIENCE will now prevent the recurrence of those doubts and difficulties which have formerly embarrassed the history of vegetable remedies, by furnishing a strictly philosophical language, independent of all theory, and founded upon natural structure, and therefore necessarily beyond the control of opinion: while the advancement of chemical knowledge, by enabling us better to distinguish and identify the different substances we employ, will also materially assist in preventing the confusion which has formerly oppressed us. At the same time, I am unwilling to join in the commendations which have been so liberally bestowed upon our chemical nomenclature; nay, I am disposed to consider it as a matter of regret that the names of our medicinal compounds should have any relation to their chemical composition, for in the present unsettled state of this science, such a language must necessarily convey theory instead of truth, and opinions rather than facts; in short, it places us at the mercy and disposal of every new hypothesis, which may lay our boasted fabric in ruins, and in its place raise another superstructure, equally frail in its materials and ephemeral in its duration: thus CORROSIVE SUBLIMATE was a *muriate* of Mercury, or an *oxy-muriate*, until Sir H. Davy established his new theory of chlorine, and then it became a *bi-chloride*; at some future

period, Chlorine will be found to be a compound, and then it must have another name; for the same reason the term CALOMEL,* is surely to be preferred to *sub-muriate*, or *Chloride*. TARTARIZED ANTIMONY, again, has been called by our nomenclatural reformers the *Tartrate of Antimony and Potass;* but is it a triple compound? Gay Lussac thinks not, and considers it as a combination, in which *cream of tartar* acts the part of a simple acid. The French in their new *codex*, are still more extravagant in their application of chemical nomenclature; thus, the sub-carbonate of potass is called by them *sub-deuto-carbonas potassii*. The first part of this quadruple name indicates the comparative quantity of acid in the salt, the second that of oxygen contained in the base, the third announces the acid, and the fourth the basis of the base.

THE PROGRESS OF BOTANICAL SCIENCE.

It has been just stated that we have derived from botanical science a philosophical language which enables us to describe the structure and habits of any plant with a luminous brevity and an unerring perspicuity; but we are moreover indebted to botany for another service no less important to the successful investigation of the materia medica,—that of throwing into well defined groups, those plants which possess

* Calomel.—There is some doubt respecting the original meaning of this word, literally it signifies, *fair*, *black*, καλος. μελας. Sir Theodore Mayerne is said to have given the name to it, in consequence of his having had a favorite black servant who prepared it, but is it not more probable that its name was derived from the change of colour which it undergoes, from *black* to *white*, during its preparation? Another explanation has been also given, viz. quòd *nigro* humori sit *bonum*—a *good* (καλος) remedy for *black* (μελας) bile.

obvious natural affinities, and which will be found at the same time to present certain medicinal analogies; indeed, as a general rule, we may admit the axiom, "*Quæ genere conveniunt, virtute conveniunt.*" *

The *Umbelliferæ* which grow on dry ground are aromatic, whilst the acquatic species are among the most deadly of poisons. The *Cruciform* plants are aromatic and acrid in their nature, containing essential oils, (hence the peculiar smell of cabbage water, &c.) which are obtainable by distillation; and Linnæus asserts that "among all the *Leguminous* or *Papilionaceous* tribe there is no deleterious plant to be found:" this however is not exactly true. Some of the individuals in these natural orders, although very nearly related, do nevertheless possess various, and even opposite qualities; in the leguminous tribe above mentioned, which is as consistent as any one we possess, we have the *Cytisus Laburnum*, the seeds of which are violently emetic, and those of *Lathyrus Sativus*, which have been supposed at Florence to soften the bones and cause death.

In the subdivision even of a genus there is often a

* Dr. Blair thinks that the ancients were led in many instances by the comparison of habit, to ascribe similar virtues to plants; there does not however appear to be a trace of what may be called System, in the writings of Theophrastus, Dioscorides, or Pliny. Cæsalpinus was the father of botanical system, and he was probably the first who suggested the idea that the virtues of plants were discoverable by their structure and alliance to each other. In his Preface to his work "*De Plantis*," he says "*Quæ enim generis societate junguntur, plerumque et similes possident facultates.*" This idea was pursued by Petiver, an apothecary in the City of London, a name well known in the annals of Botany; there is a paper by him on this subject, in the 21st volume of the Philosophical Transactions, entitled, "*Some attempts to prove that herbs of the same make and class, for the generality have the like Vertue, and Tendency, o work the same Effects.*" Dr. Murray has adopted an arrangement founded upon natural character in his celebrated work entitled, "*Apparatus Medicaminum.*"

remarkable difference in the properties of the species; there are for instance, *Solanums*, *Lettuces*, *Cucumbers*, and *Mushrooms*, both esculent and poisonous. The *Digitalis* or *Foxglove*, and the *Verbascum*, or common *Mullein* of our fields, are included in the same Natural family, and yet the one is as active as the other is mild in its effects; the plants of the natural family of *Contortæ* abound with a highly acrid milky juice, but Dr. Afzelius met with a shrub of this order at Sierra Leone, the milk of whose fruit was so sweet, as well as copious, as to be used instead of cream for tea; this is certainly what no one could have guessed from analogy. The same individual will vary from culture or other circumstances, as much as any two plants which have no botanic affinity; the Chamomile, *Anthemis Nobilis*, with which we are all acquainted, by cultivation may have its whole disk changed to ligulate white florets, destitute of medicinal properties. But what is more embarrassing, the different parts of the same plant have often very different powers; a fact which is beautifully exemplified in the *Podophyllum Peltatum*, or May Apple, the *leaves* of which are poisonous, the *root* powerfully cathartic, and the *fruit* agreeably esculent: yet notwithstanding all these difficulties, botany is capable of furnishing us with analogies which will lead to important conclusions with respect to the medicinal properties of different vegetables.

The system of Linnæus, although in a great degree artificial, corresponds in a surprising manner with the natural properties of plants; thus a plant whose *calyx* is a double valved *glume*, with three *stamina*, two *pistils*, and one *naked seed*, bears seeds of a farinaceous and nutritious quality; a flower with twelve, or more *stamina*, all of which are inserted in the internal side

of the *calyx*, will furnish a wholesome fruit; whereas a plant whose flower has five *stamina*, one *pistil*, one *petal*, and whose fruit is of the *berry* kind, may at once be pronounced as poisonous.

It is also in a great degree true that the sensible qualities of plants, such as *colour*, *taste*, and *smell*, have an intimate relation to their properties, and may often lead by analogy to an indication of their powers; we have an example of this in the dark and gloomy aspect of the *Luridæ*, which is indicative of their narcotic and very dangerous qualities, as *Datura*, *Hyoscyamus*, *Atropa*, and *Nicotiana*. *Colour* is certainly, in many cases a test of activity; the deepest coloured flowers of the *Digitalis*, for example, are the most active, and when the leaves of powerful plants lose their green hue, we may conclude that a corresponding deterioration has taken place with respect to their virtues, but Linnæus ascribed too much importance to such an indication, and his aphorisms are unsupported by facts; for instance, he says "Color pallidus *insipidum*, viridis *crudum*, luteus *amarum*, ruber *acidum*, albus *dulce*, niger *ingratum* indicat." * A peculiar heavy odour, which is well known, but is with difficulty defined, is a sure indication of narcotic properties. Bitterness, when not extreme, denotes a tonic quality, which will stimulate the stomach and intestines, and promote the proccess of digestion. When the bitterness is more intense and pungent, ‡ as in *Aloes*, *Colocynth*, &c. we may infer that such

* The student will find an interesting dissertation upon this subject in a late work, entitled "*Histoire Naturelle des Medicamens.*" Par J. J. Virey. 1820.

‡ Lord Bacon attributes the operation of purgatives to three causes, viz. 1, to *extreme bitterness*, as in Aloes, 2, to *loathsomeness and horrible taste*, as in Agaric and black Hellebore, and 3, to *a secret malignity*, as in antimony, &c.

substances will produce a more active effect upon the *primæ viæ*, and that catharsis will ensue.

Botanical, like human physiognomy, may frequently afford an insight into character, but it is very often a fallacious index. With regard to the indications of *Smell* and *Taste*, it may be observed that in the examination of an unknown substance we instinctively apply to these senses for information respecting its properties. It is certainly reasonable to suppose, that those bodies which produce upon the organs of taste a sensible, astringent, or pungent effect, may occasion an impression, corresponding in degree upon the stomach or intestines, which are but an extension of the same structure. But what numerous exceptions are there to such a law? nay, some of the most poisonous substances affect in a very slight degree the organs of taste, especially those that belong to the mineral kingdom, as *Arsenious Acid*, *Oxyd of Antimony*, *Calomel*, *&c.*; yet some of these are in fact but apparent exceptions, depending upon the degree of solubility which they possess, in consequence of which their energies are not developed until they have traversed a considerable portion of mucous surface. Nor ought it to be forgotten, that cultivation and artificial habits may have blunted the natural susceptibility of our organs, and in some instances changed and depraved their functions: certain qualities for instance are so strongly connected with each other by the chain of association, that by presenting only one to the mind, the other links follow in succession.*

* This might be illustrated by the recital of numerous fallacies to which our most simple perceptions are exposed from the powers of association, but I will relate an anecdote, which to my mind elucidates the nature and extent of such fallacies more strikingly than any example

THE APPLICATION AND MISAPPLICATION OF CHEMICAL SCIENCE.

Amongst the researches of different authors, who, animated with a sacred zeal for ancient learning, have endeavoured to establish the antiquity of chemical science, we find many conclusions deduced from an ingenious interpretation of the mythological fables which are supposed to have been transmitted by the Egyptians, who previous to the invention of letters, adopted this method of perpetuating their discoveries in natural philosophy. Thus, wherever Homer studiously describes the stolen embraces of Mars and Venus, they recognise some chemical secret, some combination of iron with copper, shadowed in the glowing ornaments of fiction. Lord Bacon* conceived that the union of spirit and matter was allegorised in the fable of Proserpine being seized by Pluto as she was gathering flowers; an allusion, says Dr. Darwin, which is rendered more curiously exact by the late discovery, that pure air, *(oxygen)* is given out by

which could be adduced. Shortly after Sir Humphry Davy had succeeded in decomposing the fixed alkalies, a portion of *Potassium* was placed in the hand of one of our most distinguished chemists, with a query as to its nature? the philosopher observing its aspect and splendour, did not hesitate in pronouncing it to be metallic, and uniting at once the idea of weight with that of metal, the evidence of his senses was even insufficient to dissever ideas so inseparably associated in his mind, and, balancing the specimen on his fingers, he exclaimed, "it is certainly metallic, and *very ponderous*!" Now this anecdote is not related in disparagement to the philosopher in question. Who could have been prepared to meet with a substance, so novel and anomalous as to overturn every preconceived notion?—A METAL SO LIGHT AS TO SWIM UPON WATER, AND SO INFLAMMABLE AS TO CATCH FIRE BY THE CONTACT OF ICE!

* Bacon's works, vol. v. p. 470. Editio, 4to. London, 1778.

vegetables, and that in this state it is greedily absorbed by inflammable bodies. The same ingenious Poet supposes that the fable of Jupiter and Juno, by whose union the vernal showers were said to be produced, was meant to pourtray the production of water by the combination of its two elements, an opinion which, says he, is strongly supported by the fact that, in the ancient mythology, the purer air or *æther*, was always represented by Jupiter, and the inferior by Juno. Were the elegant author of the Botanic Garden now living, he would no doubt, with a taste and delicacy peculiarly his own, avail himself of the singular discovery of Mr. Smithson, who has detected in the juice of the mulberry *two* distinct species of colouring matter;—the mingled blood of the unfortunate Pyramus and Thisbe:

> "Signa tene cædis: pullosque et luctibus aptos
> Semper habe fætus, *gemina* monumenta cruoris."
>
> *Ovid. Metamorph. Lib.* iv. 160.

Sir William Drummond, the learned apologist of Egyptian science, conceives that the laws of *latent* heat were even known to the philosophers of that ancient nation, and that caloric in such a state, was symbolically represented by VULCAN, while *free* or *sensible* caloric was as clearly described in the character of VESTA.

But with whatever ingenuity and success the antiquity of chemical knowledge may be advocated, as it relates to the various arts of life, yet it must be allowed that not the most remote trace of its application to physic can be discovered in the medical writers of Greece or Rome. The operation of distillation*

* Dioscorides and Pliny describe a process, which may be considered that of distillation in its infancy, it consists in obtaining oil from pitch, by spreading over it while boiling, fleeces of wool, which receive the vapour and afterwards yield it by expression.

is not even mentioned by Hippocrates or Galen; and the waters of different plants, as described by some later authors, are to be understood, as we are informed by Gesner, merely as simple decoctions, and not as the products of any chemical process; while the essences of Dioscorides, Galen, Oribasius, and others, were only the extracts produced by the evaporation of such infusions.

Upon the downfall of the Roman Empire, all the sciences, the arts, and literature, were overwhelmed in the general wreck, and the early Mahometans, in the first paroxysms of their fanaticism, endeavoured to destroy every record of the former progress of the human mind; consigning to destruction, by the conflagration of the Alexandrian library, no less than seven hundred thousand volumes, which comprised the most valuable works of science and literature.* It is not a little extraordinary that this same people were destined at a more advanced period, to rekindle the light of letters,‖ which they had taken such pains to extinguish, and to become the inventors and cultivators of a new science, boundless in its views and inexhaustible in its applications. The medical profession too was more particularly selected as an object of reward and encouragement; and we may say, with much truth, that our *Materia Medica* is more indebted to the zeal and industry of the Arabians, than to the learning of the Greeks, or to the refinement of the Romans. From this source we have acquired the milder purges of *Manna*, *Cassia*, *Senna* and *Rhubarb*,

* It was destroyed in the sixth century, by the CALIPH OMAR, the cotemporary and companion of Mahomet.

‖ The Saracens, in their treaty with the Greek Emperors, demanded, by express articles, the works of the ancients.

and many plants and oriental aromatics, amongst which we may notice *Musk*, *Nutmeg*, *Mace*, and *Cloves*; the introduction of which into medicine, was greatly facilitated by the situation of Bagdat, and its connection with India; and although Archigenes and Aretæus had long before applied *Blisters*, yet it is to the Arabian physicians that we are indebted for a practical acquaintance with their value, for in general, the Greeks and Romans prescribed acrid *Sinapisms* for such a purpose. We are also indebted to the Arabians for our knowledge respecting Camphor, as its name imports, for the original word was *Cafur*, or *Canfur*.* They are also the first upon record, who speak of sugar, and sugar candy, extracted from the sugar cane, which they call *honey of cane*; and they ushered into practice *Syrups*, *Juleps*, and *Conserves*. At the same time it is but just to allow that from the disgusting ostentation of this people, and their strong attachment to the marvellous, many absurd medicines have been introduced. Gold, Silver, Bezoars, and precious stones were received into their materia medica, and surprising virtues were attributed to them. Amongst a people thus disposed to magnificence, and from the very spirit of their religion credulous and romantic, it is not a matter of surprise that their first researches into the nature of bodies, should have raised a hope, and excited a belief, that the baser metals might be converted into gold.‡

* Garcias as well as Geoffroy and Hill say that Ætius mentions camphor, but it cannot be found, as Dr. Alston has observed, in that, or in any other Greek author. There is a *Camphoræ herba* in Myrepsus; this is evidently a very different thing.

‡ Those who advocate the antiquity of chemistry, conceive that the alchemical secret is metaphorically concealed in the fable of the GOLDEN FLEECE of the Argonauts, rejecting the more probable solution of this

They conceived that gold was the metallic element, in a state of perfect purity, and that all the other metals differed from it in proportion only to the extent of their individual contamination, and hence the origin of the epithet *base*, as applied to such metals; this hypothesis explains the origin of alchemy: but, in every history, we are informed that the earlier alchemists expected by the same means that they hoped to convert the *baser* metals into gold, to produce a universal remedy, calculated to prolong indefinitely the span of human existence.

It is difficult to imagine what connection could exist in their ideas between the "*Philosopher's stone*," which was to transmute metals, and a remedy which could arrest the progress of bodily infirmity: upon searching into the writings of these times, it clearly appears that this conceit originated with the alchemists from the application of false analogies, and that the error was subsequently diffused and exaggerated by a misconstruction of alchemical metaphors.

An example of reasoning by false analogy is presented to us by Paracelsus, in his work *de vita longa*, wherein, speaking of antimony, he exclaims, "*Sicut antimonium finit aurum, sic, eadem ratione et forma, corpus humanum purum reddit.*"

The processes of alchemy were always veiled in the most enigmatic and obscure language; the earliest alchemist whose name has reached posterity, is Geber, an Arabian prince of the seventh century, whose lan-

story of Strabo, who says that the Iberians, near neighbours of the Colchians, used to receive the gold, brought down from the high lands by the torrents, into sieves and sheep skins, and that from thence arose the fable of the Golden Fleece. Dionysius, of Mytelene, offers a different explanation of the fable, and supposes it to allude to a book *written on skins*, and containing an account of the process of *making Gold*, according to the art of alchemy.

guage was so proverbially obscure, that Dr. Johnson supposes the word gibberish or *geberish* to have been derived from this circumstance; sometimes the processes of alchemy were expressed by a figurative and metaphorical style of description, thus Geber exclaims, "*Bring me the six lepers that I may cleanse them;*" by which he implied the conversion of the six metals,* the only ones then known, into gold. From the works of later alchemists it also appears that they constantly represented *gold* as a sound, healthy, and durable man, the imperfect metals as diseased men, and the means or processes by which the latter were to be transmuted into the former, they designated by the name of *medicines;* and hence, those who were anxious to dive into the secrets of these magicians or Adepts, as they termed themselves, without possessing a key to their language, supposed that these descriptions were to be understood in a literal sense, and that the imperfect metals might be changed into gold, and the bodies of sick persons into healthy ones, by one and the same chemical preparation.

This hieroglyphical style of writing adopted by the earlier alchemists, was in a great degree supported by the prevailing idea that the elements were under the dominion of spiritual beings, who might be submitted to human power; and Sir Humphry Davy has observed that the notions of fairies, and of genii, which have been depicted with so much vividness of fancy and liveliness of description in THE THOUSAND AND ONE NIGHTS, seem to have been connected with the pursuit of the science of transmutation, and the production of the elixir of life. That the Arabian Nights' Entertainment admits of a mystic interpre-

* Silver, Mercury, Copper, Iron, Tin, Lead.

tation, is an opinion which I have long entertained. How strikingly is the effect of fermented spirit, in banishing the pressure of the melancholy which occurs in solitude, depicted in the story of Sinbad when he encountered the withered and decrepid hag, on the uninhabited island—but, to return from this digression to the subject of medical chemistry.

It was not in fact until several years had elapsed in the delusive researches of alchemy, that the application of chemical knowledge became instrumental in the advancement of the medical art. RHASES and AVICENNA, who were the celebrated physicians of the age, are the first who introduced pharmaceutical preparations into their works, or made any improvement in the mode of conducting pharmaceutical processes. Avicenna describes, particularly, the method of conducting *Distillation;* he mentions also, for the first time, the three *Mineral Acids*, and distinguishes between the *vegetable* and *mineral Alkalies;* he speaks likewise of the *Distilled Water of Roses*, of *Sublimed Arsenic*, and of *Corrosive Sublimate.*

In the year 1226, ROGER BACON, a native of Ilchester in Somersetshire, and a Franciscan monk of Westminster Abbey, laid the foundations of chemical science in Europe; his discoveries were so extraordinary that he was excommunicated by the Pope, and imprisoned ten years for supposed dealings with the devil; it appears that he was a believer in a universal Elixir, for he proposed one to Pope Clement the Tenth, which he extolled highly, as the invention of Petro de Maharncourt.

This wonderful man was succeeded at the end of the same century by Arnoldus de Villa Nova, a Frenchman, or as others assert, a Spaniard, who deserves to be noticed on this occasion, as being the first to recommend the distilled spirit of wine, im-

pregnated with certain herbs, as a valuable remedy; from which we may date the introduction of *Tinctures* into medical practice; for, although Thaddæus, a Florentine, who died in 1270, at the age of eighty, bestows great commendation upon the virtues of *Spirit of Wine*, yet he never used it as a solvent for active vegetable matter.

It was not however until the end of the thirteenth century, that Chemistry can be said to have added any considerable power to the arm of Physic.

Basil Valentine, a German Benedictine monk, led the way to the internal administration of metallic medicine, by a variety of experiments on the nature of *Antimony*, and in his "*Currus Triumphalis Antimonii*," a work written in high Dutch, he has described a number of the combinations of that metal. If however we may credit a vague tradition, he was extremely unfortunate in his first experiments upon his brother monks, all of whom he injured if not killed; those who have keen ears for etomological sounds will instantly recognise, in this circumstance, the origin of the word *Antimony*, ἀντί Μονοχος.

It appears that the ancients were ignorant of the internal use and administration of the metals, with the exception of iron, although they frequently used them in external applications Oribasius and Ætius added "*Lithargyrium*" to several plaisters, and the composition of the "*Snow-like plaister*," from *Minium*, was long preserved amongst their more valuable secrets. Whether antimony is the *Stimmi* or *Stibium* of the ancients has been a matter of conjecture; for Pliny, in speaking of its preparation observes, "Ante omnia urendi modus necessarius, ne *Plumbum* fiat." This plumbum however was evidently the revived metal of *Antimony*, with which the ancients

were unacquainted, and therefore mistook it for *Lead;* besides, the word *Plumbum*, like many others which I have before mentioned, was used as a general term, thus, according to Pliny, Tin was called *Plumbum album*.

The question however is unimportant, for this *Stibium* was never used but as an external Astringent, especially for the purpose of contracting the eye-lids, and thereby of making the eyes appear very large, which has been considered from the most remote antiquity, as a feature of great beauty; thus the epithet βοωπὶς is constantly applied by Homer to Juno. This practice appears also to have been followed by the Jews, for Jezebel is said to have painted her eyebrows to make the eyes appear big;* the expression also shews that the drug employed was the *Stimmi*. Ἐστίμμισαν τοὺς ὀφθαλμοὺς αὐτῆς.

To Basil Valentine we are moreover indebted for the discovery of the *Volatile Alkali*, and of its preparation from *Sal Ammoniac;* he also first used mineral acids as solvents, and noticed the production of *Ether* from Alcohol; he seems also to have understood the virtues of *sulphate of iron*, for he says, when internally administered, it is tonic and comforting to a weak stomach, and that externally applied, it is astringent and styptic: he moreover recommended a *fixed alkali*, made from vine twigs cut in the beginning of March, for the cure of gout and gravel.

In the year 1493, was born near Zurich in Switzerland, Paracelsus, or as he termed himself, Philippus, Theophrastus, Bombastus, Paracelsus de Hohenheim, a man who was destined to produce a greater revolution in the Materia Medica, and a greater change in

* ii Kings, chap. ix. verse 30.

medical opinions and practice, than any person who had appeared since the days of Galen. He travelled all over the Continent of Europe to obtain knowledge in chemistry and physic, and was a great admirer of Basil Valentine, declaring that Antimony was not to be equalled for medicinal virtue, by any other substance in nature: this opinion however does not deserve our respect, for it was not founded upon observation and experiment, but on a fanciful analogy, derived from a property which this metal possesses of refining gold, as I have before related. He also used *Mercury* without reserve, and appears to have been the first who ventured to administer it internally,* for although Avicenna asserts that it was not so poisonous as the ancients had imagined, yet he does not attribute to it any virtues; he merely says, "Argentum quidem vivum, plurimi qui bibunt, *non læduntur* eo." Its effects, when applied externally, were well known to Theodoric the friar, in the twelfth century, who describes the salivation which mercurial frictions will produce.

Paracelsus, thus armed with opium, mercury, and antimony, remedies of no trifling importance, travelled in all directions and performed many extraordinary cures, amongst whom was the famous printer Frobenius of Basil, a circumstance which immediately brought him acquainted with Erasmus and made him known to the magistracy of Basil, who elected him professor of chemistry in the year 1527, which was the first professorship that was established in Europe for the promotion and dissemination of chemical science.

* It has been already stated, that we are indebted to an Indian for the discovery of Bark, and it now appears we derived our knowledge of Mercury to the wildest of the alchemists. We are therefore indebted to a *savage*, and a *madman*, for two of our most powerful remedies.

While seated in his chair, he burnt with great solemnity the writings of Galen and Avicenna, and declared to his audience that if God would not impart the secrets of physic, it was not only allowable but even justifiable to consult the devil. His cotemporary physicians he treated with the most sottish vanity and illiberal insolence; in the preface to his work entitled "Paragranum," he tells them "that the very down of his bald pate had more knowledge than all their writers, the buckles of his shoes more learning than Galen and Avicenna, and his beard more experience than all their Universities." With such a temper it could not be supposed that he would long retain his chair, in fact he quitted it in consequence of a quarrel with the magistrates, after which he continued to ramble about the country, generally intoxicated, and seldom changing his clothes, or even going to bed; and although he boasted of possessing a *Panacea* which was capable of curing all diseases in an instant, and even of prolonging life to an indefinite length, yet this drunkard and prince of empirics died after a few hours illness, in the forty-eighth year of his age, at Salzburg in Bavaria, with a bottle of his immortal *Catholicon* in his pocket.

In contemplating the career of this extraordinary man, it is difficult to say whether disgust or astonishment is the most predominant feeling; his insolence and unparalled conceit, his insincerity and brutal singularities, and his habits of immorality and debauchery, are beyond all censure; whilst the important services he has rendered mankind, by opposing the bigotry of the schools and introducing powerful remedies into practice, cannot be recorded without feelings of gratitude and respect: but in whatever estimation Paracelsus may be held, there

can be no doubt but that his fame produced a very considerable influence on the character of the age, by exciting the envy of some, the emulation of others, and the industry of all.*

About a century after Paracelsus, VAN HELMONT took the lead in physic; he was a man of most indefatigable industry, and spent fifty years in torturing by every chemical experiment he could devise, the various objects in the animal, vegetable, and mineral kingdoms. He was the first physician who applied *alum* in uterine hemorhage, and he acquired great reputation from the success of the practice.

SYLVIUS DE LA BOE, and OTHO TACHENIUS, followed in the track of Van Helmont.

A prejudice in favour of chemical remedies having been thus introduced, the merited success which attended their operation, and the zeal and perseverance which distinguished the votaries of that science, soon kindled a more general enthusiasm in its favour. It is impossible to reduce into minature the historical features of these chemical times, so as to bring them within the compass of a lecture; I must therefore rest satisfied with delineating a few of the more prominent outlines. The Galenists, who were in possession of the schools, and whose reasonings were fettered by the strongest predilection for their own doctrines, instantly took the alarm; and the celebrated contest ensued between the *Galenical* and *Che-*

* Paracelsus maintained that the human body is composed of salt, sulphur and mercury, and that in these "*three first substances*," as he calls them, health and disease consist: that the mercury, in proportion to its volatility, produces tremors, mortifications in the ligaments, madness, phrensy and delirium, and that fevers, phlegmons, and the jaundice are the offspring of the *sulphureous* principle, while he supposed that the cholic, stone, gravel, gout, and sciatica derive their origin from *salt*.

mical sects, which has given such a controversial tone to the writers of the fifteenth and sixteenth centuries. As this revolt from orthodox authority was in a great degree attributed to the mischievous introduction and unmerited success of Antimonial remedies, so were the preparations of this metal denounced with all the virulence of party spirit; and upon this occasion, in order to support their ground and oppress and persecute their adversaries, the Galenists actually solicited the assistance of secular power; the Supreme Council of Paris accordingly proscribed its use by an edict in 1566, and Besnier was expelled the faculty of medicine in 1609, for having administered it to a patient. In 1637, *Antimonial wine* was by public authority received into the number of purgatives; and in 1650, a new *arret* rescinded that of 1566, and again restored Antimony to public favour and general reputation. Before this period the invention of *Calomel* had taken place; this preparation is first mentioned although very obscurely by Oswald Crollius, in his *Basilica Chemical* in 1608, and in the same year Beguin described it most fully and clearly under the title of *Draco Mitigatus*, in his *Tirocinium Chemicum*, which he published in Paris.

Chemistry at this period* took possession of the schools, and whilst it was gradually grafted into the theory of medicine, it soon became the only guide to its practice, the absurdity of which has been already dwelt upon.

In tracing the march of chemical improvement during the last century, we cannot but be struck with

* In the year 1644 Schroeder published a *Chemico*-medical Pharmacopœia, which delineates with accuracy the pharmacy of these times, and enumerates almost all the chemical medicines that were known towards the close of this period.

the new and powerful remedies which it has introduced, and the many unimportant and feeble articles which it has dismissed from medical practice.

In the present century, the rapid progress of Chemistry has outstripped the anticipations of its most sanguine votaries; and even in the department of vegetable analysis, a correctness has been attained, the very attempt at which had been abandoned by the most illustrious chemists of the former age as hopeless and chimerical: let us for instance only compare the results obtained by the Academicians of Paris, and published by Geoffroy, in their analyses of several hundred plants by the operation of heat, with the elegant and satisfactory researches in this branch of science lately conducted in the same country; whilst the former failed in establishing any distinction between the most inert and the most poisonous plants, the latter have succeeded in detecting, separating, and concentrating several of their more subtile constituents. *Opium* has been at length compelled to confess its secret source of action, and *Ipecacuan* to yield its emetic element in a state of perfect purity.

Our Pharmacopœias and Dispensatories* have cautiously kept pace with the scientific progress of the age; and in tracing them from their origin to the present time† it is gratifying to observe the gradual influence of knowledge in reducing the number of their articles—simplifying the composition of their formulæ—and improving the processes for their pre-

* The Dispensatories of London, and Edinburgh, the former by Mr. A. T. Thomson, and the latter by Dr. Duncan, are works which reflect credit on the age and country in which they were written.

† In the year 1618, the London College published their first Pharmacopœia, and successive editions in the following years, viz. 1650, 1677, 1721, 1745, 1787, 1809.

paration.* Chemistry has also been the means of establishing the identity of many bodies which were long considered specifically different; thus an extensive list of animal substances has been discarded, since it is known that they owe their properties to one and the same common principle, as to *gelatine*, *albumen*, *carbonate of lime*, &c.; so again the fixed alkaline salt produced by the incineration of different vegetables, has been found to be potass, from whatever plant it may have been obtained, with the exception of sea plants, and perhaps some of the Tetradynamia, the former of which yield *Soda* and the latter *Ammonia*. Previous to the Pharmacopœia of 1745, every vegetable was supposed to yield a salt essentially different, and therefore a number of alkaline preparations were recommended, each bearing the name of the particular plant from which it had been procured, as salt of *Wormwood*—salt of *Broom*, &c.

But from the very nature and object of a Pharmacopœia, it cannot be supposed to proceed *pari passu* with the march of chemical science, indeed it would be dangerous that it should, for a chemical theory must receive the seal and stamp of experience before it can become current: a Pharmacopœia however is always an object of abuse, because it is a national

* What would be the surprise and gratification of the Pharmaceutist who lived a hundred years ago, if he could now visit Apothecaries Hall? the application of steam for the various purposes of pharmacy, and for actuating machinery, for levigation, trituration, and other mechanical purposes is no less useful, in ensuring uniform results, than it is in abridging labour and economising time. The greatest credit is due to the gentlemen under whose guidance this national laboratory is conducted, and more especially to their worthy and public spirited Treasurer, William Simons, Esq. whose zeal and liberality suggested and promoted the fitting up of the Steam Laboratory, as well as the ingenious machine for triturating mercury with lard, or conserve.

work of authority, which is quite a sufficient reason why the ignorant and conceited should question its title to respect, and its claims to utility. "*Plures audivi,*" says Huxham, "*totas blaterantes Pharmacopœias, qui tamen ne intellexerint quidem quid vel ipse pulsus significabat.*"

It is very evident, that the greater number of these attacks has not been levelled with any view to elicit truth or to advance science, but to excite public attention, and to provoke unfair discussion for individual and unworthy advantage; their obscure and presumptuous authors vainly hope, that they may gain for their ephemeral writings some share of importance, and for themselves some degree of reputation, if they can only obtain notoriety by provoking a discussion with the College or with some of its responsible members, though such a combat should be sure to terminate in their defeat. Like the Scythian Abaris, who upon being wounded by Apollo, plucked the arrow from his side, and heedless of the pain and disgrace of his wound, exclaimed in triumph that the weapon would in future enable him to deliver Oracles.

It is not to such persons that the observations which are contained in this work are addressed, for with them I am most anxious to avoid a contest, in which, as a worthy Fellow of our College expresses it, "*Victory itself must be disgraceful.*"

When, however, we are assailed upon every occasion by a gentleman whose talents entitle him to respect, and whose public situation commands notice, I apprehend that a humble individual like myself, may, in the conscientious discharge of a public duty, deliver his sentiments from the chair to which he has been called by his professional brethren, without any risk of compromising the dignity of the College, or

of drawing upon himself the charge of an unnecessary and injudicious interference.

The attack to which I chiefly allude, is contained in an historical preface by Mr. Professor Brande, to the *Supplement of the Fourth and Fifth Editions of the Encyclopædia Britannica;* in which, speaking of the writings of BOERHAAVE, he says, "The observations which he has made upon the usefulness of Chemistry, and of its necessity to the medical practitioner, may be well enforced at the present day; for, except in the schools of London and Edinburgh, Chemistry, as a branch of education, is either entirely neglected, or, what is perhaps worse, superficially, and imperfectly taught; this is especially the case in the English Universities, and the London Pharmacopœia is a record of the want of chemical knowledge, where it is most imperiously required."

The learned Professor of Oxford, Dr. Kidd, naturally anxious to repel a charge which he considered individually unfair, and to vindicate his University from an aspersion, which he felt to be generally unjust, published an animated, but at the same time, a cool and candid defence, to which I have much pleasure in referring you. With respect to the Sister University, my own *Alma Mater*, I feel that I should be the most ungrateful of her sons, were I, upon this occasion, to omit expressing similar sentiments with respect to the course of chemistry, and that of its collateral branches, which are annually delivered in the crouded schools at Cambridge. Is Mr. Brande acquainted with the discipline of our University?—Is he aware that the chemical chair has been successively filled by BISHOP WATSON—MILNER—WOLLASTON—and the late lamented Mr. TENNANT?—"*Master Builders in the Science.*" To say that

such men have been the lecturers, is surely a sufficient testimony to shew that the science of chemistry heretofore *could not* "have been neglected, or what perhaps is still worse, imperfectly taught;" and the zeal and ability displayed by the present Professor, ought to have shielded him from any such attack. Is Mr. Brande aware that the eloquent appeal of BISHOP WATSON from the chair at Cambridge,* on the general importance and utility of chemistry, gave the first impulse to that public taste for this science which so eminently distinguishes our Augustan age, and which has been the means of founding and supporting the Royal and other Public Institutions in this Metropolis, as well as in the other towns of the British Empire?

I need make no farther remark upon this part of Mr. Brande's assertion; the sequel, judging from the construction of the sentence, is evidently intended to be understood as a consequence, viz. and *therefore* "the London Pharmacopœia is a record of the want of chemical knowledge where it is most imperiously required," *because Oxford and Cambridge Physicians were its Editors.* Is not this the obvious construction?

It appears from Mr. Brande's laconic answer to Dr. Young, published in "*The Journal of Science and*

* The Chemical Laboratory at Cambridge has produced some valuable discoveries. *Ex pede Herculem*, let me remind the chemist of the formation of Nitrous Acid, by passing a current of ammoniacal gas through the heated Oxyd of Manganese, for which we are indebted to Dr. Milner. I mention it merely as a whimsical circumstance, that the greatest degree of cold ever produced, was effected at Oxford, and the highest temperature, lately, at Cambridge. The researches of Dr. Clarke are highly interesting and important, a succinct account of them has been published by him in a small work, entitled "*The Gas Blowpipe, or the Art of Fusion, by burning the Gaseous constituents of Water.*"

the Arts," that his objections are those of Mr. Phillips, contained in his experimental examination of the Pharmacopœia, a work which, I confess, appears to me to furnish a testimony of the experimental tact, subtile ingenuity, and caustic style of criticism, which its author so eminently possesses, rather than a proof of any fatal or material inaccuracy in the Pharmacopœia; and I may urge this with greater force and propriety, when it is considered that at the time of its publication I was not a Fellow of the College, and therefore had no voice upon the subject of its composition, and consequently must be *personally* disinterested in its reputation.

I cannot conclude these observations upon Mr. Brande's attack, without expressing a deep feeling of regret, that a gentleman, whose deserved rank in society, and whose talents and acquirements must entitle him to our respect, should have condescended to countenance and encourage that vile and wretched taste of depreciating the value and importance of our most venerable institutions, and of bringing into contempt those acknowledged authorities which must always meet with the approbation of the best, and the sanction and support of the wisest portion of mankind.

And I shall here protest against the prevailing fashion of examining and deciding upon the pretensions of every medicinal compound to our confidence, by a *mere chemical* investigation of its composition, and of rejecting, as fallacious, every medical testimony which may appear contradictory to the results of the Laboratory; there is no subject in science to which the maxim of Cicero more strictly applies, than to the present case; let the *Ultra* Chemist therefore cherish it in his remembrance, and profit by its appli-

cation—PRÆSTAT NATURÆ VOCE DOCERI, QUAM INGENIO SUO SAPERE."

Has not experience fully established the value of many medicinal combinations, which, at the time of their adoption could not receive the sanction of any chemical law? We well remember the opposition, which on this ground was for a long time offered to the introduction of the *Anti-hectic Mixture* of Dr. Griffith,—the *Mistura Ferri Composita* of the present Pharmacopœia, and yet subsequent inquiry has confirmed upon scientific principles the justness of our former practical conclusion; for it has been shewn that the chemical decompositions which constituted the objection to its use, are in fact the causes of its utility *(see Mist. Ferri,)*; the explanation, moreover, has thrown additional light upon the theory of other preparations; so true is the observation of the celebrated Morveau, that "*We never profit more than by those unexpected results of Experiments, which contradict our Analogies and preconceived Theories.*"

Whenever a medicine is found by experience to be effectual, the practitioner should listen with great circumspection to any *chemical* advice for its correction or improvement.* From a mistaken notion of this kind the *Extractum Colocynthidis compositum*,

* Great credit is due to Dr. Scudamore for the steadiness with which he rejected the expostulations of the *Ultras*, on the unchemical and contradictory nature of his formula for the administration of the Colchicum. Experience led him to the conclusion, that the *Acetum Colchici* generally proved more efficacious, when exhibited in combination with some medicine that will relax, without occasioning any uneasiness in the bowels or stomach; and he accordingly found, that the following formula is the best adapted for such a purpose. ℞ *Magnesiæ*, gr. xv. *Magnesiæ Sulphat:* ℥ss. *Aceti Colchici*, f℥j. *Aquæ Cinnamomi*, f℥x. *Extract: Glychrrh:* gr. x. At this formula, it appears the *Ultra* Chemists were terribly disconcerted. What—combine an alkaline earth with an acetic solution of an active vegetable? to which

with a view of making it chemically compatible with *Calomel*, has been deprived of the *Soap* which formerly entered into its composition, in consequence of which its solubility in the stomach is considerably modified, its activity is therefore impaired, and its mildness diminished.

On the other hand, substances may be medically inconsistent, which are chemically compatible, as I shall have frequent opportunities of exemplifying. The stomach has a chemical code of its own, by which the usual affinities of bodies are frequently modified, often suspended, and sometimes entirely subverted; this truth is illustrated in a very striking manner by the interesting experiments of M. Drouard, who found that Copper, swallowed in its metallic state, was not rendered poisonous by meeting with oils, or fatty bodies; nor even with *Vinegar*, in the digestive organs. Other bodies, on the contrary, seem to possess the same habitudes in the stomach as in the laboratory, and are alike influenced in both situations by the chemical action of various bodies, many examples of which are to be found under the consideration of the influence which solubility exerts upon the medicinal activity of substances; so again, acidity in the stomach is neutralized by *Alkalies*, and if a *Carbonate* be employed for that purpose, we have a copious disengagement of *Carbonic acid gas*, which has been frequently very distressing; lastly, many bodies taken into the stomach undergo decompositions

Dr. Scudamore very justly replies, that the Colchicum, brought to the state of a mere solution in water, by having its acid menstruum neutralised, is in the most favourable state of preparation in which it can be possibly administered. This explanation agrees perfectly with the views I have long entertained respecting the operation of Colchicum. (See *Colchici Radix*)

and changes *in transitu*,* independent of any play of chemical affinities from the hidden powers of digestion, some of which we are enabled to appreciate. (See *Potassæ Acetas.*)

The powers of the stomach would seem to consist in decomposing the *Ingesta*, and reducing them into simpler forms, rather than in complicating them, by favouring new combinations.

But every rational physician must feel in its full force, the absurdity of expecting to account for the phænomena of life upon principles deduced from the analogies of inert matter, and we therefore find that the most intelligent physiologists of modern times have been anxious to discourage the attempt, and to deprecate its folly. Sir Gilbert Blane, in his luminous work on MEDICAL LOGIC, when speaking of the different theories of digestion, tells us that Dr. William Hunter, whose peculiar sagacity and precision of mind detected at a glance the hollowness of such delusive hypotheses, and saw the danger which theorists run in trusting themselves on such slippery ground, expressed himself in his public lectures, with that solidity of judgment combined with facetiousness of expression, which rendered him unparalleled as a public teacher. "Gentlemen," said he, "Physiologists will have it that the stomach is a mill—others, that it is a fermenting vat—others again, that it is a

* What can illustrate in a more familiar and striking manner the singular powers of *Gastric Chemistry*, than the fact of the shortness of time in which the aliment becomes acid in depraved digestion? A series of changes is thus produced in a few hours, which would require in the laboratory as many weeks: while in acute affections of the alimentary canal the functions of the stomach are nearly suspended, and hence under such circumstances, whatever is introduced into this organ remains unchanged, even the nutritious mucilages are not digested.

stew-pan,—but in my view of the matter, it is neither a mill, a fermenting vat, nor a stew-pan—but a STOMACH, Gentlemen, a STOMACH."

From what has been said, it is very evident that the mere chemist can have no pretensions to the art of composing or discriminating remedies; whenever he arraigns the scientific propriety of our Prescriptions, in direct contradiction to the deductions of true medical experience,—whenever he forsakes his laboratory for the bed-side, he forfeits all his claims to our respect, and his title to our confidence. It is amusing to see the ridiculous errors into which the chemist falls, when he turns physician; Seguin found that Peruvian bark contained a peculiar principle that precipitated *Tannin*, he immediately concluded that this *could not be any other* than *Gelatine*, and upon the faith of this blunder, the French, Italian, and German physicians,* gave their patients nothing but *Clarified Glue*, in intermittent fevers! But I desist—not however without expressing a hope, in which I am sure my medical brethren will concur, that, should Mr. Brande again condescend to favour us with a commentary upon Boerhaave, he will select that passage in his work, where, alluding to the application of Chemistry to Physic, he emphatically exclaims, "EGREGIA ILLIUS ANCILLA EST, NON ALIA PEJOR DOMINA."

THE INFLUENCE OF SOIL, CULTURE, CLIMATE, AND SEASON.

The facts hitherto collected upon this subject are so scanty and unsatisfactory, that I introduce its con-

* This practice was introduced into France by Seguin, into Italy by Couticiri, and into Germany by Bischoff.

sideration in this place, rather with a wish to excite farther enquiry, than with any hope of imparting much additional information.

There can be little doubt, but that Soil, Culture, Climate, and Season, may very materially influence the active properties of a medicinal plant; while the two latter of these causes may as essentially change the type and character of a disease, and modify the vital susceptibility of the patient: this must be admitted to its full extent, or it will be extremely difficult to explain the contradictory and even opposite opinions, and to reconcile the conflicting testimonies of the physicians of different countries, with respect to the efficacy of the same remedy, in similar diseases.

The Influence of Soil may be exemplified by many well known facts; thus, strongly smelling plants lose their odour in a sandy soil, and do not again recover it by transplantation into a richer one; a fact upon which Rozier founded his proposal for the improvement of Rape oil; so again, no management could induce the *Ricotia Ægyptiaca* to flower, until Linnæus suggested the expediency of mixing clay with the earth in the pot; *Assafœtida* is one of those plants that vary much according to station and soil, not only in the shape of the leaves, but in the peculiar nauseous quality of the juice which impregnates them, and Dr. Woodville states that it is frequently so modified that the leaves are eaten by goats; Gmelin informs us, on the authority of Steller, that the effects of the *Rhododendron* have

* A very ingenious Dissertation has been lately published by M. Virey, on the *Degeneration of Plants in foreign soils*, which he says may depend upon 1, *Climate* and *Station*; 2, *Nutriment*; 3, *Culture*; 4, *Factitious Mutilation*; 5, *Hybrid Generation*.

been found to vary very materially according to the "*solum natale;*" for example, that produced in a certain spot has proved uniformly *narcotic*, that in another *cathartic*, while a sense of suffocation has been the only symptom occasioned by a third.

CLIMATE also produces a powerful impression upon vegetable and animal life. It is probable that in southern countries some vegetables enjoy more energetic properties than in northern climes. The history of Opium immediately countenances such an opinion; thus Egypt produces a stronger *opium* than any of the countries on the north side of the Mediterranean, —France, than England or Germany;—and Languedoc, than the northern parts of France;—while Smyrna, Natolia, Aleppo, and Apulia, furnish a juice far more narcotic than Languedoc: so again, *Senna* by transplantation from Arabia into the south of France (Provence) assumes a marked change in its physiognomy and virtues, its leaves are more obtuse, and its taste less bitter and nauseous than the pointed leaved variety, while its effects will be found to be less purgative. It is hardly necessary to observe that plants, which in temperate climates are merely shrubs, have been developed into trees, by the hot and humid plains of Africa and Asia; while in the arid deserts of Nubia or in the frigid plains of Siberia, vegetable life is confined to stunted shrubs and humble mosses: cold also suppresses the colour of flowers, and indeed even that of the leaves, as is witnessed in the *Cyclamen*, *Amaranthus*, and *Ranunculus* of Lapland and Siberia. But climate not only modifies the powers of a remedy by influencing its structure and composition, but renders it more or less active, by increasing or diminishing the susceptibility of the body to its impression; can a more

striking proof of this fact be adduced than the well known effects of perfumes at Rome? The inhabitants are unable to sustain the strong scent of flowers in that climate, without experiencing a sensation highly oppressive, and which in some cases is even succeeded by syncope; and thus realising the well known line of the poet,

"*Die of a Rose, in aromatic pain.*"

As I have been favoured with some very interesting observations upon this subject by my friend Dr. Harrison, who resided for a considerable time in Italy, and was thus enabled to institute a satisfactory inquiry into this curious subject, I feel no hesitation in introducing a quotation from his letter to my readers.—"You ask me what experience I have had on the subject of climate, as affecting the powers and operation of remedies; I have no difficulty in asserting that Narcotics act with greater force even in smaller doses at Naples, where I had the advantages of much experience, than in England. I might adduce as an example the *Extract of Hyoscyamus*, which, when given to the extent of three grains thrice a day, produced in two patients a temporary amaurosis, which disappeared and again recurred on the alternate suspension and administration of this medicine; and it deserves particular notice that these very patients had been in the habit of taking similar doses of the same remedy in England, without any unpleasant result. Now that this depended upon an increased susceptibility of the patient, in the warmer climate, rather than an increased power in the remedy, is unquestionable, since the extract which was administered in Italy had been procured from London; indeed a high state of nervous irritation is the pre-

valent disorder of Naples. I treated several cases of Epilepsy in Italy with the *nitrate of silver*, and with complete success, while in England I have certainly not met with the same successful results. During my residence at Naples, I spent some time in the island of Ischia, so celebrated all over the continent for its baths; many of the patients who were then trying their efficacy, had been attacked with Paralysis, Apoplexy, and almost every degree of loss of mental and muscular power, and among them I certainly witnessed what with propriety might be denominated a genuine case of *Nervous Apoplexy*. These complaints I was generally able to trace to the abuse of *Mercury*, whence we may, I think, very fairly conclude that this metal is more active in its effects, than in our own country. Before I quit this subject, I ought to mention that the doses of medicines, as seen in the prescriptions and works of English Physicians, excite universal astonishment among the faculty of Italy. In fact, as I have just stated, the human constitution in this part of the continent is certainly much more susceptible of nervous impression than in England: it is perfectly true that flowers or perfumes in a chamber, will frequently produce syncope in persons apparently strong and healthy, and the fact is so universally admitted, that the Italians avoid them with the greatest caution." On the other hand, it certainly appears equally evident that some remedies succeed in cold climates which produce little or no benefit in warmer latitudes. Soon after the publication of the first edition of my Pharmacologia, I received a letter from Dr. Halliday of Moscow upon the subject of the "*Eau Medicinale*," and as it offers a striking proof of the efficacy of the *Rhododendron Chrysan-*

thum in curing the rheumatism of the North, whilst in this country the plant has been repeatedly tried without any signal proof of success, I shall here subjoin an extract from the letter of my correspondent: "In reading your account of the '*Eau Medicinale*,' I perceive that, upon the authority of Mr. James Moore, you state it to be a preparation of the *White Hellebore;* may I be allowed to suggest the probability of its being made from the leaves of the *Rhododendron Chrysanthum?* for so far as I can learn, the effects of the French medicine are precisely those which are experienced from an infusion of the above plant, which the Siberians and Russians regard as an infallible specific in the cure of chronic rheumatism and gout, and from which I myself, as well as other physicians in Russia, have witnessed the most desirable and decided effects, whenever we had it in our power to administer the remedy with confidence and courage. We have seldom given it in any other form or dose than that adopted by the Siberians themselves, which is to infuse in a warm place, generally near a furnace and during the night, two drachms of the fresh leaves in about twelve ounces of boiling water, taking care that the liquid never boils. This dose is to be taken in the morning upon an empty stomach, and during its nauseating operation, which generally commences in about a quarter of an hour after it has been swallowed, neither solids nor liquids of any description are allowed; after an interval of three or four hours, I have seen the patient obtain a copious and black fœtid stool, and get up free from all pain. Should it happen that the patient does not recover from the first dose, another is administered on the succeeding day, and I have known it to be taken for three days in succession,

when the severest fits of gout have been removed.* Is it not then probable that some cunning Frenchman has availed himself of this Siberian specific, and concentrated it in such a form, as to defy all the learned to find it out?"

Dr. Halliday adds, "The Siberians denominate the leaves of this plant, when infused in water, *Intoxicating Tea;* and a weaker infusion is in daily use, especially for treating their neighbours, just as the Europeans do with tea from China."

But of all the circumstances that produce the greatest change in the aspect as well as in the virtues of the vegetable creation, is CULTIVATION, which may either destroy the medicinal properties of a plant, or raise in it new and most valuable qualities: cultivation converts single into double flowers, by developing the stamens into petals, a change which in many cases destroys their efficacy, as in the chamomile, *Anthemis Nobilis*; for, since all the virtues of this flower reside in the disc florets, it is of course greatly deteriorated by being converted into the double flowered variety.

Buffon states that our wheat is a factitious production raised to its present condition by the art of agriculture. M. Virey† observes, that by suppressing the growth of one part of a plant we may respectively give rise to an increased developement in others; thus are some vegetables rendered eunuchs, or are deprived of seeds by obliteration, and only propagate themselves by slips; such a condition is frequently

* This plant was first described by Gmelin in his *Flora Siberica*, iv. 121. It has obtained a place in the Edinburgh Pharmacopœia. Besides the effects stated by Dr. Halliday, it is said by different authors to excite a peculiar creeping sensation in the pained part.

† *Journal Complementaire du Dict. des Sciences Medicales, tom. II.*

produced by culture, continued through a long succession of generations; this is the case with the *Banana*, *Sugar Cane*, and other fruits that have carefully been made to deviate for a long series of years from their original types, and having been continually transplanted by slips, suckers, or roots, at length only propagate themselves in this way, whereby the roots, as those of the common potatoe, become inordinately developed, drawing to themselves the succulence and nutrition originally possessed by the berries. It seems probable that we may thus have lost many vegetable species; the *Tuberes* of Pliny, for example, are supposed by Mr. Andrew Knight to have been intermediate productions, formed during the advancement of the Almond to the Peach, or in other words that they were swollen almonds or imperfect peaches; if this conjecture be admitted, it will explain the fact stated by Columella, that the peach possessed deleterious qualities when it was first introduced from Persia into the Roman Empire. If there be any who feel sceptical upon the subject of such metamorphoses, let him visit the fairy bowers of Horticulture, and he will there perceive that her magic wand has not only converted the tough, coriaceous covering of the almond into the soft and melting flesh of the peach, but that by her spells the sour Sloe has ripened into the delicious Plum, and the austere Crab of our woods into the Golden Pippin; that this again has been made to sport in endless variety, emulating in beauty of form and colour, in exuberance of fertility and in richness of flavour, the rarer productions of warmer regions and more propitious climates! In our culinary vegetables the same progressive amelioration and advancement may be traced; thus has the acrid and disagreeable *Apium graveolens*

been changed into delicious *Celery*, and the common *Colewort*, by culture continued through many ages, appears under the improved and more useful forms of Cabbage, Savoy, and Cauliflower.

THE IGNORANT PREPARATION AND FRAUDULENT ADULTERATION OF MEDICINES.

The circumstances comprehended under this head certainly deserve to be ranked amongst the more powerful causes, which have operated in affecting the reputation of many medicinal substances. The subject is copious and full of importance, and I have taken considerable pains to collect very fully, the various modes in which our remedies are thus deprived of their most valuable properties, and to suggest the best tests by which such frauds may be discovered. Very few practitioners have an idea of the alarming extent to which this nefarious practice is carried, or of the systematic manner in which it is conducted: there can be no doubt but that the sophistication of medicines has been practised in degree in all ages, but the refinements of chemistry have enabled the manufacturers of the present day not only to execute these frauds with greater address, but unfortunately at the same time to vend them with less chance of detection. It will be scarcely credited, when I affirm that many hundred persons are supported in this metropolis by the art of adulterating drugs, besides a number of women and children who find ample employment and excellent profit in *counterfeiting* Cochineal with coloured dough, Isinglass with pieces of bladder and the dried skin of soles, and by filling

up with powdered Sassafras the holes which are bored in spice and nutmegs, for the purpose of plundering their essential oils.

THE UNSEASONABLE COLLECTION OF VEGETABLE REMEDIES.

Vegetable physiology has demonstrated, that during the progress of vegetation most remarkable changes occur in succession, in the chemical composition, as well as in the sensible qualities of a plant; time will not allow me to be prodigal of examples, take therefore one which is familiar and striking,—the aromatic and spicy qualities of the unexpanded flowers of the Caryophyllus Aromaticus *(Cloves)* are well known to every body, but if the flower-bud be fully developed it loses these properties altogether, and the fruit of the tree is not in the least degree aromatic; so the berries of pimento, when they come to full maturity, lose their aromatic warmth and acquire a flavour very analogous to that of juniper. The *Colchicum autumnale* may be cited as another example in which the medicinal properties of the vegetable are entirely changed during the natural progress of its developement. See also *Inspissated Juices*, under the article *Extract*.

THE OBSCURITY WHICH HAS ATTENDED THE OPERATION OF COMPOUND MEDICINES.

It is evident that the fallacies to which our observations and experience are liable with respect to the efficacy of certain bodies, as remedies, must be neces-

sarily multiplied when such bodies are exhibited in a state of complicated combination, since it must be always difficult, and often impossible, to ascertain to which ingredient the effects produced ought to be attributed.

How many frivolous substances have from this cause alone gained a share of credit, which belonged exclusively to the medicines with which they happened to be accidentally administered?* Numerous are the examples which I might adduce in proof of this assertion; the history of Bezoar would in itself furnish a mass of striking evidence, indeed the reputation of this absurd substance was maintained much longer than it otherwise would have been, by its exhibition having been frequently accompanied with that of more active articles. Monardes for instance extolls the efficacy of the *Bezoar* as a vermifuge, but he states that it should be mixed with the seeds of *Wormwood*. Besides, in the exuberance of mixture, certain reactions and important changes are mutually produced, by which the identity of the original ingredients is destroyed; but this subject will be introduced for discussion in the first part of the Pharmacologia.

The practice of mixing together different medicinal substances, so as to form one remedy, may boast of very ancient origin, for most of the prescriptions which have descended from the Greek physicians are

* The editors of the *American Medical Recorder* (vol. I. p. 471), in descanting upon the efficacy of Prussic acid, very gravely remark, that they are acquainted with a lady, subject to hysteric affections, who *always* derives relief from a dose of CHERRY BRANDY, in which *Peach kernels* have been digested; the stimulus of the brandy then goes for nothing! Zimmerman not unaptly compares a man who is intoxicated with a favourite opinion, to a passionate lover, who sees and hears nothing but his mistress.

of this description; the uncertain and vague results of such a practice appear also to have been early felt and often condemned, and even Erasistratus declaimed with great warmth against the complicated medicines which were administered in his time; the greater number of these compositions present a mass of incongruous materials, put together without any apparent order or intention; indeed it would almost appear as if they regarded a medical formula as a problem in *Permutation*, the only object of which was to discover and assign the number of changes that can be made in any given number of things, all different from each other.

At the same time, it must in justice be allowed, that some of the earlier physicians entertained just notions with regard to the use and abuse of combination, although their knowledge of the subject was of course extremely limited and imperfect.

Oribasius recommends in high terms certain combinations of *Evacuant* and *Roborant* medicines, and the remarks of Alexander Trallian on a remedy which he exhibited in paralysis, serve to shew that he was well acquainted with the fact, that certain substances lose their efficacy when they stimulate the bowels to excess, for he cautions us against adding a greater proportion of *Scammony* to it; many, he observes, think that by so doing, they increase the force of the medicine, whereas in fact they make it *useless*, by carrying it immediately through the bowels, instead of suffering it to remain and be conveyed to the remote parts.

In modern Europe, the same attachment to luxuriancy of composition has been transmitted to our own times: there are several prescriptions of Huxham extant, which contain more than *four hundred* ingre-

dients. I have already observed that all extravagant systems tend, in the course of time, to introduce practices of an opposite kind; this truth finds another powerful illustration in the history of medicinal combination, and it becomes a serious question, which it will be my duty to discuss, whether the disgust so justly excited by the *poly-pharmacy* of our predecessors, may not have induced the physician of the present day to carry his ideas of simplicity *too far*, so as to neglect and lose the advantages which in many cases beyond all doubt may be obtained by scientific combinations.

In the year 1799, Dr. Fordyce, in a valuable paper published in the second volume of the Transactions of the Medical Society, has investigated this subject with much perspicuity and success: unfortunately, however, this memoir terminates with the investigation of *similar* remedies, that is to say, of those which produce upon the body similar effects, and he is entirely silent upon the advantages which may be obtained by the combination of those medicines which possess *different*, or even *opposite* qualities; it must be also remembered that at the time this memoir was composed by its eminent author, Chemistry had scarcely extended its illuminating rays into the recesses of physic. Under such circumstances, I am induced to undertake the arduous task of inquiring into the several relations in which each article of a compound formula may be advantageously situated with respect to the others; and I am farther encouraged in this investigation, by a conviction of its great practical importance, as well as by feeling that it has hitherto never received the share of attention which it merits. "I think," says Dr. Powell, "it may be asserted, without fear of contradiction,

that no medicine compounded of five or six simple articles, has hitherto had its powers examined in a rational manner." If this attempt should be the means of directing the attention of future practitioners to the subject, and thereby of rendering the Art of Composition more efficient, by placing it upon the permanent basis of science, I shall feel that I have profitably devoted my time and attention to the most useful of all medical subjects. "*Res est maximi momenti in arte medendi, cum, Formula, in se considerata, possit esse profecto mortis vel vitæ sententia.*"

PHARMACOLOGIA,

PART THE FIRST.

ON THE

THEORY AND ART

OF

MEDICINAL COMBINATION.

"*Variorum mixtura novas sæpe vires generet, in simplicibus nequaquam reperiundas longe saluberrimas.*"

Gaubius.

PHARMACOLOGIA.

PART THE FIRST.

ON THE

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OF

MEDICINAL COMBINATION.

It is a truth universally admitted, that the arm of physic has derived much additional power and increased energy, from the resources which are furnished by the mixture and combination of medicinal bodies. I do not mean to assert that the physician cannot frequently fulfil his most important indications by the administration of one simple remedy, I only contend that in many cases, by its scientific combination with other medicines, it will not only act with greater certainty and less inconvenience, but that its sphere of influence may be thus more widely extended, and its powers so modified or changed as to give rise to a remedy of new powers. Such a theory is amply justified by the state of combination in which certain medicinal principles are found in vegetable remedies, while the medicinal practice founded upon it is thus as it were, sanctioned by Nature's own prescriptions; enter but her laboratory, and you will soon be satisfied, that many of her most efficient remedies do not owe their valuable powers to any one specific ingre-

dient, but to the combined or modified energies of various, and sometimes opposite principles. This view of the subject opens an interesting and unexplored field* of medical and chemical research, and I shall endeavour to avail myself of the novelties its investigation may present, and the hints it may suggest for the improvement of *extemporaneous combination.* By contemplating the laws by which Nature effects her wise purposes, we may learn to emulate her processes, and even in some cases to correct and assist her operations: such at least has been the happy result of the labours in other departments of natural knowledge; it was for instance by observing the means used by nature for preventing the diffusion of light in the eye-ball, that Euler derived an important hint for the improvement of his telescope; and more lately, the structure of the crystalline humour of the eye has been successfully imitated in the invention of achromatic lenses; on the other hand, it is hardly necessary to observe to what extent these instruments of art are capable of improving and multiplying the powers of that natural organ, to the contemplation of whose structure and functions, we are, as I have just stated, so greatly indebted for their origin and perfection. So shall I endeavour to shew, in the progress of this work, that the combinations of nature as exemplified in her more valuable remedies, are capable if properly studied, of suggesting many important hints for improving the arrangements of art, while art in return may frequently supply the defects, or extend the advantages of natural compounds.

* I selected it as the subject of my Lectures before the Royal College of Physicians, during the present year, (June 1820.)

AN ANALYSIS

OF

THE OBJECTS TO BE ATTAINED BY MIXING AND COMBINING MEDICINAL SUBSTANCES.

THE objects to be attained, and the resources which are furnished by MEDICINAL COMBINATION, together with the different modes of its operation, and the laws by which it is governed, may with much practical advantage be arranged in the following order.

I.

TO PROMOTE THE ACTION OF THE BASIS, OR PRINCIPAL MEDICINE.

A.—*By combining together several different Forms, or Preparations, of the same substance.*

The utility of such a combination is obvious, whenever we desire the full and general effects of *all* the principles of a medicinal body in solution; thus, where the *Bark* is required in the cure of an intermittent fever, and the stomach will not allow the exhibition of the powder, it will be eligible to conjoin in one formula, the tincture, decoction, and extract. See *Formulæ* 37, 62, 63. The necessity of such a combination may be expressed by the following canon. *Whenever the chemical nature of the medicinal substance will not admit of the full solution of all its active principles in any* ONE *Solvent, and its exhibition in substance is at the same time impracticable.*

Practitioners, without probably having reasoned upon the theory, have very generally adopted the practice of combining the different solutions of the same substance, for we commonly find that the decoction or infusion of a vegetable remedy, is quickened by a certain portion of a corresponding tincture.

B.—*By combining the Basis with different Substances which are of the* SAME NATURE, *that is, which are* INDIVIDUALLY *capable of producing the same effect, but with less energy than when in combination with each other.*

DR. FORDYCE first established the existence of the singular and important law, that *a combination of similar remedies will produce a more certain, speedy, and considerable effect, than an equivalent dose of any single one;* a fact which does not appear to have been known to any ancient physician. The earliest mention of it that I can find is by VALISNIERI, the favourite pupil of Malpighi, who filled the medical chair at Padua in 1711, nearly ninety years before Fordyce published his valuable memoir on the combination of medicines, but he does not attempt any generalization* of the subject; he merely states, as the result of careful

* Numerous isolated statements of the same tendency may be adduced, but these cannot invalidate the claim of Dr. Fordyce, as the first person who *generalized* the fact, and applied it with success to practice. DIEMERBROECK, in his notes upon the *Theriaca Andromachi*, observes that the composition is a more efficacious medicine from the *concurrent* powers of so many ingredients, *alike in virtue:* and Quincy in his Lectures on Pharmacy, which were published by Dr. Shaw, in 1723, says " those fetid gums which are generally prescribed in Hysteria, as *Ammoniacum*, *Galbanum*, &c. may be conjoined with advantage, *because from a concurrence of properties, they all conspire to the same end.*

experiments, that twelve drachms of *Cassia Pulp* are about equivalent in purgative strength to four ounces of *Manna;* and yet says he, if we give eight drachms of *Cassia Pulp*, in combination with four drachms of *Manna*, we obtain double the effect! How, adds the professor, can this possibly happen? Surely the very contrary *ought* to obtain, since four drachms of Cassia are much more than equivalent to an equal weight of Manna, the strength of the former being to that of the latter as 8 to 3. The truth of this law must be continually felt by the practitioner in the most ordinary routine of his practice, viz.

Emetics are more efficient when composed of *Ipecacuan* united with *Tartarized Antimony*, or *Sulphate of Zinc*, than when they simply consist of any one of such substances in an equivalent dose. See *Formulæ*, 1, 3.

Cathartics not only acquire a very great increase of power by combination with each other, but they are at the same time rendered less irritating in their operation, the *Extractum Colocynthidis Compositum* affords a very good example of a compound purgative mass, which is much more active and manageable, and less liable to irritate than any one of its components separately taken. Additional examples are furnished by *Formulæ* 14, 15, 16, 18, 22.

Diuretics. Under this class of medicinal agents it may be noticed that *whenever a medicine is liable to produce effects different from those we desire, its combination with similar remedies is particularly eligible*, by which the action of the basis may be directed and fixed: thus the individuals which compose the class of Diuretics are uncertain in their operation, and disposed when exhibited singly to produce diaphoretic, and other contrary effects: it is therefore in such

cases, highly judicious to unite several of them in one Formula, by which we increase their powers, and are more likely to ensure their operation. *Formulæ* 29, 31, 36, 37, 38, 39, are constructed upon this principle.

Expectorants. More is to be gained by the co-operation of these remedies than can be obtained by the exhibition of any of them separately, as in *Formulæ* 48, 49.

Diaphoretics. Our maxim, "Vis Unita Fortior," certainly applies with equal truth and force to this class of medicinal agents.—*Formulæ* 58, 60.

Emmenagogues.—*Formulæ* 70, 71, 72.

Aromatic and Diffusible Stimulants. There are perhaps no remedies which receive greater mutual benefit by intermixture with each other, than the individuals which compose the class of stimulants; they not only thus acquire increased efficacy, but at the same time they lose much of their acrimony; if for instance any one spice, as the dried capsule of the *Capsicum*, be taken into the stomach, it will excite a sense of heat and pain; in like manner will a quantity of pepper; but if an equivalent quantity of these two Stimulants be given in combination, no such sense of pain is produced, but on the contrary, a pleasant warmth is experienced, and a genial glow felt over the whole body; and if a greater number of spices be joined together, the chance of pain and inflammation being produced is still farther diminished. The truth of this law is also strikingly illustrated, as Dr. Fordyce has observed, by that universal maxim in cookery, *never to employ one spice if more can be procured;* the object being to make the stomach bear a large quantity of food without nausea. This principle also finds an

illustration of its importance, as it regards the class of Stimulants, in the following preparations of our Pharmacopœia: *Pulvis Cinnamomi compositus. Infusum Armoraciæ compositum. Infusum Aurantii compositum. Spiritus Lavendulæ compositus. Tinctura Cinchonæ composita. Tinctura Cardamomi composita*, and the *Confectio Opii*, the elegant and scientific substitute for the celebrated *Mithridate* or *Theriaca*. The practitioner is also referred to *Formulæ* 103. 106.

Local Stimulants are under the dominion of the same law, and perhaps the origin of the custom, so long observed, of mixing the varieties of snuff, may thus receive a plausible explanation; certain it is that by such combination the harsh pungency of each ingredient will be diminished, whilst its stimulating properties will in the same ratio be increased, but rendered more grateful; the same principle will direct the formation of safe and efficient plaisters and lotions, the *Emplastrum Cumini* of the London, and the *Emplastrum Aromaticum* of the Dublin Pharmacopœia, offer examples of its judicious application.

In a late valuable work on Therapeutics,* by Dr. Chapman, the propriety of combining *several* stimulants in *one* formula is doubted; and although the arguments which he adduces, fail in establishing his general position, they certainly suggest an important exception to the practice in question; by directing, says he, stimulating remedies *separately*, we shall economise our resources in many lingering diseases. The justness of this statement must be admitted to its fullest extent; for instance, in the feeble forms of protracted

* Discourses on the Elements of Therapeutics, and Materia Medica, by N. Chapman, M. D. Professor of the Institutes and Practice of Physic in the University of Pennsylvania, vol. 2, 8vo. *Philadelphia* 1819.

fevers, where the indications are to be met with stimulants, it will certainly be salutary to alternate the use of camphor, ammonia, and other remedies of a similar nature, in preference to presenting them all at once in combination, so that the system may not lose its susceptibility by the continued impression of the same stimulant.

Bitter Tonics are also thus exalted. *Formulæ* 94, 96.

Narcotics. The intention of allaying irritation and pain, will be better fulfilled by a combination of these substances in different proportions, than by any single one, notwithstanding its dose be considerably increased. See *Formulæ* 117, 118.

Demulcents do not appear to obtain any other benefit from combination, than occasionally a convenience and efficacy of application, by deriving a proper degree of consistence and solubility. See Article *Trochisci*.

The operation of the law which has thus formed the first object of this inquiry, will be found, like every other, to have a natural and well defined limit; it is easy to perceive that by multiplying the number of ingredients too far, we shall either so increase the quantity and bulk of the medicine as to render it nauseous and cumbersome, or so reduce the dose of each constituent as to fritter away the force and energy of the combination.

There is also another important precaution respecting the application of this principle which demands our most serious attention; that in combining substances in the manner, and for the object just related, the practitioner should be well satisfied that their medicinal virtues are in reality practically similar, or he will fall into an error of the most fatal

tendency. He must remember that Medicines are not necessarily similar because they have been arranged in the same artificial class of remedies; but that, in order to establish a perfect similarity *their operation must be found by experience to continue similar under every condition of the human body; and that, moreover, they must owe such similarity to modes of operation which are compatible with each other, and consonant with the general plan of cure;* thus *Squill, Calomel,* and *Digitalis,* are each powerful Diuretics, but nevertheless, they cannot be considered similar remedies, since *Digitalis* will entirely fail in its effects in the very cases that *Calomel* and *Squill* succeed, and *Squill* will prove inert when *Digitalis* is capable of producing the most powerful influence; this arises from their modes of operation being dissimilar, and consequently requiring for their success different states of the living system.

Dr. Blackall, in his "Observations upon the Cure of Dropsies," has offered some remarks so valuable in themselves, and so illustrative of this important subject, that I beg leave to quote the passage. "Many Physicians, he observes, are fond of combining *Squill, Calomel,* and *Digitalis,* as a Diuretic in Dropsy; a practice often unsafe, and not very decidedly possessing the merit even of being consistent. Digitalis greatly depresses the action of the heart and arteries, and controls the circulation, and it seems most unreasonable to believe that its curative powers can be independent of such an effect; on the other hand, Mercury, if it does not pass off quickly, is always exciting fever, and raising and hardening the pulse; speaking from experience, where the urine is coaguable, and *Digitalis* agrees, both the others are, often at least, positively injurious. On the contrary,

where the urine is foul, and not coaguable, and *Squills* with *Calomel* render service, I have on that very account made less trial of Digitalis, and cannot therefore speak of it from much experience." See *Form.* 31.

Bark and *Steel* are also too often considered as equivalent *Tonics;* in Dropsy, says Dr. Blackall, it is far otherwise, the former being infinitely to be preferred after the dropsy of young persons, of acute disease, and of sound stamina; the latter being suited to a vitiated rather than a feeble habit, and indicated more by a pale sallow complexion, and a want of red colour in the blood as shewn by the paleness of the lips, than by any other signs. This is a subject upon which too much importance can be scarcely attached; once for all let it be observed, that the terms employed to denote the different classes of remedies, as *Diuretics*, *Diaphoretics*, &c. are frequently but relative ones, expressive of specific effects which are produced only in reference to a peculiar disposition of the living body, and as this necessarily varies in different states of health and disease, it follows that medicines can only be *relative* agents, and are frequently convertible into each other; so that the most opposite articles may be presented to us under the same artificial classification. "*Medicamenta non agunt in cadaver*," is one of the best established maxims of the schools, and when we attempt to institute general rules respecting their administration, without taking into consideration the constitution and circumstances of the patient upon whom they are to operate, we shall generally be disappointed in the result: we may say of medicines what Van Swieten said of diet, "to assert that such or such a thing be wholesome, without a knowledge of the person for whom it is intended, is like a sailor saying that the wind is fair, without

knowing the port to which the vessel is bound." Boerhaave was fully impressed with this truth, "*Nullum ego,*" says he, "*cognosco remedium, nisi quod tempestivo usu fiat tale*"—I know of no remedy in physic, but what *becomes such* by due application. Venesection may in one case produce Diuresis, and Brandy in another; Dr. Blackall presents us with a case, on the authority of Mr. Johnson of Exeter, in which well fermented bread occasioned in the space of a few hours an effect so powerfully diuretic, as to have cured the sailors on board the Asia East Indiamen, who had been attacked with Dropsy, in consequence of the use of damaged rice; so that Diuretics in some cases, *cure by evacuating*, while in others, as in the instance above cited, they *evacuate by curing*.

The individuals which compose the class of DIAPHORETICS, vary no less in their effects; thus in the cure of Intermittent fevers they are useful in the paroxysm, and in the intermission; in the first they shorten its duration, in the second they support the tone of the extreme vessels, and prevent its recurrence, but in these opposite states of disease a very different kind of diaphoretic is required,—to fulfil the first indication a cooling and relaxing one is necessary,—to answer the second, the stimulating diaphoretic is exacted,—the one may be said to *solicit*, the other to *extort* perspiration. So again EMMENAGOGUES can only be considered as relative agents, since the suppression of the Catamenia may depend upon or be connected with very different states of the system; in some cases with a diminished, and in others with an increased state of excitement. ANTISPASMODICS may likewise embrace remedies of the most opposite tendency, for spasm may occur under the most opposite circumstances,—in an extreme con-

dition of weakness, as in nervous affections, and in an highly excited state, as in cholic, and in cases of poisoning.

C.—*By combining the Basis with Substances of a* DIFFERENT NATURE, *and which do not exert any Chemical influence upon it, but are found by experience to be capable of rendering the Stomach, or System, or any particular organ, more susceptible of its action.*

Thus it is that the system is rendered more susceptible of the influence of Mercury, by combining it with Antimony and Opium. Where the stomach is insensible to impressions, the exhibition of Opium previous to, or in combination with, any active medicine, often assists its operation; this is frequently seen in Mania, when emetics will fail, unless the stomach be previously influenced and prepared by a Narcotic; so again the system, when it is in that particular condition which is indicated by a hot and dry skin, is unsusceptible of the expectorant powers of Squill, unless it be in union with Antimony or some powerful diaphoretic, (48). Squill is by no means disposed to act upon the urinary organs, when exhibited singly; but calomel, and some other mercurial preparations, when in conjunction with it, appear to direct its influence to the kidneys, and to render these organs more susceptible of its operation, (31. 34). Upon the same principle, *Antimonial Wine* quickens the operation of saline cathartics (8.); *Opium* increases the sudorific powers of *Antimony* (60); and the purgative operation of *Jalap* is promoted by *Ipecacuan*, (21).

Sir John Pringle speaks of the advantages which may be obtained by combining an alkali with a bitter infusion, by which the diuretic effects of the former will be increased, while the latter is calculated to remove any gastric debility, and to impart a general tone to the body: there is no doubt but that *Bitters*, from their invigorating influence * upon the *primæ*

* *Bitter Extractive* seems to be as essential to the digestion of herbivorous, as salt is to that of carnivorous animals. It acts merely as a natural stimulant, for it has been shewn by a variety of experiments, that it passes through the body without suffering any diminution in its quantity, or change in its nature. No cattle will thrive upon grasses which do not contain a portion of this vegetable principle: this has been most satisfactorily proved by the late researches of Mr. Sinclair, gardener to the Duke of Bedford, which are recorded in that magnificent work the "HORTUS GRAMINEUS WOBURNENSIS." They shew that if sheep are fed on *yellow turnips*, which contain little or no *bitter extractive*, that they instinctively seek for, and greedily devour any provender which may contain it, and that if they cannot obtain it they become diseased and die. We are ourselves conscious of the invigorating effects of slight bitters upon our stomach; and their presence in malt liquors not only tends to diminish the noxious effects of such potations by counteracting the debility they are liable to occasion, but even to render them, when taken in moderation, promoters of digestion. The custom of infusing bitter herbs in vinous drinks is very ancient and universal,—the "*Poculum Absinthiatum*" was regarded as a wholesome beverage, and the wormwood was supposed to act as an antidote against drunkenness. The Swiss peasant cheers himself amidst the frigid solitude of his glaciers, with a spirit distilled from *Gentian*, the extreme bitterness of which is relished with a glee that is quite unintelligible to a more civilized taste. With regard to the natural use of *Bitter extractive*, it may be laid down as a truth, that it stimulates the stomach, corrects putrefying and unwholesome nutriment, promotes tardy digestion, increases the nutritive powers of those substances to which it is united, and furnishes a natural remedy for the deranged functions of the stomach; while in its medicinal applications it certainly imparts additional activity to many remedies, and renders the stomach and system more susceptible of their salutary energies. As an essential ingredient in the provender of herbivorous animals, it may I think be stated, that its importance is in an inverse ratio with the nutritive powers of the food, and we accordingly find, in conformity with that universal scheme of

viæ, increase the effects of remedies whose operation is connected with changes *in transitu*, or with absorption, as in the exhibition of certain diuretics; they also frequently render the stomach and bowels more susceptible of bodies that act by impression, as purgatives, emetics, &c.

We may discover the operation of such a principle in some of the more active compounds presented to us by nature; many herbs owe their efficacy to a cause of this kind. *Elaterium*, as I have ascertained by experiment, contains a purgative element, *sui generis*, *(Elatin)* and a bitter principle, which in itself is quite inert, and yet its presence in the compound renders the alimentary canal more susceptible of the impression of the active ingredient, and therefore increases its force. See *Extract. Elaterii.* The history of *Senna* will afford some interesting facts in farther elucidation of this subject; the leaves of this plant, like *Elaterium*, appear to contain an active principle, in combination with a bitter, which latter ingredient,

self adjustment that influences all the operations of nature, that cultivation, which extends the nutritive powers of vegetable bodies generally, decreases their bitterness in the same proportion. Gummy matter is certainly rendered more digestible by the presence of a bitter; pure gum is not very much disposed to yield to the powers of digestion, " it frequently passes through the bowels," says Dr. Chapman, " very little changed, as I have witnessed a thousand times." We see the value therefore of the bitter principle in the *Lichen islandicus*, which is intended as the food of animals in northern latitudes: for the same reason animals that feed in marshy lands on food containing but little nourishment, are best defended from the diseases they are liable to contract in such situations, by the ingestion of bitter plants. It has been found by experiments that the *Menyanthes trifoliata* (the Water Trefoil), which on account of its bitterness has been used as a substitute for Hops, is a cure for the Rot in sheep, when given in doses of a drachm of the powdered leaves; and Dr. William Bulleyn, the cotemporary of Turner, the father of English Botany, observes in his work, entitled " *The Bulwark of Defence*," that " *Tormentil* in pastures, prevents the rot in sheep."

although destitute of purgative properties, considerably increases those of the former; for if this be removed, as happens when Senna is transplanted into the south of France, the purgative principle is weakened, but may be again restored by the artificial addition of some bitter extractive. The fruit or pods of Senna * contain only the purgative principle, and are therefore comparatively feeble unless the defect be compensated by art: Dr. Cullen has observed that a much smaller quantity of the leaves is required for a dose if they be infused in company with some bitter plant.

The experiments of Seguin have established beyond all doubt that the active principle of vegetable astringents is a peculiar element, to which the name of *Tannin* has been given; but the efficacy of this ingredient is undoubtedly enhanced by the presence of gallic acid with which it is usually associated, although this acid, when separated from the native combination, is incapable of producing the least astringent effect. In some cases, the addition of certain bodies will induce the absorbents to admit and carry into the circulation, remedies which in a more simple state they would reject as injurious; this position is supported by the fact of mercury being more readily absorbed when in combination with animal matter, see *Ung: Hydrarg:* and it is probable that iron, in the form of a *tanno-gallate*, will be more acceptable than when presented in a more purely mineral state: see *Ferri Sulphas.* Does it not therefore appear that *certain elements exist in the composition of vegetable remedies, as furnished by nature, which although indi-*

* The Arabian and Greek physicians scarcely noticed the leaves, but always employed the pods of Senna; a fact which will explain the operation of this plant, as observed by them.

*vidually inert, confer additional strength and impulse upon the principle of activity with which they are associated?**

The solutions of saline cathartics appear likewise to gain an accession of power and celerity of operation by impregnation with *Carbonic acid gas*, depending probably upon the intestines thus receiving a degree of distention favourable to the action of the salt, (19. 23). Certain it is that the operation of Emetics, as well as that of Glysters, is materially increased by the stimulus of distention.

In enumerating the methods to be adopted for increasing the energies of a remedy, by rendering the system more susceptible of its action, it is right to observe that under certain circumstances Venesection

* From what has been here stated, it appears that there are two orders of medicinal elements,—the one comprehending those that possess an inherent and independent activity,—the other, those that are in themselves inert, but which are capable of imparting impulse and increased energy to the former when combined with them. As this is a new view of the subject of vegetable combinations, no apology is necessary for the introduction of new terms for its explanation; I therefore propose to designate the former of these SUBSTANTIVE, and the latter ADJECTIVE constituents. When the structure of vegetable remedies shall have been thoroughly examined upon this principle of combination, much medicinal obscurity will be removed, and probably some pharmaceutical improvements of value suggested; at all events it will teach a lesson of prudent caution to the pharmaceutic chemist; it will shew the danger of his removing this or that element from a vegetable compound, merely because he finds, upon its separation, that it is inert. I dwell the more upon this point, because I feel that there never was a period in the history of medicine, at which such a caution was more necessary; for while the poly-pharmacy of our ancestors has driven the physician of the present day into a simplicity of prescription that on many occasions abridges his powers and resources, the progress of chemical knowledge has diffused through the class of manufacturing chemists a bold spirit of adventure and empiricism,—a mischievous propensity to torture our best remedies, in order to concentrate or extract their essential ingredients.

deserves a distinguished rank amongst the ADJUVANTIA. The fact is strikingly discovered in the exhibition of *Mercurial Preparations*,* and some other Alterative Medicines. Whether the "*Vis Conservatrix*," which Nature when in a state of health and vigour opposes to the admission of poisonous substances into the circulation, be overcome by blood-letting, is a question which I shall leave others to decide; but thus much reiterated practice has taught me, that the system in a strong and healthy condition frequently offers a resistance to the operation of mercury, which is overcome the moment the stomach becomes deranged, the circulation languid, or the general tone of the system impaired. I have frequently seen this during my Hospital practice: if a patient who has been using mercurial friction, or taking the preparations of that metal without effect, be transferred into a close and unhealthy ward, his appetite soon fails, the tongue becomes furred, and the system instantly yields to the influence of the remedy. Nauseating doses of *antimony* frequently repeated, or the accidental supervention of any disease of debility, will be attended with the same phenomena. My practice has also afforded me an opportunity of appreciating the debilitating effects of despondency in a case of this description; a patient had been taking mercurial medicines, and using frictions for a considerable period, without any apparent effect; under these circumstances he was abruptly told that he would fall a victim to his disease; the unhappy man experienced an unu-

* In a practical treatise on Tropical Dysentery, lately published by Mr. Bampfield, a Surgeon in his Majesty's Ships Belliqueux and Warrior, serving in the East and West Indies, the author states that ptyalism is the most effectual cure, but that this can rarely be induced without previous bleeding and purging.

sual shock at this opinion, and in a few hours became violently salivated.

Venesection, moreover, increases the effects of Cathartic Medicines. I have often noticed this fact in contending with a plethoric diathesis; whenever the bleeding preceded the purgative, the effects of the latter have been uniformly more speedy and considerable; in obstinate constipation the same fact has been observed, and mild remedies have been known to act more powerfully, when preceded by blood-letting, than potent ones have when exhibited antecedent to it. Venesection has certainly an extraordinary power in awakening the susceptibility of the *primæ viæ* to remedial impressions: in some diseases, as in *Cynanche Trachealis*, or Croup, so great is the insensibility of the stomach, that Emetics frequently fail in their effects; and Dr. Hamilton has given as much as a hundred grains of *Calomel* in the twenty-four hours; in such cases previous venesection affords most extraordinary assistance. The effects of *Bark*, *Steel*, and other tonics, are certainly influenced in the same manner; whether in any case it may be prudent or judicious to have recourse to such a practice, is a question not immediately connected with the present inquiry.

Purgatives also awaken the susceptibility of the body to mercurial impressions, and it is remarked by Dr. Chapman that this practice affords a resource which rarely disappoints the practitioner: this class of remedies moreover seems capable of exalting the efficacy, and indeed of accelerating the benefit to be derived from many Alteratives, when administered *previous* to the exhibition of these latter substances; the advantages of a course of Steel medicines are undoubtedly increased by such means. The febrifugous

and antiseptic properties of diluted muriatic acid (see *Form.* 85.) are inconsiderable, unless its exhibition be accompanied with cathartics. I beg to refer the practitioner to some cases published by me in *the Medical and Physical Journal for December*, 1809, in further illustration of these views. Experience enables me also to state that *Diuretics* are considerably assisted by similar means, having many instances in my case book of the failure of these agents before, and their successful operation after, the exhibition of a cathartic. Dr. Darwin observes that " *Absorptions are always increased by Inanition*, and in support of this position refers to the frequent advantage derived from evacuations in the cure of ulcers. I have certainly seen obstinate sores in the leg cured by small and repeated bleedings. Dr. Chapman arrives at the same conclusion, although by a different train of reasoning; he states that the blood vessels and absorbents are to a certain extent antagonising powers; instructed by this obvious fact, we ought, says he, in the exhibition of Diuretics to regulate the state of the system by interposing purgatives, or even venesection, as the state of the circulation may indicate.

Change of Diet and of Habits may be also classed amongst the *Adjuvantia*, but the young practitioner must be warned that he is not to exercise his *Caduceus* as Sancho's Doctor did his wand. I have seen a young disciple of Esculapius so vex his patient, that his food became more nauseous to him than his medicine, and I verily believe his Physician was more irksome than his disease. It is well observed by Dr. Percival that the prejudices of the sick should never be contemned with wantonness, or opposed with harshness; for though silenced by authority, they will operate secretly and forcibly on the mind, creating

fear, anxiety, and watchfulness. And with regard to diet it may be here stated, that no function of the body is so materially influenced by mental impressions as that series of actions constituting what is termed *Digestion*—the unexpected communication of any distressing event destroys the keenest appetite, and converts the sensation of hunger into one of disgust at the bare idea of food : a fact which did not escape the penetrating eye of our immortal Shakespeare, for Henry dismisses Wolsey from his government with these words—

> ——— Read o'er this ;
> And after, this : and then to breakfast
> *with what appetite* you have.

If feelings of disgust are excited by the repast, the stomach will never act with healthy energy on the ingesta; and in cases of extreme aversion, they are either returned, or they pass through the alimentary canal almost unchanged : on the other hand, the gratification which attends a favourite meal is in itself a specific stimulus to the organs of digestion, especially in weak and debilitated habits. Dr. Merriman has lately communicated to me a case which affords a striking illustration of the powerful influence of the mind upon these organs : a lady of rank labouring under menorrhagia, suffered with that irritable and unrelenting state of stomach which so commonly attends that disease, and to such a degree that every kind of aliment and medicine was alike rejected : after the total failure of every expedient to appease the stomach and procure relief, she applied to Miss Prescott, and was *magnetised*, when she immediately, to the astonishment of all her friends, eat a beef steak, and continued to repeat the meal every day for six weeks, without the least inconvenience, but the

disease, which continued with unabated violence, shortly afterwards terminated her life.

The diet of a sick person ought never to *combine too much nutriment in too small a space*;* when so given it will even in health be followed by *fermentation* instead of *digestion*; and although we may admit the expediency of that domestic maxim, "*a little, and often*," yet this is to be received with limitation; no one, for instance, who possesses any philosophical knowledge, will adapt his practice to the notions of Sir William Temple, who asserted that "the stomach of a valetudinarian was like a school boy, always doing mischief when unemployed," and that we should therefore not allow it any interval of repose: to this I answer, that the conversion of aliment into blood is effected by a series of elaborate processes, several of which are only perfectly performed during the quiescence of the rest: it would seem for instance that the process of *chylification* is incompatible with that by which the first changes are produced in the stomach;

* The capacity of our digestive organs sufficiently testifies that nature never intended them for the reception of highly concentrated food; while this idea is farther strengthened by perceiving how sparingly she produces concentrated aliment; the saccharine matter of esculent fruits is generally blended with acidulous and mucilaginous ingredients; and the oleaginous principle of seeds, kernels, and other similar substances, is combined with farinaceous matter: the capacity observable in the organs of graminivorous animals evidently shews that they were also designed for a *large bulk* of food, and *not* for provender in which the nutritive matter is concentrated; the gramineous and leguminous vegetables do not present their nutritive matter in a separate state, nor is the animal furnished with an apparatus by which he can separate the chaff and straw from the grain,—the obvious inference is, that he was intended to feed *indiscriminately on both*.

Some years ago I constructed a Logometric scale of Equivalents, to shew the relative nutritive powers of different vegetables, and I found that unless *bulk* was taken into calculation, it was incapable of furnishing even an approximation to truth.

this is evident from the well known fact, that our appetite for food ceases when the former process commences, although the repast should, at the time, have been insufficient to satisfy the cravings of nature:* the converse of this also is true, for if the stomach be called into action during the assimilating stages of digestion, the process will, in weak persons, be much disturbed if not entirely suspended.

II.

TO CORRECT THE OPERATION OF THE BASIS, BY OBVIATING ANY UNPLEASANT EFFECTS IT MIGHT BE LIKELY TO OCCASION, AND WHICH WOULD PERVERT ITS INTENDED ACTION, AND DEFEAT THE OBJECTS OF ITS EXHIBITION.

The virtues of the most important remedies are frequently lost, or much invalidated for want of proper attention to the circumstances comprehended in this section. It may be almost admitted as an axiom, that *whenever an Alterative medicine acts with violence upon the primæ viæ, its energies are uselessly expended; and the objects of its exhibition defeated.* So again, *Diaphoretics*, *Diuretics*, and many other remedies suffer a diminution in their effects, whenever they stimulate the stomach or bowels to excess. *Guaiacum* loses its anti-arthritic, *Squill* its diuretic, and *Antimony* and *Ipecacuan* their diaphoretic virtues under such circumstances. The action of these substances

* In diseases of imperfect or depressed digestion, as in *Diabetes*, *Tabes Mesenterica*, and others, we find that the appetite for food is never satisfied by the most nutritive meals.

therefore requires correction, and a medicine must be selected capable of fulfilling that intention. *Opium* has very extensive powers as a corrigent. *Formulæ* 28, 34, 38, 89.

The griping and nauseating tendency of some remedies receives correction by the addition of *aromatics* or essential oils, (10, 15, 16, 21,) or by small portions of a corresponding tincture, (9, 14). The drastic operation of *Colocynth* may be mitigated by trituration with *Camphor:* the griping from *Senna* and resinous purgatives is prevented by the addition of *soluble Tartar*, or alkaline salts, by which their solubilities are increased, or their operation accelerated, (15). There are many other substances which receive a much pleasanter mode of operation by having their solubilities increased or diminished, but the farther consideration of this question will be resumed under the fourth section of the Analysis. It has been already shewn in the first section, that the operation of a purgative substance is frequently rendered milder by combining it with several others of the same nature.

There are several substances which are deprived of their acrimonious qualities by trituration with mucilage, milk, barley-water, &c. The tendency which mercurial preparations possess of affecting the bowels is, with the exception of *corrosive sublimate*, corrected by *Opium*, but the acrid operation of this latter salt is more securely guarded against by the decoction of *Guaiacum* or *Mezereon*, or by the plentiful exhibition of mucilaginous drinks and broths; the enfeebling influence of *Digitalis*, *Tobacco*, and of other narcotics, is successfully opposed by aromatics and stimulants.

Sometimes the unpleasant or perverse operation of a medicine may be obviated by changing the form of

its exhibition, the period at which it is taken, or the extent of its dose: thus the inconvenience arising from the too easy solubility of *Camboge*, and its consequent action upon the stomach, Dr. Cullen found might be obviated by repeating small doses at short intervals, (26).

The scientific physician, from his knowledge of the chemical composition of a medicine, and of the principles upon which its different qualities depend, is enabled to remove or render inert the element which imparts to it a deleterious operation; thus it has been found that the peculiar principle in the *Spanish Fly*, which so frequently irritates the urinary organs, is soluble in boiling water; ebullition in water therefore offers the means of depriving it of the power of thus acting upon the kidneys, whilst it does not effect any alteration in its visicatory properties. It is upon the same principle that many vegetable substances of a very acrid nature, become harmless by boiling or by chemical manipulation, and some of them might even in times of scarcity and want, be introduced as wholesome and nutritious articles of diet. The experiments of Westring shew that the bitterness of the *Lichen Islandicus* may be entirely removed by maceration in an alkaline ley, and a tasteless but highly nutritious fecula be thus obtained: in the same manner the *Æsculus Hippocastanum* (horse chesnut) may be deprived of its bitterness, leaving a residuum which will afford a kind of bread; and according to Parmentier (*Recherches sur les vegetaux nourissans*) excellent starch may be also made from it. Dr. Darwin observes, that if the roots of *white bryony* be rasped into cold water, and agitated with it, the acrid juice of the root along with the mucilage will be dissolved, or swim in the water; while a starch perfectly

wholesome and nutritious will subside, and may be advantageously used as food: by a similar species of address the French prepare from the acrid *Arum*, the harmless but highly prized cosmetic, called *Cyprus Powder*.

Under this head it ought also to be noticed, that there is frequently a *chemical* condition of the stomach which may interfere with the mild operation of a medicine, and may therefore require consideration; this is particularly exemplified in the action of those antimonial preparations which are liable to become emetic and drastic by the presence of an acid; it is, for this reason, very eligible to guard such substances with antacid adjuncts. See *Antimonii Sulphuretum*, and *Formulæ* 61, 64.

The vinous infusion of *Colchicum* appears to act more violently when acid is present in the stomach; small doses of magnesia ought therefore to precede and accompany its exhibition.

III.

TO OBTAIN THE JOINT OPERATION OF TWO OR MORE MEDICINES WHICH HAVE DIFFERENT POWERS, AND WHICH ARE REQUIRED TO OBVIATE DIFFERENT SYMPTOMS, OR TO ANSWER DIFFERENT INDICATIONS.

Arrangements constructed upon this principle constitute some of the most valuable remedies with which we are acquainted; they are in general *extemporaneous*, because their very value depends upon their being varied and modified according to the symptoms

and circumstances of each particular case. Dr. Fordyce observes, that combinations of this kind are often indicated in cases of Diarrhœa, where it is necessary to astringe the vessels of the intestines, and at the same time to relax those of the skin: such an indication, he says, may be fulfilled by exhibiting *Tormentil root*, or any other vegetable astringent, with *Ipecacuan.*

The practice suggested by Drs. Stoll and Warren in the treatment of *Cholica Pictonum*, affords a striking example of the expediency of combinations of this nature. It is found in that disease, as well as in others attended with spasmodic constriction of the intestinal canal, that purgatives produce no effect unless the spasm be allayed by combining them with *Opium*, (*Form.* 13, 14.) In the treatment of Dropsies we have often two indications to fulfil—to evacuate the water, and to support the strength of the patient; hence the necessity of combining brisk and stimulating purges, such as *Scammony*, *Jalap*, &c. with active tonics, (10, 20): hence also the value of combinations composed of certain diuretics with the preparations of Steel, (10.) In Chlorosis again, cardialgia is not unfrequently a vexatious attendant, and solicits the union of *Emmenagogues* with *Antacids*, or *Absorbents*, (72). In the cure of Dyspepsia, we frequently require a remedy for the purpose of obviating debility, that is more sudden in its action and prompt in its effects than that of a bitter tonic, whose operation is almost imperceptible; while the case may at the same time stand in need of that permanent increase of tone, which the latter remedy can alone supply; such an indication therefore must be fulfilled by combination.*

* Having on a former occasion stated, that all the principles of medicinal combination, capable of practical application in the formation of extemporaneous formulæ, are exemplified in the construction of

(See *Form.* 97.) As a palliative in calculous irritation, the union of opium and alkalies proves a valuable resource.

In the exhibition of Tonic medicines it is frequently essential to accompany their operation with purgation; in Intermittent fevers, for instance, when attended with a redundant secretion of bile, or any obstruction of the viscera, the *Bark* must be given in

natural compounds, I shall in this place proceed to shew that *many of our most valuable vegetables owe their useful properties to the joint operation of the several distinct and different ingredients which enter into their composition.* How many substances does Nature produce in the vegetable kingdom, in which the permanent tonic quality of bitterness exerts its influence in union with the transient stimulating powers of an aromatic principle? Indeed there is a series of vegetable remedies of this kind; commencing with those that are simply bitter, we gradually proceed through the different species, each blending as we advance an increasing proportion of aroma, until we arrive at those in which the aromatic quality greatly predominates. *Peruvian Bark* owes its powers to a triple combination of bitterness, astringency, and aroma; a fact which suggested the probability of our being able to produce an artificial compound that might emulate the effects of *Cinchona*, and to a certain extent the idea has been realised; for we are informed by Cullen that he frequently succeeded in the cure of an Intermittent by a combination of *Oak Bark* and *Gentian*, when neither bitters or astringents separately produced the least impression; and I am informed by Dr. Harrison that in the Horncastle Dispensary, of which he was the physician for many years, he never employed any other remedy for curing the Ague of Lincolnshire, than a combination of equal parts of *Bistorta* (astringent) and *Calamus Aromaticus* (bitter and aromatic), neither of which plants, *individually*, effected any benefit.

The great superiority of the Hop as an ingredient in our malt liquors, depends upon the fact of its containing within itself several distinct and independent elements of activity, which the other bitter herbs that have been employed as its substitute do not possess. The philosophy of its operation may be adduced as a striking illustration of the present subject: first then it contains a *bitter* principle, which imparts a tonic and agreeable flavour to the beverage, while at the same time an aromatic ingredient adds a warm and stimulating quality, and modifies the bitterness; the Hop moreover contains an astringent ingredient

combination with some laxative, for which purpose Boerhaave has recommended *Muriate of Ammonia;* Mead, *Rhubarb;* whilst, in many cases, experience suggests the propriety of selecting some of the warmer cathartics, especially the aloetic. Arrangements of this nature are also continually necessary during the progress of an alterative plan, in order to remedy any incidental symptom which may occur: thus the addition of *Magnesia* may be required to obviate constipation, or cretaceous powder to check a too great relaxation of the intestines. In the exhibition of *Cathartics* how frequently it happens that the patient's strength will hardly allow the evacuation? In such a case, the addition of steel as a roborant, or of æther or ammonia as a diffusible stimulant, is loudly called for; the Cheltenham waters offer a natural combination of this character. In the cure of *Cynanche Maligna*, the use of bark is indicated; but if the skin be hot and dry, it should be accompanied with a diaphoretic, (62.) In the treatment of the chronic and humid coughs of old men, I have generally witnessed the beneficial union of the warm and stimulating in-

(*tannin* and *gallic acid*,) the effects of which are to precipitate the vegetable mucilage, and thus to remove from the beer the active principle of fermentation. Every attempt therefore to substitute an ordinary bitter for that of the Hop must necessarily fail, unless one can be constructed that shall combine within itself, in a due proportion, the principles of bitterness, astringency, and aroma. *Quassia* therefore is but a sorry substitute, it will impart bitterness enough, but it will not be modified by agreeable aroma, and as it contains no astringent principle, it will fail in precipitating the vegetable mucilage or gluten, and consequently beer, thus manufactured, will be in a perpetual state of fermentation, and therefore cannot be kept: the same reasoning will explain why *English* Hops that contain more *gallic acid* and *tannin*, than those imported from the continent, are found to be superior as preservatives of beer.

fluence of myrrh, with the astringent tonic of *sulphate of Zinc*. Formula 105 presents the combination which I have usually adopted.

In the construction of these complex arrangements, the practitioner must of course take care that he does not fall into the error of CONTRA-INDICATION, combining substances possessing properties essentially different, and which are at variance with, or opposed to each other; it is an error of the most serious description, and unfortunately is one of too common occurrence in the lower walks of medical practice, "*crimine ab uno disce omnes.*" I lately met with a practitioner in the country, who upon being asked by a lady whom he attended, the intention of three different draughts which he had sent her, replied, that one would warm, the second cool her, and that the third was calculated to moderate the too violent effects of either; thus it is that discredit and contempt fall upon the use of medicines, which ought only to attach to the ignorant pretenders or designing knaves who administer them.

IV.

TO OBTAIN A NEW AND ACTIVE REMEDY NOT AFFORDED BY ANY SINGLE SUBSTANCE.

A. *By combining medicines which excite different actions in the Stomach and System, in consequence of which* NEW, *or modified Results are produced.*

This constitutes by far the most obscure part of the subject of medicinal combination, and must ever con-

tinue so until we become better acquainted with the laws which govern the action of medicinal substances upon the living system. That the most valuable effects, however, are really produced by such arrangements, we have the testimony of long experience, and examples are furnished in the valuable and well known operation of many officinal preparations; thus the "*Pulvis Ipecacuanhæ compositus*" contains as its active elements, *Opium* and *Ipecacuanha;* and yet, in well regulated doses, it neither possesses the narcotic operation of the former, nor the nauseating effects of the latter; they appear to be mutually lost, and converted into a powerful diaphoretic: so again, the emetic operation of *Sulphuret of Antimony*, and the specific influence of *Calomel*, are changed by combination with each other, giving rise to a remedy eminently distinguished for its powers as an Alterative.

It is probable that many of our natural remedies owe their efficacy to the results of a similar species of combination; Dr. Chapman* asserts that *Kino* when administered in union with *Calumba*, constitutes a pretty certain and powerful purgative; this is indeed an anomaly in the history of medicinal combination, and deserves farther inquiry.

* Therapeutics, vol. 2. p. 470.

B. *By combining Substances which have the property of acting chemically upon each other; the result of which is the formation of* NEW COMPOUNDS, *or the decomposition of the original Ingredients, and the developement of their more* ACTIVE ELEMENTS.

That medicinal substances are actually capable of thus combining together and producing new compounds, or of effecting decompositions, and thereby of developing active elements, may be illustrated by many well known examples.

a. *Formation of New Compounds.*

Under this head, the class of Metals will immediately present itself to our consideration; all the individuals of which, with the exception perhaps of iron, are perfectly inert and harmless; even arsenic,* lead, copper, and mercury, which in certain states of combination are the most virulent substances known, exert no action upon the living system, until they be in union with some other body; but when so united, how valuable do they become; what various medicinal effects may they not be made to produce?

The *Acetic Acid* and *Volatile Alkali* become neutralized by combination, affording a compound of new virtues. *Sulphate of Zinc*, and *Super-acetate of Lead* when mixed together in solution, decompose each other, and the *Acetate of Zinc* which is formed, affords a more valuable remedy than either of the former salts for ophthalmia. The "*Mistura Ferri composita*" offers another example. I also beg to refer the reader

* See *Arsenici Oxydum.*

to Formula 19, which presents an instance of a purgative draught being produced by chemical combination, in which the original properties of every element are entirely changed. See also *Formula* 24, the chemical actions of which are more complicated than the preceding one; thus, the free *Sulphuric Acid*, together with that which exists in the *Sulphate of Iron*, is sufficient to saturate the *Carbonates of Soda* and *Magnesia*, forming two *Sulphates*, and thereby disengaging a volume of *Carbonic acid gas*, which not only increases the purgative operation of the new salts, as already explained, but by its excess holds in *solution* the *Carbonate of Iron* which is formed by the decomposition of the Sulphate, and which in that state is a very active tonic: this case therefore affords an illustration of the species of chemical action which forms the subject of the following division.

Before we quit the consideration of medicinal compounds as the results of chemical action, it is expedient to remind the practitioner of the essential difference between *Mixture* and *Combination*, a difference which affects the medicinal virtues no less than the chemical characters of bodies; it is determined by ample experience, that substances will produce effects upon the living system when presented in a state of simple mechanical mixture, very different from those which the same medicines will occasion when they are combined by the agency of chemical affinity, as is well exemplified in the comparative effects of Alcohol as existing in ardent spirits, and in wine (see *Vinum*); or in the relative powers of *Mercury* in the *Unguentum Hydrargyri* of the London College, and the *Unguentum Oxidi Hydrargyri cinerei* of the Pharmacopœia of Edinburgh (see *Unguent. Hydrargyri.*)

b. *Developement of Active Elements.*

A more striking and instructive instance of the effect of chemical action in developing an active principle cannot be selected than that of the well known *Stimulant Plaister*, composed of *Muriate of Ammonia*, *Soap and Lead Plaister*, in which the alkali of the soap enters into combination with the *Muriatic Acid*, when the *Ammonia*, upon which the virtues of the plaister solely depend, is slowly disengaged in the form of gas, producing a powerful rubefacient and stimulant effect: the "*Cataplasma Fermenti*" or "*Yeast Poultice*, is indebted for its antiseptic properties to a similar agency, for they do not depend upon any virtue in the ingredients themselves, but upon their decomposition, and the consequent developement of an active element, which is *Carbonic Acid*. The practitioner unacquainted with the *modus operandi* of these combinations, would inevitably fall into an error by which their efficacy must be lost; he would hardly apply them as soon as they were formed, nor would he be aware of the necessity of repeating them at short intervals.

The decomposition of *Calomel* by lime water, forming the well known "*black wash*," and that of *corrosive sublimate* in the same fluid, constituting the "*aqua phagadenica*," furnish remedies which derive all their peculiar efficacy from the developement of the mercury in different states of oxidation.

A substance separated by chemical precipitation is often a valuable remedy, being in a much more subtile and impalpable form than any body can be rendered by mechanical triture and levigation; for example, the *Carbonate of Lead*, (Cerussa), when diffused in water is far less active as a topical applica-

tion than the same substance when produced at once by precipitation from the *sub-acetate.*

Many interesting and important illustrations of this principle may possibly be hereafter derived from an extended knowledge of vegetable chemistry; the late researches of Serturner render it probable that we may be able to develope a new principle of extraordinary powers from opium, in which it appears to exist in a state of neutralization; the same observations may be applied to the discoveries relative to the emetic principle of Ipecacuan: but I must here beg to caution the practitioner against a fatal error into which his chemical zeal may betray him—that of simplifying too much. I have already shewn that an active principle may be diminished in force by the removal of matter which *individually* is quite inert, although in combination it may subdivide the particles of the essential constituent, or modify its solubility, and give impulse and steadiness to its operation.

C. *By Combining Substances between which no other Chemical change is induced, than a diminution or increase in the* SOLUBILITIES *of the Principles, which are the Repositories of their Medicinal virtues.*

The degree of solubility possessed by a medicinal substance may perhaps be regarded by some practitioners as a circumstance of but little or no importance, it will however appear in many cases that *it not only influences the activity of a remedy, but like its dose, goes far to determine its specific operation.* It is probably owing to the diversity which exists in the solubility of the active elements of purgatives, that so great a diversity occurs in their operation: it is for

instance easy to conceive that a medicine may act more immediately and specially on the stomach, small or large intestines, according to the relative facility with which its principles of activity enter into solution; that those which are dissolved before they pass the Pylorus are quick and violent in their effects, and liable to affect the stomach, as is exemplified by the action of *Gamboge*, *&c.* whilst some resinous purgatives, on the other hand, as they contain principles less soluble, seldom act until they have passed out of the stomach, and often not until they have reached the colon. *Colocynth* has a wider range of operation, since its principles of activity reside both in soluble and insoluble elements. *Aloes* again, being still further insoluble, pass through the whole alimentary canal before they are sufficiently dissolved, and act therefore more particularly upon the rectum, by which they are liable to produce piles, tenesmus, and the various effects which so usually attend their operation. The characteristic effects of *Rhubarb*, *Senna*, *Saline Cathartics*, and indeed of all the individual substances which compose the class of purgative medicines, will also admit of a satisfactory explanation from the application of these views. It ought moreover to enable the practitioner, by changing the solubilities of these substances, to change their medicinal effects. Experience shews that this is the fact, and that by combining *Aloes* with *Soap*, or an *Alkaline Salt*, we quicken their operation, and remove their tendency to irritate the rectum; the *Compound Decoction of Aloes* affords a combination of this kind. *Gamboge*, whose too ready solubility it is an object to obviate, should be intimately incorporated with some insoluble purgative, as for instance *Aloes*; a formula of this nature was introduced by Dr. George

Fordyce, and it has been since simplified and admitted into our Pharmacopœia, under the title of "*Pilulæ Cambogiæ Compositæ.*" *Tartrate of Potash*, which on account of its comparative solubility has gained the name of *Soluble Tartar*, acts with corresponding briskness upon the small intestines; but if we increase its proportion of *Tartaric Acid*, we convert it into a *super-tartrate* or "*Cream of Tartar*," which is a substance characterized by a comparative degree of insolubility, a correspondent change is produced in the medicinal activity of the salt; its purgative effects are considerably diminished, whilst its diuretic powers are rendered more considerable: we may even extend this experiment by adding to the *Cream of Tartar*, *Boracic Acid*, a substance capable of increasing to a certain extent its solubility, when we shall again find that its purgative properties are strengthened in an equal proportion.

It has been observed that a mixture of different saline cathartics is more efficient than an equivalent dose of any single one, a fact which is strikingly exemplified in the prompt and active operation of Cheltenham Salts in comparatively small doses, as well as in that of sea water. I submit whether this may not in some degree depend upon increased solubility; for it is a law well known to the chemist, that *when water has ceased to act upon a salt, in consequence of its having obtained the term of saturation, the solution may still take up another salt of a different kind.* I apprehend that an advantageous application of this law might be frequently made in practice, and the energies of a remedy thereby considerably extended.*

* An ingenious application of this law has been made for the purpose of purifying *Epsom Salts*. See *Magnesiæ Sulphas*.

Where the active principle of a cathartic is not sufficiently soluble, it is apt to vex and irritate the bowels, producing tormina instead of exciting a free and copious excretion; hence the reason why the operation of resinous purgatives is so commonly attended with griping, and why relief or prevention may be obtained by combining them with *neutral salts*; thus also *Senna*, whose virtues reside in extractive matter, is apt by decoction, or long exposure to the air, to act with griping, in consequence of the extractive matter becoming by oxidation, resinous and comparatively insoluble: this effect is best counteracted by the addition of *soluble Tartar*, that will quicken its action, or an alkaline salt that will increase its solubility.

It appears then to be established as a pharmaceutical maxim, that *the intensity and even specific action of a purgative medicine may be modified or completely changed, by changing the degree of solubility possessed by the principles in which its activity resides.*

The application of this principle is highly important in practice, directing us in the choice of the different purgatives, according to the objects which we may wish to fulfil by them, and pointing out safe and easy methods by which we may increase, diminish, retard, or accelerate their operation; it thus enables us to construct new and powerful combinations, by imparting to established remedies fresh activity, or by mitigating the acrimony and violence of arrangements in other respects efficacious and eligible.

In the exhibition of solid substances, their mechanical state of division may be capable of modifying their operation, from the influence which this condition must necessarily exert upon their solubilities, although I am by no means disposed to assign to it the importance which Gaubius has ventured to express, "*Sunt quæ*

ruditer pulverata alvum, subtilius vero urinas, aut alios humores movent; and Ray, speaking of the *Asarum* (Hist. p. 208) has the following remark—" *Quo tenuius est tritum, eo magis urinas movere, minus autem alvum ducere, creditur;*" and Linnæus * observes that this same plant, when exhibited in the state of *very fine* powder, uniformly acts as an emetic, but that when *coarsely* powdered it always passes the stomach, and becomes cathartic. I have endeavoured under the article *Pulveres* to establish some useful precepts upon this subject, to which I beg to refer the reader.

The influence of solubility upon the medicinal energies and specific effects of remedies, may be farther illustrated by a comparative examination of the virtues of the *Acetate* (super-acetate), and *Sub-acetate* (Goulard's Extract) *of Lead*: the acetate preserves its solubility and integrity under any degree of dilution, while the sub-acetate when slightly diluted with the purest water, in consequence of the carbonic acid diffused through it, gives out a copious precipitate; the former therefore is undoubtedly the more immediately active application as a preparation of lead, but it is nevertheless perhaps less adapted to remove inflammation and abate irritation than the turbid mixture of the sub-acetate, since the slow and gradual action which is ensured by the latter is more desirable than the instantaneous operation of the same remedy, applied in a more soluble form: the popular injection for gonorrhæa, consisting of a mixed solution of *Sulphate of zinc* and *Super-acetate of lead*, probably owes much of its value to the insoluble precipitate of *Sulphate* of lead which necessarily takes place, and which, from becoming entangled in the mucus of the urethra, produces a more permanent stimulus than what could

* *Amænitates Academ;* T. 7, p. 307.

have happened from a soluble salt: thus again the *Sulphuret of Antimony*, and some other preparations of that metal, of slow solubility, establish a more permanent influence than *Tartarized Antimony*, and may be preferable to it in cases where immediate and active evacuations are not required.

Of remedies composed of vegetable tonics and astringents, the useful application of this principle is also apparent. Thus the addition of *alkalies*, or *lime water* to the infusions of *Gentian*, &c. or to the decoctions of *Bark*, by rendering their extractive and resinous principles more soluble, increase their elegance, and exalt their virtues. (*Formulæ* 94, 96.) A knowledge of this principle likewise offers many useful hints connected with the successful exhibition of active remedies; it points out the medicines which require dilution in order to promote their operation, and those whose too speedy and violent effects may be retarded and checked by an abstinence from all potation. Thus in the exhibition of *Diuretics* likely to become cathartic or diaphoretic, no liquid should be given for at least an hour after their administration; the same caution applies with respect to the *Compound Powder of Ipecacuan*, which has a strong tendency to excite vomiting. When the remedy has passed out of the stomach, then the ingestion of fluids may, and ought to be encouraged.

To Sir Francis Milman the Profession is highly indebted for hints concerning the importance of accompanying the exhibition of *Diuretics* with plentiful dilution, the arguments he adduces elucidate in a very satisfactory manner the view which has been just taken of the *Influence of Solubility*.

Whenever a poisonous substance has been received into the stomach we should religiously avoid adminis-

tering any thing which may be likely to favour its solubility. In the selection of *Emetics* this admonition must not be forgotten, *Vomiting ought never to be provoked by preparations containing water, nor by liquids which are capable of acting as solvents;* hence we perceive the propriety of that practice, to which so much importance has been attached, of producing vomiting in the first instance, by the mechanical irritation of the fauces.*

Late experiments † have shewn that *Magnesia*, as well as the *fixed Alkalies*, increases the virulence of arsenic, by forming with it a soluble salt; whereas *Lime* or its *Carbonate*, has an opposite tendency, in consequence of the insolubility of *Arsenite of Lime*. I confess that these results agree with the views I have long entertained upon this subject: *destroy the solubility of a poisonous substance, and you will probably disarm it of its virulence.*‡ *Nitrate of Silver*, by

* Dry Vomit of Mariott. This once celebrated vomit, called *Dry*, from its being exhibited without drink, consisted of equal proportions of *Tartarized Antimony* and *Sulphate of Copper*.

† London Medical Repository, August, 1817.

‡ The most subtile of all poisons,—*the matter of febrile contagion*,—is certainly modified in activity by the degree of moisture in the atmosphere influencing its solubility; the Plague is said to be most common in Egypt after the inundation of the Nile, a period at which the atmosphere is necessarily saturated with water: according to the account of Sir Robert Wilson, the English and Turkish armies that marched to Cairo escaped contagion, while the troops that remained stationary on the moist shore of Aboukir, were very severely visited On the other hand, the *Harmattan*, a wind experienced on the western coast of Africa, between the Equator and fifteen degrees *North Latitude*, blowing from north-east towards the Atlantic, and which, in consequence of its passage over a very extensive space of arid land, is necessarily characterized by excessive dryness, puts an end to all Epidemics, as the Small Pox; and infection at such a time does not appear to be easily communicable even by art. *Philosophical Transactions, Vol.* 71.

The difficulty of communicating infection to animals during a dry state of the air, as remarked on the Western Coasts of Africa, during the

coming in contact with a *Muriatic Salt*, is rendered quite inert, and may be discovered unaltered in the fæces of persons to whom it has been administered. See *Argenti Nitras*. Orfila has accordingly found that a solution of common salt is a complete counter-poison to *lunar caustic*, and he has also shewn that the pernicious qualities of the *Muriate of Barytes* are counteracted by any soluble *Sulphate*.

Under the article *Plumbi Superacetas* the practitioner will find that the conjunction of this substance with any sulphuric salt, at once deprives it of its valuable properties as a remedy in *Hæmopthysis*. At the same time it is right to acknowledge that in the medical treatment of a case of poison, there are circumstances which might render it even judicious to administer a solvent, in order to remove the particles of the substance which sometimes adhere with such obstinacy to the coats of the stomach, as to defy the exertions of an emetic, especially if the poison be *Arsenic*; but this practice should not be allowed until all that can be fairly ejected by vomiting or purging has been previously removed, then the ingestion of *Magnesia* or an *Alkaline Salt*, as proposed by Mr.

blowing of the *Harmattan*, agrees with some observations on Plague by the French physicians, as this complaint first made its appearance in the French army during a moist state of the air in Syria, when it lay under the walls of Jaffa in February, 1800.

It is a well known fact that volatile bodies are sooner converted into a gaseous state by the presence of water in the atmosphere; this is strikingly exemplified by the greater rapidity with which *Limestone* is burnt and reduced to quick lime, in moist weather, and by the assistance which is rendered in a dry season, by placing a pan of water in the ash-pit; so again the perfume of flowers is most sensible when the air is humid, as during the fall of the evening dew; for the same reason the stench of putrid ditches and common sewers, is conveyed to the organs of smell much more speedily in summer previous to rain, when the air is charged with moisture.

Marshall * might be admissible, but it should be quickly followed up by fresh emetics or purgatives. The propriety of administering *vinegar*, *lemonade*, and different acid potations, in order to counteract the baneful effects of *Opium* and other narcotics, which has been so often questioned, receives ample explanation from the same views: they shew that if any quantity of the substance of opium remain in the primæ viæ, that acid or mucilaginous drinks, by favouring its solution or absorption, must accelerate its fatal effects,† but should it have been previously removed from the stomach, that then the antinarcotic influence of a vegetable acid‡ may remove the consequent stupor and delirium, and thus realize the expectations which Virgil has so poetically raised.

> "Media fert tristes succos tardumque saporem
> Felicis mali: quo non præsentius ullum
> (Pocula si quando sævæ infecere novercæ
> miscueruntque herbas, et non innoxia verba)
> Auxilium venit, ac membris agit atra venena."
>
> Virg. Geor. II, 126.

> "Nor be the Citron, Media's boast, unsung,
> Though harsh the juice, and ling'ring on the tongue.
> When the drug'd bowl mid witching curses brew'd
> Wastes the pale youth by step-dame haste pursu'd,
> Its powerful aid unbinds the mutter'd spell
> And frees the victim from the draught of hell." ‖

* Remarks on Arsenic, to which are added Cases of recovery from its Poisonous Effects, by John Marshall, Surgeon, &c. Lond. 8vo. 1817.

† The Reader is referred to a work lately published by M. Orfila, entitled "Toxocologie générale considérée, sous les Rapports de la Physiologie, de la Pathologie, et de la Medicine légale." Paris, 1815.

‡ Vegetable acids are rarely the vehicles of poison, the most deleterious plants being inert in those parts that are impregnated with acid; the pulp of the fruit of the *Srychnos*, amongst many others, offers an illustration of this fact. *Virey.*

‖ Mr. Parkes, author of the Chemical Catechism and other works, suggested the probability of this passage being an allusion to the antinarcotic powers of a vegetable acid.

I shall conclude this section upon the influence of Solubility, by the relation of an anecdote which may tend to confirm the justness of the views I have offered more satisfactorily perhaps, than any additional arguments derived from a scientific examination of chemical and medicinal facts; in as much as it presents us with a practice, the utility of which has been discovered by unassisted experience, and must consequently be independent of theory. The American Indians, whenever they undertake a long journey, and are likely to be destitute of provisions, employ Tobacco for the purpose of counteracting the uneasy sensations of hunger, and in its preparation for such a purpose they adopt an expedient for modifying its powers, and protracting its effects, which affords an instructive illustration of the influence of solubility; it consists in combining the juice of tobacco, with the pulverized shells of snails, cockles, and oysters;* the mass is dried, and formed into pills, of a convenient size to be held between the gum and lip, which being gradually dissolved and swallowed, fulfil the intention required.

V.

TO AFFORD A CONVENIENT, AGREEABLE, AND EFFICACIOUS FORM.

After the views which have been submitted, it is evident that the form in which a remedy is exhibited may exert some influence upon its medicinal effects; in general it must be adapted to the extent of the dose—the nature of the remedy—its degree of solubility—the

* They are previously calcined but not burnt to lime, to an extent only that may destroy their tenacity, and render them fit for levigation.

objects it is to fulfil—and, as far as can be attained with propriety, to the caprice of the patient. For more particular directions, see *Decocta, Infusa, Tincturæ, Misturæ, Pilulæ, Pulveres, &c.*

When a substance, or a combination of substances, requires the addition of some other one for the purpose of imparting a convenient, agreeable, or efficacious form, *a vehicle should always be selected, whose effects will be likely to correspond with the intention of the other ingredients.* This precept may be exemplified by a reference to *Formulæ* 17, 33, and others, the key letters of which will shew the *modus operandi* of their respective *vehicles.*

Some medicines are more grateful to the stomach, as well as more efficacious in their operation, when exhibited in a state of effervescence, we must however be careful that their properties are not injured by such a combination; see *Formulæ* 19, 23, 24.

Such are the objects which are to be attained by combining several substances in one *Formula*, and such are the laws by which these compositions are to be regulated; but unless a physician can satisfactorily trace the operation of each element in his prescription to the accomplishment of one or more of the objects which I have enumerated, SIMPLICITY should be regarded by him as the greatest desideratum. I was once told by a practitioner in the country that the quantity, or rather complexity of the medicines which he gave his patients, for there never was any deficiency in the former, was always increased in a ratio with the obscurity of their cases; "if," said he, "I fire a great profusion of shot, it is very extraordinary if some do not hit the mark." A patient in the hands of such a practitioner has not a much better chance

than the Chinese Mandarin, who upon being attacked with any disorder, calls in twelve or more physicians, and swallows in one mixture all the potions which each separately prescribes!

Let not the young practitioner however be so deceived; he should remember that unless he be well acquainted with the mutual actions which bodies exert upon each other, and upon the living system, it may be laid down as an axiom, that *in proportion as he complicates a medicine, he does but multiply the chances of its failure.* SUPERFLUA NUNQUAM NON NOCENT: let him cherish this maxim in his remembrance, and in forming compounds, always discard from them every element which has not its mode of action clearly defined, and as thoroughly understood.

The perfection of a Medicinal Prescription may be defined by three words; it should be PRECISE (in its *directions*,) CONCISE (in its *construction*,) DECISIVE (in its *operation*.) It should carry upon its very face an air of energy and decision, and speak intelligibly the indications which it is to fulfil. It may be laid down as a position which is not in much danger of being controverted, that *where the intention of a medicinal compound is obscure, its operation will be imbecile.*

A Medicinal Formula has been divided into four constituent parts, a division which will be found to admit of useful application to practice, in as much as it was evidently suggested with a view of accomplishing the more prominent objects which have been related in the preceding pages; or in the language of Asclepiades of enabling the BASIS to operate "CITO," "TUTO," et "JUCUNDE." Quickly, Safely, and Pleasantly.—thus

I. The Basis, or Principal Medicine.

II. The Adjuvans; that which assists and promotes its operation.
("*Cito.*")

III. The Corrigens; that which corrects its operation.
("*Tuto.*")

IV. The Constituens; that which imparts an agreeable form.
("*Jucunde.*")

These elements however are not all necessarily present in every scientific formula, for many medicines do not require any addition to promote their operation, and the mild and tractable nature of others renders the addition of any corrective unnecessary; whilst many again are in themselves sufficiently manageable, and do not therefore require the *intermede* of any *vehicle* or *constituent*. It also frequently occurs that one element is capable of fulfilling two or more of the objects required; the Adjuvans for instance, may at the same time act as the Corrigens, or Constituens; thus the addition of *Soap* to *Aloes* or *Extract of Jalap* mitigates their acrimony, and at the same time quickens their operation (17.) So again *Neutral Salts* both quicken and correct the griping which attends the operation of resinous purgatives. The disposition of the key letters placed opposite to the elements of the following *Formulæ*, will furnish the practitioner with a farther elucidation of these principles, viz. 9, 10, 14, 15, 29, 30, 33, 49, &c. This coincidence, if possible, should be always at-

tained, for it simplifies the formula, and by decreasing the bulk of the remedy, renders it less nauseous and more elegant. *

This division also affords the best general rule for placing the ingredients of a formula in proper order, for the order should correspond with that of the arrangement; and those elements intended to act in unity should be marshalled together. The chemical and mechanical nature however of a medicinal substance will occasionally offer exceptions to any general rule; thus the volatile ingredients should be those last added, and the constituent or *vehicle* should be placed next the particular element to which it is intended to impart convenience or efficacy of form, or a capability of mixing with the other ingredients, as may be seen in Formulæ 8, 10, 50, 63, &c. If any substance require decoction or infusion, a question then arises, determinable only by a knowledge of its chemical composition, whether the remaining ingredients should be added previous to, during, or subsequent to that operation; *Formula* 95, which is recommended by Pringle as a remedy in Typhus fever, may serve to exemplify this principle. The preparation of the ingredients is resolved into three distinct stages, and it is easy to discover that by any other arrangement their several virtues could not be fully obtained, and secured from change. The *Cinchona*, for instance, yields its full powers only by decoction, a process

* It appears from what has been stated under Section I.. B. with respect to DIURETICS, that some medicines not only *assist*, but actually DIRECT the operation of the substances with which they may be associated, and that many remedies act in unison with those they are joined with; thus *Nitre* in conjunction with *Squill* is diuretic; in conjunction with *Guaiacum*, diaphoretic; for these reasons I hesitated whether I ought not to have added a fifth *constituent*, and restored the "*Dirigens*" of Ancient authors.

which would necessarily impair those of *Serpentaria*, connected as they are with an essential oil; whilst the addition of the acid at any other stage of the process than that directed, would produce decompositions in the vegetable substances; and it is evident that were the *Spirit of Cinnamon* added previously, it would be entirely lost by vaporization.

COMPOUND MEDICINES have been divided into two Classes, *viz.*

I. OFFICINAL PREPARATIONS,

which are those ordered in the Pharmacopœias, and kept ready prepared in the shops. No uniform class of medicines however can answer the indications of every case, and hence the necessity of

II. MAGISTRAL OR EXTEMPORANEOUS FORMULÆ.

These are constructed by the practitioner at the moment, and may be either arrangements altogether new, or officinal preparations with additions, or modifications. Too much importance cannot be assigned to the Art which thus enables the physician to adapt and graduate a powerful remedy to each particular case by a prompt and accurate prescription; without this knowledge, the practitioner of the nineteenth century with all the collateral aid of modern science, will be as helpless in the chamber of sickness as the physicians of ancient Egypt, who were obliged by the laws to follow with servile exactness the unvarying mandates of their medical code. *Extemporaneous* are also preferable to *Officinal Formulæ*, whenever the powers of the compound are liable to deterioration from being kept; for examples, see *Mistura Ferri composita; Infusum Sennæ: Liquor Hydrargyri Oxy-muriatis, &c.*

The Chemical and Pharmaceutical Errors, which may be committed in the composition of Extemporaneous Formulæ, are referable to the following Sources.

1.—*Substances are added together which are incapable of mixing, or, of forming Compounds of uniform and suitable consistence.*

This may be termed an error in the *Mechanism* of the Prescription, and has been generally regarded as being more inconvenient than dangerous, more fatal to the credit of the Prescriber than to the case of the Patient; the observations however which are offered in this work, especially under the article *Pilulæ*, must satisfy the practitioner that this error is more mischievous in its effects than has been usually supposed; it is so palpable and self-evident in its nature, that it will be unnecessary to illustrate it by more than one or two examples. *Calomel*, for instance, has been ordered in an aqueous vehicle, and certain *resinous tinctures* have been directed in draughts, without the necessary intervention of mucilage; so again, an intermixture of substances has been formally ordered in powder that possesses the perverse property of becoming liquid by triture (see *Pulveres*. p. 160.), and bodies have been prescribed in the form of pills, whose consistence*

* Dr. Percival in his Essays, ingenuously exemplifies this error by stating a case which occurred in his own practice. "I ordered," says he, a combination of *Camphor* and *Balsam of Copaiba* in the form of pills, but the apothecary informed me that he was unable to form them into a mass, since they liquefied like treacle." I may here observe that the addition of a small portion of the coagulated yolk of an egg, would have rendered the mixture practicable.

renders it impossible that they should preserve the globular form; or else they have been so hard and insoluble, that they might be fired through a deal board.*

II.—*Substances are added together which mutually decompose each other, whence their original virtues are changed, or destroyed.*

This is a more serious, but not a less frequent source of error; it has been already shewn in this Analysis (IV. B) that the judicious and scientific application of chemical science has furnished new and endless resources to the physician, by exalting the efficacy and correcting the acrimony of established remedies, or by combining inert substances so as to create new and powerful medicines. With equal truth and confidence it may be asserted, that the abuse of these means not only destroys the virtues of the most valuable articles in the *Materia Medica*, but that the mildest remedy may be thus converted into an instrument of torture, and even of death. In a lecture delivered at Apothecaries' Hall, Mr. Brande stated that he had seen a prescription in which the *blue*, or mercurial pill, was ordered in conjunction with nitric acid, and that the patient was brought to "death's door" from the formation of *nitrate of mercury* in his stomach! I have myself lately seen a *Recipe*, professing to afford a preparation similar to the "*Black Drop*," and which directed a mixture of a *Tincture of Opium*, made with rectified spirit, with

* This would occur, if in making the *Pilulæ Ferri Compositæ*, we were to substitute the *Liquor Potassæ* for the *Sodæ Sub-carbonas*.

Nitric Acid; in this case, it may be very safely inferred that the author was not only ignorant of the chemical habitudes of these bodies, but that he never performed the experiment in question, or he would have learnt from dire experience, that in consequence of the rapid evolution of *nitric ether*, the contents of the phial will explode with violence, to the imminent hazard of the operator's eye-sight. During the course of my professional practice I have witnessed more than an ordinary share of consumptive cases, and I can confidently state that in the treatment of Hæmopthysis, the styptic properties of *super-acetate of lead* are entirely invalidated by combination with *alum*, or by its exhibition being accompanied with that of the acidulated *infusion of roses*, or with small doses of *sulphate of magnesia;* and yet, I would ask, whether this practice is not usual and general? The practitioner however cannot be too often reminded that he is not to reject a remedy whose value has been ascertained by experience, merely because it appears to be unchemical: the popular and certainly useful pill, consisting of calomel, rhubarb, and soap, may be adduced as an example of this kind. Of the *Mistura Ferri Composita*, I will only say that it is a most valuable combination; and whether it be the product of accident or the result of philosophical induction, it equally deserves a distinguished place in our list of tonic remedies: but it cannot be denied that many of our esteemed arrangements, which are in apparent contradiction to all the laws of composition, owe their efficacy to the operation of affinities altogether blind and fortuitous.

It is impossible to furnish any general rule that may enable the practitioner to avoid mixing together substances which are incompatible with each other;

a knowledge of their chemical habitudes must in every case direct him, and these are enumerated in the second part of this work, under the history of each medicinal substance. The Physician however will find it useful to retain in his remembrance the simple and beautiful law which has been so ably developed by the eminent author of the "STATIQUE CHIMIQUE," that, *whenever two salts in a state of solution are brought together, which contain, within themselves, elements capable of producing a soluble and insoluble salt, a decomposition must necessarily arise;* he illustrates this law by the example of *Nitrate of Silver* and *Muriate of Potass*, whose elements are capable of forming within themselves a soluble salt, *Nitrate of Potass*, and an insoluble salt, *Muriate of Silver*.

III.—*The Methods directed for the preparation of the Ingredients are either inadequate to the accomplishment of the object, or they change and destroy the efficacy of the Substances.*

The observations already offered upon *Formula* 95, will sufficiently explain the nature of the various errors comprehended under this head: so, again, if the virtues of a plant reside in *essential oils*, which are easily volatilized, or in *extractive matter*, which readily becomes oxidized, DECOCTION must necessarily destroy its efficacy; a striking example of this fact is presented us in the history of the *Laurel* and *Bitter Almond:* the poisonous influence of the essential oil and distilled water of these vegetable substances, is well known, but their watery extracts are perfectly innocuous. On the other hand, an error ually injurious would be committed, by directing

a simple infusion of a vegetable, whose medicinal properties depended upon resino-mucilaginous principles. Orfila found that an extract of Hemlock, prepared by boiling the dried powder in water and evaporating the decoction, was entirely destitute of activity. See *Decocta*, *Infusa*, *Extracta*.

An instance of the baneful effects which may arise from an erroneous method of preparation, happened some time ago to fall under my immediate notice and care; it was in preparing an infusion of the root of the *Veratrum* with *Opium*, as directed by Mr. James Moore, when the dispenser ignorantly substituted a spirituous for a vinous menstruum.

A very common error may be here noticed, which is that of prescribing a substance in such a form, as not to be acted upon with any effect by the solvent; as an example it may be stated, that in preparing an Infusion of *Juniper Berries*, unless pains be taken by strong contusion to break the seeds, it will contain but little power as a medicine.

It is unnecessary to multiply examples in proof of the numerous errors into which a physician must unavoidably fall, who presumes to compose prescriptions without a knowledge of the chemical habitudes of the different substances which he combines. The file of every apothecary would furnish a volume of instances, where the ingredients of the prescription are fighting together in the dark, or at least, are so adverse to each other, as to constitute a most incongruous and chaotic mass.

> "Obstabat aliis aliud: quia corpore in uno
> Frigida pugnabant calidis, humentia siccis,
> Mollia cum duris, sine pondere, habentia pondus."
>
> *Ovid Metamorph. lib.* 1. 19.

THE DOSES OF MEDICINAL SUBSTANCES are specific with respect to each, and can therefore be only learnt from experience; the young and eager practitioner, however, is too often betrayed into the error of supposing that the powers of a remedy always increase in an equal ratio with its dose, whereas THE DOSE ALONE VERY OFTEN DETERMINES ITS SPECIFIC ACTION. "*Medicines*," says Linnæus, "*differ from poisons, not in their nature, but their dose*," which is but a paraphrase of the well known aphorism of Pliny, "*Ubi virus, ibi virtus.**"—Five grains of *Camphor* act as a mild sedative, and slight diaphoretic, but twenty grains induce nausea, and act as a stimulant; so again, *Opium*, in too large doses, instead of promoting, prevents sleep, and rather stimulates the bowels, than acts as a narcotic. Two ounces of any neutral salt are apt to be emetic, one ounce even of *Alum* to be cathartic, and two drachms to be refrigerant; in like manner the preparations of *Antimony* either vomit, purge, or sweat, according to the quantity exhibited.

Would it not appear that *powerful doses rather produce a local than general effect?* Experience seems to prove in this respect, that the effect of an internal application is similar to that of an external impression; if violent, it affects the part only, as pinching does that of the skin, whereas titillation, which may be said to differ only from the former in degree, acts upon the whole system, and occasions itching, and laughter, and if long continued, weakness,

* The ancients applied the term "*Venenum*," to signify both a poison and its antidote; thus Horace,

"Quæ Saga, quis te solvere Thessalis
"Magus *venenis*." Od. 27. Lib. 1.

sickness, vomiting, and convulsions; in like manner *Digitalis*, if given in large doses, acts immediately upon the stomach or bowels, becoming emetic, and cathartic, but in smaller proportions, it produces a GENERAL effect, increasing all the excretions, especially that of urine. I am well satisfied that the regulation of the dose of a medicine is even more important than it is usually supposed to be. *Substances perfectly inert and useless in one dose, may prove in another active and valuable.* Hence may be explained the great efficacy of many mineral waters, whilst the ingredients which impart activity to them are found comparatively inert, when they become the elements of an artificial combination; and hence probably the failure of many *alterative* medicines, when no other rational cause can be assigned for it. We need not seek far for an example of the very different and opposite effects which the same substance can produce in different doses; the operation of *Common Salt* is familiar to us all; Sir John Pringle has shewn that in quantities such as we usually take with our food, its action is highly septic, softening and resolving all meat to which it is applied, whereas in larger quantities it actually preserves such substances from putrefaction, and therefore, when so taken, instead of promoting, destroys digestion.

It is moreover probable that medicinal, like nutritive substances, are more readily absorbed into the circulating system when presented in small quantities, than when applied in more considerable proportions. It is upon this principle that a large quantity of food taken seldom, does not fatten so much as smaller quantities at shorter intervals, as is exemplified in the universal good condition of cooks and their attendants. It is not pressing the principle of analogy too

far to suppose that the action of *alteratives*, which require to be absorbed, may be more effectually answered by similar management, that is, *by exhibiting small doses at short intervals.*

The operation of medicines is influenced by certain general circumstances, which should be also kept in mind when we apportion their dose; e. g. AGE—SEX—TEMPERAMENT—STRENGTH OF THE PATIENT—HABIT—DIET—CLIMATE—DURATION OF THE DISEASE—STATE OF THE STOMACH—IDIOSYNCRASY—and THE VARIABLE ACTIVITY OF THE MEDICINAL SUBSTANCE.

Women in general require smaller doses than men. Habit, or the protracted use of a medicine, generally diminishes its power, although certain cathartics appear to offer an exception, for when long continued, their activity is proportionally increased, as is well known to every person who is familiar with the operation of the Cheltenham waters. Emetics also frequently become more powerful by repetition; but this is probably the effect of the mind; for after the frequent use of such a remedy, the mere sight of it, or even conversation relative to it, will excite nausea.

In apportioning the dose of a very active medicine, it is of the greatest moment to determine the relative degrees of power between the system and the remedy, and to know to what extent the latter is likely to be carried, compatible with the powers of life to resist it; thus after a patient has been exhausted by protracted and severe suffering and watching, a different dose is necessary than at the commencement of the disease. The importance of this precept is impressed upon my mind from having witnessed, in the course of my practice, several instances of the mischief which has arisen from a want of attention to it; that disease

materially influences the condition of the body, and its susceptibility to remedial impressions, has been already demonstrated. Emetics act very readily in febrile affections, while in those of the Neuroses* they produce their effects with difficulty.

* Dr. Majendie presented a Memoir in the year 1812 to the Institute of France, intended to prove by a variety of experiments, that *the stomach is not the principal agent in Vomiting, but the pressure exercised by the abdominal muscles on the gastric organ during this act.* If this be true, we need no longer be surprised at the influence which the brain produces upon this operation. Dr. Harrison, in his Gulstonian Lecture lately read before the College of Physicians, treated this subject with much ingenuity and success; he observed that although the experiments of Majendie sufficiently testify the importance of the action of the Muscles in the operation of Vomiting, and which can only be explained by the influence of the brain and nervous system, yet that he has attributed too much to their agency: "it appears to me," continued he, "that vomiting may be explained in the following manner,—*the irritation of the stomach makes a call upon the brain for the aid of the diaphragm and the abdominal muscles, in order to expel its contents; the diaphragm then becomes contracted and fixed, the ribs drawn down, and the abdominal muscles drawn inwards, so that the stomach is pressed on all sides by voluntary muscles, which, together* WITH ITS OWN CONTRACTION, *expel the contents.*" Now it must be obvious that where the brain from oppression or injury withholds its influence from these voluntary muscles, and disregards the call of the stomach, vomiting can only be excited with difficulty, or will be prevented altogether; under such circumstances, Venesection may prove a powerful adjuvant by unloading the vessels of the brain, and thus restoring its natural excitability. The operation of *Nightshade* and some other narcotic poisons, will receive a satisfactory explanation from this view of the subject; an excessive dose of the *Atropa Belladonna* produces the most alarming symptoms, and so difficult is it to evacuate the stomach under such circumstances, that as much as fourteen grains of Tartarized Antimony have been administered without effect: but in such cases it has been found that after a copious draught of Vinegar, an emetic is more likely to succeed: in this case, the Narcotic paralises the brain, and in consequence it is unable to lend its aid to the muscles requisite for the operation of vomiting, until its energies are restored by the anti-narcotic influence of a vegetable acid. I shall terminate this note with an important practical precaution, which this view of the subject must suggest, and which ample experience has sanctioned: DO NOT SUFFER THE

THE VARIABLE ACTIVITY OF A MEDICINE should also be appreciated, and perhaps the practitioner would act cautiously if he were to reduce the dose, should it be a very considerable one, whenever a fresh parcel of the medicine is commenced, especially of the powders of active vegetables liable to deterioration from being kept, as those of *Digitalis*, *&c.*

THE TIME OF THE DAY at which remedies should be administered, deserves likewise some attention. *Evacuating Medicines* ought to be exhibited late at night or early in the morning. It would seem that during sleep the bowels are not so irritable, and consequently not so easily acted upon, which allows time for the full solution of the substance; the same observation applies to *Alterative*, and other medicines which are liable to suffer from a vexatious irritability of the bowels; it is on this account eligible to exhibit *Guaiacum*, *Pilulæ Hydrargyri*, &c. when they are not intended to purge, at bed time. On the other hand, where the effects of a remedy are likely to be lost by perspiration, as is the case with *Diuretics*, many of which are by external heat changed into *Diaphoretics*, it may become a question with the judicious practitioner whether he cannot select some more favourable period for their exhibition.

In fevers it is of importance to consult in all respects the quiet and comfort of the patient; Dr. Hamilton

APPARENTLY INACTIVE STATE OF THE STOMACH TO INDUCE YOU TO AUGMENT THE DOSE OF AN EMETIC TO A PREPOSTEROUS EXTENT. Remember, that although the stomach, for the reasons just stated, may be unable to void its contents by vomiting, it may nevertheless retain its sensibility, and be therefore liable to inflammation; Dr. Harrison presented the College with a case of this kind, where the practitioner in attempting to excite Emesis in an Epileptic patient, by a large dose of *Sulphate of Zinc*, produced an inflammation in the stomach that terminated fatally.

therefore, in his valuable work on Purgatives, very judiciously observes that, on this account, the exhibition of purgative medicines should be so timed, that their effects may be expected during the day.

The Intervals between each Dose must be regulated by the nature of the remedy and that of the objects which it is intended to fulfil, and whether it be desirable or not that the latter dose should support the effects of the preceding one, or whether there be any fear of a reaction or collapse taking place after the effect of one dose has subsided, unless immediately repeated; thus the effects of diffusible stimulants, such as ammonia and æther, are very evanescent, they should therefore be repeated at short intervals; the same may be said of *Diaphoretics*, especially the lenient ones; we ought not to allow the period between the doses to be so remote as to occasion any striking abatement in the impression: so Opium, where its primary and stimulant operation is required, as in diseases of debility, such as fevers of the typhoid type, it should be given in small doses at short intervals, so that it may enkindle and sustain a uniform and regular state of excitement: but where the object is to mitigate pain, allay irritation, and produce sleep, it ought to be exhibited in full doses, at distant intervals. There is a caution also which it is very necessary to impress upon the practitioner, respecting the power which some medicines possess of accumulating in the system; this is notorious with regard to Lead and Mercury, and probably with the preparations of Arsenic, and some other metallic compounds. Dr. Withering has observed that the repetition of small doses of *Digitalis*, at short intervals, till it produces a sensible effect, is an unsafe

practice, since a dangerous accumulation will frequently take place before any signals of forbearance present themselves.

Constitutional Peculiarities, or Idyosyncrasies, will sometimes render the operation of the mildest medicine poisonous, "*Virum novi,*" says Gaubius, "*qui cum fatuum lapidum cancrorum pulvisculum ingessit, vix mitius afficitur quam alii ab Arsenico.*" I have seen a general Erysipelas follow the application of a blister, and tormina of the bowels, no less severe than those produced by the ingestion of *Arsenic*, attend the operation of purgatives composed of *Senna!* In some constitutions Antimony has been known to produce a ptyalism; Dr. James assured Sir George Baker that he knew six instances of it, although the patients thus affected had neither their teeth loosened, nor their breath made offensive. The peculiar susceptibility of certain individuals to the effects of particular plants is also very singular: Murray relates that unpleasant symptoms have been experienced by merely keeping *Aconite* for some time in the hand, or on the bosom. I am acquainted with two persons in whom the odour of Ipecacuan always produces a most distressing dyspnæa: there are some idiosyncrasies so singular and incredible, that nothing but unimpeachable testimony could sanction our belief in their existence. It is said that whenever Dunning the celebrated barrister was called upon to make the finest displays of his eloquence, whether forensic or parliamentary, he constantly applied a blister to his chest, which he found to have the effect of imparting an unusual tone and vigour to his body, and elevation to his mind! Education, and early habits do likewise establish very extraordinary peculiarities in different countries with respect to various objects of diet and

luxury: what shall we say of the refinement of the Ancients who regarded the flavour of the Citron with disgust, while the odour of putrid fish was deemed by them so exquisite, that they carried it about in caskets of onyx as a favourite perfume!

The popular scheme of Gaubius for adapting the doses of medicine to different ages, which was published in the former editions of this work, is now omitted, as being less easy of application, than the following simple formula by Dr. Young.

RULE.

For children under twelve years, the doses of most Medicines must be diminished in the proportion of the Age to the Age increased by 12.

thus at two years to $\frac{1}{7}$—viz.

$$\frac{2}{2+12} = \frac{1}{7}$$

At 21 the full dose may be given.

Every general rule however respecting the doses of medicines will have exceptions. Thus Children will bear larger doses of *Calomel* than even Adults, and many medicines which do not affect Adults, although exhibited in considerable quantities, prove injurious even in small doses to Children.*

* The Mechanical Physicians attempted to adjust the doses of medicines according to the constitution, by a mathematical rule; thus they say, "*the doses are as the squares of the Constitution.*" And in the Edinburgh Medical Essays, there is actually a formal attempt to correct the errors of this rule. See "*An Essay towards ascertaining the doses of vomiting and purging Medicines, by Dr.* CHARLES BALGUY, *Physician at Peterborough.* vol. 1. 167.

ON THE PARTICULAR FORMS OF REMEDIES, AND THE GENERAL PRINCIPLES UPON WHICH THEIR CONSTRUCTION, AND ADMINISTRATION ARE TO BE REGULATED.

SOLID FORMS.

PULVERES. *Powders.*

The form of powder is in many cases the most efficient and eligible mode in which a medicinal substance can be exhibited, more especially under the following circumstances.

1. *Simple Powders.*

1. Whenever a remedy requires the combination of all, or most of its principles, to ensure its full effects, as *Bark*, *Ipecacuan*, *Jalap*, *&c.*

2. Where medicinal bodies are insoluble, and indisposed to undergo those essential changes, *in transitu*, which render them operative; for it must be remembered that by minute division, every particle is presented to the stomach in a state of activity, being more immediately exposed to the solvent or decomposing powers of that organ.

3. Where the mechanical condition of the substance is such as to occasion irritation of the stomach, as the *Sulphuretum Antimonii*,* or in external applications, to produce an improper effect upon the skin, as *Hydrargyri nitrico-oxydum.*

The degree of fineness to which substances should be reduced by pulverization, in order to obtain their

* Camphor, unless it be presented to the stomach in a state of minute division, is liable to occasion heat and uneasiness in that organ. *Fothergill's Med. Observ.* vol. i. p. 432.

utmost efficacy, is an important question. The impalpable form appears to be extremely injurious to some bodies, as *cinchona*, *rhubarb*, *guaiacum*, and to certain aromatics, in consequence of an essential part of their substance being dissipated, or chemically changed by the operation; Fabbroni, for instance, found by experiment that cinchona yielded a much larger proportion of soluble extractive, when only coarsely powdered. I think it may be laid down as a general rule, that *extreme pulverization assists the operation of all substances whose active principles are not easily soluble, and that of compound powders whose ingredients require, for their activity, an intimate intermixture; whilst it certainly injures, if not destroys, the virtues of those which contain as their active constituents, a volatile principle easily dissipated, or extractive matter which is readily oxidized.*

2. *Compound Powders.*

The disintegration of a substance is much accelerated and extended by the addition of other materials; hence the pharmaceutical aphorism of Gaubius, "*Celerior atque facilior succedat composita, quam simplex pulverisatio.*" Thus several refractory vegetable bodies, as *myrrh*, *gamboge*, *&c.* are easily reduced by triturating them with sugar or a hard gum; and some gum resins, as *assafœtida* or *scammony*, by the addition of a few drops of almond oil: upon the same principle the Pharmacopœia directs the trituration of aloes with clean white sand, in the process for preparing *Vinum Aloes*, to facilitate pulverization and to prevent the particles of aloes, when moistened by the liquid, from running together into masses; some dispensers very judiciously adopt the same mechanical expedient in making a tincture of myrrh; so again,

in ordering a watery infusion of opium, it will be judicious to advise the previous trituration of the opium with some hard and insoluble substance, as directed in the *Pulvis Cornu Usti cum Opio*, otherwise its particles will adhere with tenacity, and the water be accordingly unable to exert a solvent operation upon its substance. It is equally evident that in the construction of compound medicinal powders, the addition of an inert ingredient, which the mere chemist might condemn and discard as useless, not unfrequently acts a very important part in the combination, owing to its effects in dividing and comminuting the more active constituents: *the sulphate of potass* in Dover's powder, acts merely in dividing and mixing more intimately the particles of opium and ipecacuan: the *phosphate of lime* appears to act in the same mechanical manner in the Antimonial Powder; so again, in the *Pulvis Contrajervæ compositus*, the prepared oyster shells may be a necessary ingredient: in the *Pulvis Jalapæ compositus* of the Edinburgh college, the cream of tartar greatly increases the activity of the jalap, by breaking down its substance and dividing its particles. The old combination of *Pulvis Helvetii* consisted of alum and dragon's blood, and there can be no doubt but that the effect of this latter ingredient, which has been often ridiculed, was to retard the solution of alum in

* In some cases the subject to be pulverised has been previously exposed to heat, but the doubtful influence of exalted temperature upon vegetable bodies, ought to afford us a lesson of extreme caution; the astringency of the stalks of the *Artichoke* is entirely destroyed by being gently heated in an oven, for after this operation they no longer strike a black colour with the salts of iron: another example is afforded us in the effects of heat upon Starch, which is thus changed into a species of gum, that does not produce a blue colour with Iodine.

the stomach, in consequence of which the preparation was likely to produce less inconvenience, and could therefore be administered in larger doses; the Edinburgh college has substituted gum Kino in their *Pulvis Aluminis compositus*, which may have the same effect in modifying the solubility of the alum.

In rubbing together different substances, it is necessary to remember that there are many saline bodies, which in the dry state become moist and even liquid, by triture with each other, and that they are consequently susceptible of mutual decomposition. This change is effected by the action of water, derived from the following sources.

1. *From the water of crystallization.* This always operates when the proportion contained in the original ingredients is greater than that which the products can dispose of; that is to say, whenever the capacity of the new compound for water is less than that of the original ingredients. By previously driving off this water by heat, we shall of course avoid such a source of solution, and no liquefaction can ensue. Thus, if recently burnt quicklime be triturated with calomel, the resulting mixture will be white, shewing that no decomposition can have arisen, but add a few drops of water, and it instantly assumes a dark aspect. If *crystallized* sulphate of copper be triturated with super-acetate of lead, the resulting mixture will assume a fine green colour, but if the sulphate of copper be previously heated, and its water of crystallization driven off, no change of colour will be produced: if for super-acetate of lead we substitute muriate of lime, and the sulphate of copper be *crystallized*, we shall obtain a result of a yellow colour, but if the sulphate of copper be *anhydrous*, the product will be colourless, becoming however in-

stantly yellow, like the former, on the addition of a drop of water; and on a further addition of this fluid, the yellow product in both instances will be rendered blue, which proves that a chemical decomposition has taken place, and that a muriate of copper has resulted; for this salt is rendered *yellow* by a small, and *blue* by a larger proportion of water. The *Cuprum Ammoniatum* presents another illustration, for the ingredients, when rubbed together, become extremely moist, and undergo a chemical decomposition. Certain resinous bodies also, as *myrrh*, become liquid by triture with alkaline salts, in which case the resin and alkali form a soluble compound, which the water of crystallization, thus set at liberty, instantly dissolves.

2. *From aqueous vapour in the atmosphere.* The water of the atmosphere does not act upon these occasions, unless it be first attracted and absorbed by one of the triturated bodies; e. g. if super-acetate of lead and recently burnt alum be triturated together, no change will be produced; but, if the burnt alum be previously exposed for a short time to the atmosphere, these bodies will in that case become liquid.

The physician, without this chemical knowledge, will be often betrayed into the most ridiculous blunders, an instance of which very lately came to my knowledge in a prescription for the relief of cardialgia and constipation, in a case of dyspepsia; it directed *sulphate of soda* and *carbonate of potass*, in the form of a powder, but the *fiat* of the physician, upon this occasion, only served to excite the ridicule of the dispenser, who soon discovered that the ingredients in his mortar dissolved into a liquid.

During the exhibition of powders containing insoluble matter, it is always important to maintain a

regularity in the alvine excretions, or an accumulation may take place attended with very distressing symptoms. Dr. Fothergill relates a case of this kind which succeeded the use of powdered bark; and Mr. Brande has communicated a similar instance of mechanical obstruction, produced by the habitual use of magnesia. I could also add, if it were necessary, some striking facts of a similar tendency, which occurred from eating bread that had been adulterated with pulverized *felspar*. The precaution seems more particularly necessary in the case of children, whose bowels are very impatient of extraneous and insoluble contents.* This dose of a powder ought not to exceed ʒj; and, when taken, should be diffused in water, wine, or any other convenient liquid; resinous and metallic powders require a thick and consistent vehicle, as syrup or honey, since they subside from those which are more fluid.

PILULÆ. *Pills.*

These are masses of a consistence sufficient to preserve the globular form, and yet not so hard as to be of too difficult solution in the stomach. The subject offers some extremely interesting points of inquiry. The following general rules will enable the practitioner to select those substances to which the form of pill is adapted, and to reject those to which it is not

* It is perhaps not generally known, that the *sugared plumbs* sold to children consist very frequently of *Plaister of Paris*; the introduction of such a substance into the intestines may often prove a source of mischief. I also understand, that it is no uncommon fraud to adulterate biscuits with the same substance. I confess I felt a great inclination to oppose the practice, lately suggested, of improving bad flour by the addition of *Magnesia*; I object to the introduction of any foreign and insoluble substance into our daily bread, and I am satisfied that the result of medical experience will sanction such an objection.

suitable, as well as to direct, *extemporaneously*, the most efficient mode of preparation.

I. The Selection of Substances.

1. *Suitable Substances* are, 1. All remedies which operate on small doses, as *Metallic Salts*; and 2, Those which are designed to act slowly and gradually, as certain *Alterative Medicines*, or 3, which are too easily soluble when exhibited in other forms, as *Gamboge*, &c. 4, Substances which are not intended to act until they reach the larger intestines, as in pills for habitual costiveness; *see Aloes*. 5, Bodies whose specific gravities are too considerable to allow their suspension in aqueous vehicles. *Efflorescent* salts may also be exhibited in this form, but they ought to be first deprived of their water of crystallization, or the pills composed of them will crumble into powder as they dry.

2. *Unsuitable Substances* are, 1, Those which operate only in large doses. 2, Which deliquesce. 3, Whose consistence is such as to require a very large proportion of dry powders to afford them a suitable tenacity, as *oils*, *balsams*, &c. 4, Substances that are so extremely insoluble, that when exhibited in a solid form they pass through the canal unaltered, as certain *extracts*.

Many remedies which are incompatible with each other in solution, may be combined in pills, unless indeed their medicinal powers are adverse or inconsistent, or their divellent affinities sufficiently powerful to overcome their state of aggregation.

II. Their Formation into Masses.

This is a subject of far greater importance than is usually assigned to it, as will be more fully explained in the sequel.

1. Many substances, as *vegetable extracts*, may be formed into pills without any addition; others, as *gum resins*, become sufficiently soft by being beaten, or by the addition of a drop or two of spirit, or *liquor potassæ*. Some dry substances react upon each other, and produce, without the addition of any foreign matter, soft and appropriate masses. The *Pilulæ Ferri Compositæ* of our Pharmacopœia, afford a very striking example of this peculiar change of consistence, which the mutual reaction of the ingredients produces by simple triture. The *Pilulæ Aloes Compositæ* offer another instance; for the extract of gentian, upon being triturated with aloes, produces a very soft mass, so that the addition of a syrup, as directed by the Pharmacopœia, is quite unnecessary.

2. Many substances are, in themselves, so untractable, that the addition of some matter foreign to the active ingredients, is absolutely essential for imparting convenience of form. It is generally considered that very little skill or judgment is required in the selection of such a substance, provided it can fulfil the *mechanical* intention just alluded to—the fact however is, that *the medicinal power of the pill may be materially controlled, modified, or even subverted, by the mode in which it is formed into a mass.* Where the active element of a pill is likely to be improved by minute division, a gummy or resinous constituent may be usefully selected; under the history of Aloes, I have alluded to a popular pill, known by the name of the *dinner pill*, in which case the *mastiche* divides the particles of the aloes, and modifies the solubility of the mass. The *Pilulæ Opii* of the former Pharmacopœia of London, consisted of equal proportions of opium and extract of liquorice, and the mass was so insoluble that its effects were extremely uncertain

and precarious; in the present edition, soap has been very judiciously substituted; but in certain cases where we wish to protract the influence of opium, or that of any other active body, so as not to obtain its full effects at once, we may very advantageously modify its solubility, by combining it with a gum resin or some substance which will have the effect of retarding its solution in the stomach. The *Pilula e Styrace* of the Dublin college, presents itself as an efficient example of this species of pharmaceutical address. I am well acquainted with many extemporaneous formulæ whose utility has been fully sanctioned by experience, and I have no hesitation in believing that their salutary mode of operation would receive a plausible explanation from this simple law of combination. Dr. Young has very justly stated in his Medical Literature,* that the *balsam of copaiba* envelopes metallic salts, so as to lessen their activity; he says that the sub-carbonate of iron, made into pills with copaiba, was given for some weeks without any apparent effect; and that a few hours after the same quantity had been given, with gum only, the fœces were perfectly black. I do not know a more striking and instructive proof of the influence of a glutinous or viscid constituent, in wrapping up a metallic salt, and defending the stomach from its action, than is presented in the case published by the medical attendant Mr. Marshall, in consequence of the attempt of Eliz. Fenning to poison the family of Mr. Turner of Chancery-lane by arsenic, which she providentially administered in a heavy yeast dumpling. *Soap* is very frequently used for the formation of pill masses, and

* I shall avail myself of the present opportunity to recommend this work to the perusal of every student who is ambitious to become acquainted with the *Literature* of his profession.

it is an excellent constituent for substances likely to be injured by meeting with an acid in the *primæ viæ*; many resinous bodies may also be reduced to a proper consistence by soap, although in prescribing it, its levity should be attended to, or otherwise the pills will be too bulky; in general it will combine with an equal portion of any resinous powder, as *Rhubarb*, *Jalap*, *&c.;* it is of course ineligible where the substances are decomposed by alkalies, as *Tartarized Antimony;* this last precaution will also apply to *aromatic confection* as a vehicle, on account of the carbonate of lime contained in it. The *Conserve of Roses* has the advantage of retaining its consistency much longer than mucilage, but as it contains an uncombined acid, it is frequently inadmissible; it could not for instance be with propriety employed with the precipitated sulphuret of antimony. Pills made with mucilage, are apt to crumble when they are rolled out; this is the case with the *Pilulæ Hydrargyri sub-muriatis;* some extract therefore would be a more convenient constituent; in this particular case however the addition of a few drops of spirit would supersede the necessity of *any* constituent.

Crumb of bread furnishes a convenient vehicle for those salts which are ponderous, active in very small doses, or which are liable to be decomposed by other vehicles; but an objection is attached even to this, for it is liable to become so dry and hard when kept, that pills made with it, will frequently pass undissolved. Swediaur mentions a fact with reference to Plenck's mercurial pill, as well as to one of corrosive sublimate, and he proposes for this reason to substitute *starch;* the addition however of a small portion of sugar will prevent the bread from becoming thus indurated, and with such a precaution it may be

very safely employed. For the purpose of forming active vegetable powders into pills, such as Digitalis, Conium, &c., I am informed by Mr. Hume of Long Acre, that in his experience *melasses* or *treacle* is the best constituent that can be selected; for it undergoes no decomposition by time, but maintains a proper consistency, and preserves the sensible qualities of the plant quite unimpaired for many years. I have deposited iu the cabinet of the College, specimens of such pills, of *hemlock* and *foxglove*, which retain the characteristic odour of these vegetables, notwithstanding they have been now made for several years. *Honey* has likewise the property of preserving vegetable substances; *seeds* may be kept in it for any length of time, some of which, on being taken out, washed, and planted, will even vegetate. It has also been used for the preservation of animal matter; the bodies of the Spartan kings, who fell at a distance in battle, were thus preserved, in order that they might be carried home.

Water will on some occasions be found a convenient expedient; powdered *Rhubarb* or *Jalap* may be thus made into masses without any increase of bulk, but the pills will be apt if kept to become mouldy.

3. In the formation of pills, the ingredients should be hastily rubbed together, whenever they are liable to be injured by long exposure to the air; thus in the formation of *Pilulæ Hydrargyri sub-muriatis*, the compound is rendered less active by long-continued triture. *See Pulveres.*

4. In dividing pill masses, it is usual to add to them, and envelope them in, magnesia; where calomel is present, I have satisfied myself by experiment that a *muriate of magnesia* is formed, and it is owing to this partial decomposition, that the surface of the pill

exhibits a greenish hue; starch, powder of liquorice, or orrice root, might perhaps under such circumstances be more judiciously preferred. In Germany, the powder of *Lycopodium* is generally used. Formerly, the pill was covered with gold leaf, which protected it from the influence of the stomach, and frequently rendered it unavailing.

It has been observed that many of the pill masses directed in our pharmacopœias, are liable to become so hard and dry by being kept, that they are unfit for that division for which they were originally intended; indeed Dr. Powell considers it doubtful whether the greater number of articles had not better be kept in powder, and their application to the formation of pills left to extemporaneous direction; the necessity of this is farther apparent, when we learn that it is a common practice for the dispenser to soften these masses by the application of a hot spatula, or pestle, which sometimes carbonizes, and frequently decomposes them.*

III. Their Form of Prescription.

In our extemporaneous directions, it is necessary to apportion with accuracy the quantity of active

* Some extracts become so hard, that in the state of pill they pass unchanged; this has occurred to me with the *extract of logwood*. Astringent vegetable matter, in combination with iron, is frequently characterised by a hardness that is not exceeded by ebony, and which is perfectly insoluble; the action of iron upon the petals of the red rose furnishes a very striking instance of this fact; if the petals be beaten in an iron mortar, for some hours, they ultimately become converted into a paste of an intensely black hue; which, when rolled into beads and dried, is susceptible of a most beautiful polish, still retaining the fragrance of the rose. I have seen a necklace of this description; indeed these beads form an article of extensive commerce with the Turks, and are imported into Europe, through Austria, under the name of *Rose Beads*, or *Rose Pearls*.

materials which we may wish each pill to contain, and since the proportion of the *constituent* can rarely be exactly defined, the equable division of the whole mass into a given number of pills, will be safer than defining the weight of each pill.

A pill, the bulk of whose ingredient is vegetable matter, ought not to exceed five grains in weight, but where the substances which compose it are metallic and ponderous, it may without inconvenience weigh six or even eight grains.

TROCHISCI. *Troches*, or *Lozenges*.

As these are regarded as objects rather of confectionary than of pharmacy, the London and Dublin colleges have not condescended to notice them; the Edinburgh pharmacopœia, however, contains several formulæ for their preparation, and as the form of lozenge offers a very commodious and efficacious method of administering certain remedies, the theory of its operation deserves some notice in the present work. It is principally useful in cases where it is an object that the remedy should pass *gradually* into the stomach, in order to act as powerfully as possible upon the pharynx and top of the trachea, as in certain demulcents or astringents; for instance, *Nitre*, when intended to operate in relaxed or inflamed states of the tonsils, is best applied in this manner; so is *Sulphate of Zinc* in chronic coughs, attended with inordinate secretion. In order to retard as long as possible the solution of the lozenge in the mouth, it ought to be composed of *several* demulcent substances, such as farinaceous matter, sugar, gum, and isinglass; for such a mixture will be found to answer the purpose better than any *one* of these articles taken by

itself; (see p. 106.;) thus the farinaceous matter will prevent the sugar and the gum from being too soon dissolved; the viscidity of the sugar and gum will prevent the farinaceous matter from being swallowed so soon as it would otherwise be; and the isinglass will give a softness to the whole, and thus prevent any sharp points from stimulating the membrane.

SUPPOSITORIA. *Suppositories.*

This form of preparation is very ancient, and although it has of late years fallen into disuse, it affords an efficacious mode of administering many powerful remedies, and in some instances of producing effects which the same medicine would not command if given in any other form: besides which, it is found that after the stomach by long use has lost its susceptibility to the action of medicine, such a substance will operate with fresh and unabated force if applied to the rectum. There are two great indications which *Suppositories* are calculated to fulfil,

1, *The alleviation of pain and irritation*, especially when it arises from diseases of the bladder, prostrate gland, uterus, and other parts in the vicinity. Abortion may be thus frequently prevented: to fulfil these intentions, a mixture of Opium with two parts of Soap, will be found eligible.

2, *The production of Catharsis.* In cases of Apoplexy, from the counter-irritation which these remedies are likely to occasion, much advantage may arise; and in the failure of more common measures, they may be applied with certain success in the cure of Ascarides; see *Formula* 126. Where a very efficient Suppository is required, one or two grains of *Elaterium* rubbed up with eight grains of hard soap, will present us with a combination of great utility.

ELECTUARIA. *Electuaries.*

This is an ancient form of prescription; for although the term "*Electarium*" is first used by Cælius Aurelianus, yet the ἐκλεκτον of Hippocrates, and the *Antidotus*, *Confectio*, *Mithridatium*, *Diascordium*, *Opiatum*, *Orvietanum*, *Philonium*, *Theriaca*, and *Requies* of other authors, were all Electuaries. They differ from *Conserves* in this, that the sugar in the latter preparations is in a greater proportion, and is intended to *preserve* the ingredients; whereas in the former, it is merely intended to impart convenience of form, see *Confectiones*. Electuaries are in general, *extemporaneous* preparations, composed of dry powders, formed into a proper consistence by the addition of syrup, honey, or mucilage; when however the latter substance is employed, the electuary very soon becomes dry and hard; and when common syrup is used, the compound is apt to candy, and in a day or two to grow too hard for use; this is owing to the crystallization of the sugar; Deyeux therefore states, that the syrup should be previously exposed to the heat of a stove so long as it forms any crystals, and that the residual liquor, which from the presence of some vegetable acid has no tendency to crystallize, may then be advantageously applied; — *Melasses* or Treacle may in some cases be employed, and from experiments which I have repeated with some care, I am enabled to state that the peculiar flavour of this liquid is entirely removed by a simple operation, which consists in diluting it with an equal weight of water, and then boiling it with about one eighth part of powdered charcoal for half an hour, when the liquor is to be strained, and reduced by gentle evaporation to a proper consistence; and moreover it appears, that active

vegetable powders retain their characteristic qualities when immersed in *treacle*, longer than in any other excipient.

In selecting and prescribing this form of exhibition, the following general rules should be observed.

I. Those substances which are nauseous, deliquescent, which require to be given in large doses, or which are incapable of forming an intimate union with syrup, as *fixed oils*, *balsams*, &c. should never be prescribed in the form of an electuary.

II. The quantity of syrup directed must be regulated by the nature, and specific gravities, of the substances which enter into their composition, viz:

1. *Dry Vegetable Powders* require twice their weight of syrup, or of honey.

2. *Gummy and Resinous Powders* require an equal weight.

3. *Hard Mineral Substances* should be formed into an electuary with some conserve, as they are too ponderous to remain suspended in syrup. It deserves also to be noticed, that in consequence of the readiness with which metallic preparations undergo change, it will be generally adviseable to keep the active ingredients in the form of powder, and to add them to the syrup only just before they are required; the Electuary of the French Pharmacopœia, which is commonly called "*Opiata Mesenterica*," will furnish a good example, "*quantumvis molle fuerit recens, progressu temporis, ob ferrum quod ipsi inest, mirè indurescit.*"

2. *Liquid Forms.*

MISTURÆ. *Mixtures.*

These preparations are generally *extemporaneous*, in which different ingredients are mingled together in the liquid form, or, in which solid substances are diffused through liquid, by the medium of mucilage or syrup: for prescribing mixtures the following general rules may be laid down.

I. Substances which are capable of entering into chemical combination, or of decomposing each other, ought not to be mixed together, unless it be with a view of obtaining the new products as a remedy.

II. Transparency is not a necessary condition,* and hence insoluble powders may be advantageously introduced into mixtures, if the following precautions be observed.

1. They must be divisible and mechanically miscible in the liquid.

2. They must not possess too great a specific gravity.

3. They must not render the liquid too mucilaginous or thick; *thus,* f℥j *should seldom contain more than* ʒss *of a vegetable powder,* ℈ij *of an electuary, and conserve; or* grs xv, *or* ℈j *of an extract.*

III. The taste, the smell, and the general aspect of the mixture should be rendered as pleasant as possible; *thus milk covers the taste of bark, of the*

* A remedy may even owe its virtues to a precipitation, produced by admixture, as I have already stated.

tinctures of guaiacum and valerian, and of lime water; and a light decoction of the liquorice root disguises a bitter taste more effectually than sugar. But in thus accommodating our medicines to the taste of our patient, let us be careful that we do not invalidate their powers, which often appear to be nearly connected with the sensible qualities which render them disgusting and objectionable.

The Physician may also produce occasional changes in the appearance of his mixture, in order to reconcile a delicate taste to its continuance; he never ought however to alter the essential part of plans which he finds advantageous.

A DRAUGHT differs merely from a mixture in quantity; it is usually taken at once, and should not exceed f℥iss, it should be always preferred when,

1. *The remedy is to be taken in a precise dose.*
2. *Whenever it is liable to spontaneous decomposition.*
3. *Whenever the action of the atmosphere occasions change.*

In apportioning the dose of mixtures, the following proportions are admissible, although not perfectly accurate. A TABLE SPOON full *(Cochleare Amplum)* f℥ss. DESERT SPOON *(Cochleare Mediocre)* more than f℥ij. TEA SPOON *(Cochleare Minimum)* f℥j. A WINE GLASS *(Cyathus)* although very variable, may be estimated as containing f℥iss. The custom of measuring the dose of a liquid by dropping it from the mouth of a phial, is very erroneous; it will therefore be proper to dilute an active medicine that is to be so apportioned, with at least a triple quantity of water, that its real dose may not be essentially altered by any slight variation in the quantity.

ENEMATA. *Clysters.*

" *Lavamenta.*"

This form of applying a medicine furnishes the practitioner with many valuable resources, although the remedy has not escaped its due share of persecution. Paracelsus bestowed upon it the epithet, " *turpissimum medicamentum,*" and Van Helmont that of " *pudendum medicorum subsidium.*"

It is calculated to fulfil the following indications, viz :

1. *To promote the tardy operation of a Cathartic, or to evacuate the bowels, where, from delicacy of stomach, medicines cannot be retained, or from debility of body they cannot be safely administered.*

In the administration of a remedy of this kind, there are two essential circumstances, independent of the *strength* of its ingredients, which will modify its activity, viz. IMPULSE and QUANTITY, by which we obtain the stimulus of distention;* warm water without any adjunct may thus be made the means of overcoming those unrelenting obstructions, which had refused obedience to more common measures: Clysters, however, when most forcibly urged, rarely reach beyond the sigmoid flexure of the colon, and yet when the largest quantity of fluid which the bowels will admit is introduced with considerable impulse, the

* A most ingenious and useful apparatus has been lately contrived by Mr. Machell, of Great Ryder-street, St. James's, for administering Clysters, with which every country practitioner ought to become acquainted; in addition to the other advantages, it is capable of regulating the impulse, and force of the injection with the greatest nicety, and does not, like the common syringe, throw up any air into the intestines, a circumstance which is very important in many cases, as in *Dysentery*, &c.

local impression is so powerful that it is at once extended by the medium of sympathy, through the whole of the alimentary canal, and very thorough and copious discharges result.

2. *To induce extreme relaxation.*

Which is best effected by an infusion of Tobacco. See *Tabaci Folia.*

3. *To produce Astringent and Anodyne, or Carminative effects.*

Common starch, with the addition of Tincture of Opium, is the most common and convenient form for this purpose. See also *Assafœtida* and *Terebenthinæ Oleum.*

4. *To act as an emollient fomentation.*

5. *To convey nutriment.*

In the administration of Clysters, for the fulfilment of any of the last four indications, it is obvious, that the stimulus of distention should be avoided, as being incompatible with our object; the quantity, or bulk of the solution, ought to be also carefully graduated. The proportions of fluid vehicle necessary for the different stages of life, under ordinary circumstances, may be stated as follows:—An infant at its birth, or soon after, requires about one *fluid ounce*; a child between the age of one and five years, from three to four *fluid ounces*; a youth of ten or fifteen, from six to eight *fluid ounces;* and an adult may take twelve. With regard to the dose of the active ingredient of a *Lavement*, it may be estimated as triple that when taken by the mouth.

A

SYNOPSIS

OF THE PRINCIPLES OF

MEDICINAL COMBINATION,

As investigated in the preceding pages,

FOR THE SAKE OF ABRIDGING THE LABOUR ATTENDING THE FREQUENT REFERENCES REQUIRED FOR THE

EXPLANATION OF THE FORMULÆ.

OBJECT I.

TO PROMOTE THE ACTION OF THE BASIS.

Key Letters

A — A.—*By combining the several different forms, or preparations of the* SAME SUBSTANCE.

B — B.—*By combining the Basis with Substances which are of the* SAME NATURE, *i. e. which are individually capable of producing the same effects, but with less energy than when in combination with each other.*

C — C.—*By combining the Basis with Substances of a* DIFFERENT NATURE, *and which do not exert any Chemical influence upon it, but are found by experience, or inferred by analogy, to be capable of rendering the stomach, or system, more susceptible of its action.*

Key Letters

OBJECT II.

D TO CORRECT THE OPERATION OF THE BASIS, BY OBVIATING ANY UNPLEASANT EFFECTS IT MIGHT BE LIKELY TO OCCASION, AND WHICH WOULD PERVERT ITS INTENDED ACTION, AND DEFEAT THE OBJECTS OF ITS EXHIBITION.

OBJECT III.

E TO OBTAIN THE JOINT OPERATION OF TWO, OR MORE MEDICINES, WHICH HAVE DIFFERENT POWERS, AND WHICH ARE REQUIRED TO OBVIATE DIFFERENT SYMPTOMS, OR TO ANSWER DIFFERENT INDICATIONS.

OBJECT IV.

TO OBTAIN A NEW AND ACTIVE REMEDY NOT AFFORDED BY ANY SIMPLE SUBSTANCE.

F A.—*By combining Medicines which excite different actions in the Stomach and System, in consequence of which,* NEW, *or* MODIFIED RESULTS, *are produced.*

B.—*By combining Substances which have the property of acting* CHEMICALLY *upon each other,* the Results of which are,

Key Letters

G a. *The formation of New Compounds.*

H b. *The Decomposition of the Original Ingredients, and the developement of their more active elements.*

C.—*By combining Substances, between which no other change is induced than a diminution, or increase in the* SOLUBILITIES *of the principles in which their Medicinal virtues reside.*

I a. *By the intervention of Substances that act* CHEMICALLY.

K b. *By the Addition of Ingredients whose operation is entirely* MECHANICAL.

OBJECT V.

TO AFFORD AN ELIGIBLE FORM.

L a. *By which the* EFFICACY *of the Remedy is enhanced.*

M b. *By which its* ASPECT *is rendered more agreeable, or its mode of administration more convenient.*

A COLLECTION OF FORMULÆ.

INTENDED TO ILLUSTRATE THE FOREGOING PRECEPTS,

and to furnish the inexperienced Prescriber

WITH A SERIES OF

USEFUL AND INSTRUCTIVE LESSONS.

Explanation of the Key Letters.

The *Modus Operandi* of the different elements of each formula is designated by a Key Letter, or *Symbol*, which is placed in the margin opposite to them. This letter refers to a corresponding one in the Synopsis, and thereby shews the division containing an exposition of the principle upon which the operation of the ingredient is supposed to depend.

Two or more Key Letters denote that the element against which they are so placed has several modes of operation, whilst the order in which the letters succeed each other, serves to shew the relative importance of them.

Where any one of the letters is *small*, *i. e.* not a capital, it denotes that the operation which it is intended to express is only *incidental* to, or subordinate in, the general scheme of the combination.

When any number of elements are included within a *vinculum* or bracket, it is intended to shew that they operate but as one substance, or, that the virtues of each are not independent of the other; in this case the Key Letter within the bracket expresses upon what principle this unity depends, whilst that on the

exterior shews the action of such a combination upon the base, or the part which it performs in the general scheme of the Formula.

Let us exemplify it by a reference to *Formula* 16, which presents us with a Purgative, in conjunction with a Stimulant. The base is *Aloes*, which is succeeded by *Scammony, and Extract of Rhubarb;* these substances appear by the bracket, to act in unison, a concurrence which the interior letter (B) shews to depend upon their being SIMILAR REMEDIES; the letter also on the exterior shews that its operation upon the base depends upon the same principle. We next come to powdered *Capsicum, and Oil of Cloves;* these ingredients are also shewn by a bracket to act in unity, and the letter (B) in the interior, denotes that it is in consequence of their possessing a similar mode of action, whilst the letter (E) on the exterior, announces that they act in the general scheme for the purpose of fulfilling a second indication; at the same time the smaller letter (*d*) informs us that the combination acts, at the same time, as a *corrector* to the base.

EMETICS.

1. ℞. Vini Ipecacuanhæ f℥j.
   Antimonii Tartarizati gr. j . . . . . B.
   Aquæ puræ f℥jss . . . . . E.
   Fiat Haustus.

2. R. Antimonii Tartarizati gr. ij.
   Aquæ distillatæ f℥iv . . . . . E.

Solve. Hujus danda sunt cochlearia duo medioc: singulis horæ quadrantibus donec vomitus excitatus sit.

EMETICS.

3. ℞. Pulveris Ipecacuanhæ ʒss.
Antimonii Tartarizati gr. j . . . B } B.
Tinct: Scillæ fʒj . . . . . .
Aquæ distillatæ f℥viiss . . . . . L.

Fiat Mistura, cujus sumat quamprimum cochlearia majora quatuor, et cochl: duo sexta quaque parte horæ, donec supervenerit vomitus.

4. ℞. Zinci Sulphatis ℈j
Confect: Rosæ canin: q. s. . . . . M.

Ut fiat Bolus ex pauxillo Infusi Anthemidis hauriendus. Post quamlibet vomitionem superbibantur cyathi aliquot Infusi ejusdem tepidi.

5. ℞. Tabaci Foliorum ℥j
Aquæ fontis q. s. . . . . L.

Simul contunde in cataplasm: et regioni epigastricæ admoveatur.

6. ℞. Cupri sulphatis gr. x
Aquæ distillatæ f℥ij . . . . . L.

Fiat pro haustu emetico.

CATHARTICS.

7. ℞. Extract: Colocynth: comp: ʒj.
Opii puri gr. iij . . . . . .E.
Olei Nucis Moschat: ♏iv . . .D.

Fiat Massa in Pilulas duodecem dividenda, e quibus capiat duas omni hora donec bis dejecerit Alvus.

In Bilious Cholic.

8. ℞. Magnesiæ Sulphatis . . . . . .
et B
Sodæ Sulphatis āā ʒiij . . . . . .
Aquæ Menthæ Viridis f℥vss . . L.M.
Liquor: Antimon: Tart: fʒj . . .C.

Fiat Mistura de qua sumantur cochlearia duo ampla ter quotidie.

9. ℞. Infusi Sennæ f℥j
Tinct: Sennæ . . . . . .
et B B.D.
Tinct: Jalap: āā fʒj . . . . .
Potassæ Tart: ʒj . . . . . B.D.
Syrup: Sennæ fʒj . . . . . .Lb.

Fiat Haustus primo mane sumendus.

10. ℞. Magnesiæ Sulphat: . . . . . .
et B
Sodæ Sulphat: āā ℥ss . . . . .
Ferri Sulphat: gr. v. . . . . E.
Misturæ Camphoræ f℥viiss . . L.D.

Fiat Mistura de qua sumantur cochlearia duo ampla bis indies.

CATHARTICS.

11. ℞. Jalapæ Radicis in pulv: contrit: gr. xv
Hydrargyri Sub-muriat: gr. v . . B.
Confect: Ros: caninæ. q. s. . . . M.
Ut fiat bolus.

12. ℞. Confect: Sennæ ℥iss
Sulphuris Præcipitat: ℥ss . . . . E.
Syrup: Ros: q. s. . . . . L.
Ut fiat Electuarium, de quo, ad nucis moschatæ magnitudinem capiatur, ter vel quater quotidie, donec alvus commode purgetur. *In Hæmorrhoids.*

13. ℞. Olei Ricini f℥ss
Vitelli Ovi, q. s. . . . . M.
tere simul et adde
Syrupi Papaveris f℥ij . . . . B } E.
Tinct: Opii ♏v . . . . . .
Aquæ distillat: f℥j.
Fiat Haustus tertiis vel quartis horis sumendus.
In Cholic from the ingestion of Lead.

14. ℞. Magnesiæ Sulphatis ʒvj
Infus: Sennæ f℥iss . . . . . B.L.
Tinct: Jalap: fʒj . . . . . B.D.
Tinct: Opii ♏x . . . . . B } E.
Tinct: Castorei fʒj . . . . .
Fiat Haustus, ut supra, dandus.

15. ℞. Infus: Sennæ f℥ij
Sodæ Tart: ʒvi . . . . . B.D.
Aquæ Cinnamomi f℥ss . . . . . M.d.
Fiat Solutio duabus vicibus sumenda.

CATHARTICS.

16. ℞ Aloës Spicat: ℈j
Scammoneæ gr. xij . . . . B } B.
Extract: Rhei ℈ij . . . .
Baccarum Capsici pulv: gr. vj . B } E.d.
Olei Caryophyll: ♏v . . .

Fiant Pilulæ xvj, e quibus sumantur binæ hora decubitus, pro re nata.

17. ℞ Pulv: Aloes comp: ʒj
Pulveris Antimon: gr. v . . . . C.
Saponis duri gr. x . . . . . I.L.
Decoct: Aloes comp: q. s. . . . M.b.

Fiat massa in Pilulas xx dividenda, e quibus capiantur binæ, ad alvum, officii immemorem, excitandam.

18. ℞ Extracti Colocynth: comp: gr. xxiv
Pil: Aloes cum Myrrha ʒj . . . B } B.
Hydrargyri Sub-muriatis gr. xv .

Fiat Massa in Pilula xx dividenda, e quibus sumantur una vel binæ, p. r. n.

19. ℞ Sodæ Sub-carbonat: (crystall:) ʒiiss.
Potassæ Super-tart: (crystall:) ʒiij G.H. }
Aquæ puræ ℥viij . . . . . .

Stent in lagena bene obturata per triduum, et deinde sit in promptu, pro potu cathartico.

Young's Medical Literature: p. 455.

20. ℞ Scammoneæ gr. v.
Pulv: Rhei gr. xv . . . . . B.
Ammoniæ Sub-carbonat: gr. v . . D.E.

Fiat pulvis, ex vehiculo aliquo idoneo sumendus.

CATHARTICS.

21. ℞. Pulveris Jalap: gr. xv.
Pulv: Ipecacuan: gr. v . . . . C.
Olei Cinnamomi ♏ij . . . . . D.
Fiat pulvis ut supra dandus.

22. ℞. Pulveris Rhei gr. xv
Potassæ Super-sulphat: gr. x. . B.D.M.
Aquæ Cinnamomi f℥i . . . . . L.M.
Fiat Haustus.

23. ℞. Sodæ Tartarizat: ʒij . . . . . }
Sodæ Carbonatis ℈j
Aquæ puræ f℥iss G.H.
fiat haustus cum Cochl: j amplo
Succi Limonum . . . . . }
In impetu ipso effervescentiæ sumendus. Quotidie mane.
A grateful aperient.

24. ℞. Sodæ Carbonatis ʒij . . . . . }
Ferri Sulphatis gr. iij
Magnesiæ Sub-carb: ʒi G.H.
Aquæ puræ Oss
Acidi Sulphurici diluti fʒx . . . }
Infundatur primum lagenæ aqua, dein immittantur salina, et denique Acidum Sulphuricum; illico obturetur lagena, et in loco frigido servetur.

NOTE.—*The decompositions which take place in this formula, are described in the Analysis, page* 130.—*There is a precaution respecting the proportion of the Sulphuric Acid which it is essential to remember, viz. that it should never be added in excess; for in that case the Sulphate of Iron will not undergo decomposition.—A farther account may be found in one of the early numbers of Nicholson's Journal.*

CATHARTICS.

25. ℞. Hydrargyri Sub-muriat: gr. x
Pil: Cambogiæ com. . . . . B } B.
et Extract: Colocynth: com. āā gr.xv .
Syrupi Zingiberis q. s. . . . . M.d.
ut ft. Pilulæ xij, e quibus
Sumantur binæ hora decubitus vel summo mane, ad alvum officii immemorem excitandam.

26. ℞. Cambogiæ in pulverem tritæ gr. iij
Sacchari purificati ℈i . . . . . K.
Tere optime simul, et fiat pulvis tertia quaque hora sumendus, donec alvus commode purgetur.

27. ℞. Foliorum Sennæ ʒiij
Sodæ Sulphatis ℥i . . . . . B.
Aquæ ferventis oj . . . . . L.
Infunde, et Cola, ut fiat Enema.

DIURETICS.

28. ℞. Scillæ Radicis exsiccat: gr. iij
Pulveris Opii gr. ss . . . . . C.D.
Cinnamomi Corticis gr. x . . . D.k.m.
Fiat Pulvis bis quotidie sumendus.

29. ℞. Potassæ Sub-carbonatis gr. x
Infus: Gentian: comp: f℥iss . . . E.L.
Spir: Etheris comp: ʒss . .
Træ Cinnamomi fʒi . . . B } E.D.m.
Fiat Haustus.
Diuretic and Stimulant.

DIURETICS.

30. ℞. Scillæ Radicis exsiccat: gr. xij
Potassæ Nitratis ʒi . . . . . B.D.
Sacchari purificat: . . . . . K. } M.
et Cinnamomi cort: contrit: . .
āā ʒi. fiat pulvis in sex partes æquales dividend: sumatur una bis indies.

31.* ℞. Scillæ Rad: exsiccat: gr. iv
Digitalis Foliorum gr. x . . . . B.
Hydrargyri Sub-muriat: gr. vj . . C.
Myrrhæ Pulv: ℈i . . . . . } B } E.
simul tere et adde
Assafœtidæ ʒss . . . . . }
Extract: Gentian. q. s. . . . . C.M.
Fiat massa in Pilulas xv dividend: e quibus sumatur una, nocte maneque.

32. ℞. Massæ Pil. Scillæ ʒi
Hydrarg: Sub-muriat: gr. v . . . C.
Fiat massa in Pilulas xv dividenda, quarum sumantur duæ singulis noctibus.

* *This formula is introduced as a combination supported by authority, although I question whether its adoption can be sanctioned upon principle. Let us decypher the intention of the different ingredients by their* Key Letters. *The basis is Squill, to which Digitalis is added, for the purpose we perceive of acting in unison with it, and Calomel, which succeeds it, is intended to promote and direct the diuretic Basis; two fœtid gums next present themselves to our notice, and these are shewn by the bracket to exert a combined action, depending, as the Key Letter*

DIURETICS.

33. ℞ Sodæ Carbonat: exsiccat: ʒi
Saponis duri ℈iv . . . . . A.B.
Olei Juniperi . . . . . B.D.
Syrupi Zingiberis q. s. . . . . D.L.

Fiat massa in Pilulas xxx dividenda, e quibus capiat tres, indies, contra calculos renum.

34. ℞ Scillæ Radicis exsiccat: gr. ij
Pilulæ Hydrargyri gr. v . . . . . E.C.
Opii gr. ss . . . . . D.C.

Fiat Pilula hora decubitus per tres vel quatuor noctes consequentes capienda.

35. ℞ Potassæ Sub-carbonat: ℈i . . . }
Succi Limonum: f℥ss, vel q. s. G }
Aquæ Cinnamomi f℥i . . . . . }
Aceti Scillæ fʒiss . . . . . B.
Tinct: Opii ♏v . . . . . C.
Syrupi Aurantii fʒss . . . . . M.

Fiat Haustus bis indies sumendus.

announces, upon their medicinal similarity, but acting in the general scheme of the formula, as shewn by the exterior letter, for the purpose of fulfilling a second indication, distinct and different from that which the Basis is designed to answer, i. e. to produce, not a diuretic, but an antispasmodic and stimulant effect; an important question then arises for our consideration.—Is the latter part of the formula consistent with the former, or is the stimulant effect of the Gums compatible with the sedative operation of Digitalis?

DIURETICS.

36. ℞. Potassæ Acetatis ʒi
Oxymel: Colchici fʒij . . . . . B.
tere simul cum aquæ puræ f℥i . . . L.
Spir: Juniperi comp: f℥ss . . . B.M.
Fiat Haustus, ut supra dandus.

37. ℞. Baccarum Juniperi contus: ℥ij
Semin: Anisi contus: ʒij
Aquæ ferventis oj
Macera per tres horas, dein cola.

℞. Colaturæ f℥xij . . . . . A
Spir: Junip: comp: f℥ij . . . . A
Træ Scillæ fʒi . . . . . B.
Potassæ Nitratis ℈ij . . . . . C.
Fiat Mistura, de qua sumatur cyathus subinde.

38. ℞. Infus: Digitalis f℥iv . . . . . A
Træ Digitalis fʒss . . . . . A
Potassæ Acetat: ʒi . . . . . B.
Tinct: Opii ♏v . . . . . C.D.
Fiat Mistura, de qua sumantur coch: unum amplum bis terve indies.

39. ℞. Liquoris Ammoniæ Acetat: f℥i
Potassæ Acetatis ʒi . . . . . B.
Fiat Haustus ter quotidie sumendus.

40. ℞. Potassæ Supertartratis ʒi
Pulveris Scillæ exsiccat: gr. iij . . B.
Pulveris Zingiberis gr. v . . . . D.K.
Fiat pulvis, sexta quaque hora capiendus.

DIURETICS.

41. ℞. Spartii cacum: concis: ℥i
Aquæ puræ ℥j
Decoque ad octarium dimidium, et cola.

℞. Colaturæ f℥i
Spir: Etheris Nitrici ♏x . . . . B.D.
Sumatur alternis horis.

42. ℞. Tinct: Ferri Muriat: ♏xv
Infus: Quassiæ f℥i . . . . . C.L.
Fiat Haustus tertia quaque hora sumendus.

43. ℞. Potassæ Nitratis ʒi
Misturæ Ammoniaci f℥vj . . . . L.
Spir: Juniperi comp: ℥iss . . . B } B.D.
Aceti Scillæ fʒvj . . . . . B }
Fiat Mistura de qua capiat cochl: j amplum quartis horis.

44. ℞. Tincturæ Lyttæ ♏x
Spiritus Ætheris Nitrici fʒi . . . B.
Misturæ Camphoræ fʒxij . . . . D.L.
Syrup: Zingiberis fʒi . . . . . D.M.
Fiat Haustus ter in die sumendus
A highly stimulating Diuretic.

EXPECTORANTS.

45. ℞. Assafœtidæ ℈ij
trituratione solve in
Aquæ Menthæ vir: f℥iij . . . L.
addeque Syrup: Tolu: f℥j . . . E.

Fiat Mistura, de qua sumatur cochl: unum amplum tertia quaque hora.

46. ℞. Myrrhæ gum-resin: ʒss
Sacchari purificati ℥ss . . . . K.

Tere optime simul ut fiat Pulvis, partitis dosibus quotidie sumendus, in vehiculo aliquo idoneo.

47. ℞. Myrrhæ gum-resin: ʒiss
Scillæ exsiccat: ʒss . . . . . B.
Extract: Hyoscyami ℈ij . . . . E.
Aquæ q. s. ut fiant Pil. xxx . . . M.

E quibus sumantur binæ, nocte maneque.

48. ℞. Scillæ exsiccatæ gr. viij
Pulveris Ipecacuanhæ gr. v . . . C.
Camphoræ ℈j . . . . . E.
Pulv: Antimon: gr. vj . . . . C.
Sacch: purificat: ʒj . . . . . K.

Tere in pulverem, in quatuor partes æquales dividendum; pars una sumatur bis quotidie, ex haustu decocti hordei.

49. ℞. Oxymel: Scillæ
Syrupi Altheæ . . . . . E.L.
Mucilag: Acaciæ . . . . . E.L.

āā f℥ss, misce, et fiat linctus, de quo lambat sæpe.

EXPECTORANTS.

50. ℞. Misturæ Ammoniac:
et Aquæ Cinnamomi āā f℥iss . . L.
Syrupi Tolut: f℥ss . . . . . L.M.
Tinct: Castorei f℥ij . . . . B } E.
Tinct: Opii ♏v. . . . . .

Fiat Mistura, cujus sumatur Cochl: unum amplum subinde, ac repetatur dosis p. r. n.

Expectorant & Antispasmodic. Hooping Cough, &c.

51. ℞. Mist: Amygdal: f℥j
Vini Ipecacuanhæ ♏x . . . . E.
Potassæ Carbonatis gr. x . . GH. } E.
Sumatur cum Succi Limon: f℥iij . . .

In impetu ipso effervescentiæ.

52. ℞. Pulveris Myrrhæ gr. xij
Pulv: Ipecacuanhæ gr. vj. . . . E.
Pulv: Potassæ Nitrat: ʒss . . . D.

Misce et divide in doses æquales quatuor, quarum sumat unam quartis horis.

DIAPHORETICS.

53. ℞. Misturæ Camphoræ f℥iss
Liquor: Ammon: Acet: f℥ss . . B.
Liquor: Antimonii Tart: ♏xx . F } B.
Tinct: Opii ♏x. . . . . .

Fiat Haustus.

DIAPHORETICS.

54. ℞. Potassæ Sulphureti gr. xv
Saponis duri ʒj. . . . . I.D.
Balsam: Peru: q. s. . . . . M.

Ut ft: Pilulæ xxx; sumat tres quarta quaque hora ex cyatho Infusi calidi Juniperi baccarum.

In Cutaneous Affections.

55. ℞. Pulveris Antimon: ʒss. . . . . }
Opii Pulv: ℈ss F }
Hydrargyri Sub-muriat: gr. v . . }
Confect: Opii q. s. . . . . L.B.

Ut fiant Pilulæ decem, quarum capiat unam hora decubitus, et repetatur p. r. n.

56. ℞. Pulveris Ipecacuanhæ comp: gr. xv.
Pulv: Trag: comp: ℈ij . . . . L.

Divide in partes quatuor æquales, quarum sumat unam quavis hora.

57. ℞. Pulv: Ipecacuanhæ comp: gr. xv.
Pulv: Antimon: gr. ij . . . . . B.

Ft: pulvis hora decubitus sumend: superbibendo Haustulum tepidum.

58. ℞. Guaiaci gum-resinæ gr. x.
Pulv: Ipecacuanhæ comp: gr. v. . B.
Confect: Rosæ q. s. . . . . L.

Ut fiat Bolus, h. s. sumendus.

59. ℞. Potassæ Carbonatis gr. x. . . . . }
Mist: Camphoræ: f℥j G.H. }
Ft: Haust: cum Succi Limonum . . . . }

Cochleari uno amplo, in impetu ipso effervescentiæ sumendus.

DIAPHORETICS.

60. ℞ Guaiaci Resinæ gr. x.
Antimonii Tart: . . . . . .
et
Opii puri āā gr. j. . . . . F. } B.
Syrupi q. s. . . . . L.
Fiat Bolus bis quotidie sumendus.

61. ℞ Camphoræ
et Pulvis Antimon: āā gr. iij. . .
Opii puri gr. j. . . . . F. } B.
Confect: Aromat q. s. . . . . L.
Fiat Bolus, h. s. sumendus.

62. ℞ Liquor: Ammoniæ Acetat: fʒij
Decoct. Cinchonæ fʒx . . . . .
Tinct: Cinchonæ fʒij . . . . A } E.
Confect: Aromat: ʒss . . . . M.
Ft. Haustus, tertia vel quarta quaque hora sumendus

63. ℞ Guaiaci Resinæ ʒij
Acaciæ gummi ʒij . . . . . K.
Simul bene tritis adde
Træ Opii fʒss . . . . . C.
Pulv: Cinchonæ ʒj . . . . .
Træ Cinchonæ fʒij
Decoct: Cinchonæ f℥viij . . . A } E.
Fiat Mistura cujus sumatur cyathus bis quotidie.

Rheumatism.

64. ℞ Extracti Aconiti
Antimonii Sulphureti . . . . .
Præcipitati āā gr. j D } B.
Magnesiæ Carbonatis ℈ss . . .
Tere simul ut fiat pulvis.

DIAPHORETICS.

65. ℞. Pulv: Antimon: gr. iij.
Potassæ Sub-carbonatis gr. v. . . D.
Anthemid. Flor. exsiccat: ℈j . . . L.
M. Fiat Pulvis sexta quaque hora, per biduum vel triduum sumendus.

66. ℞. Pulveris Ipecacuanhæ gr. ij . . .
Pulveris Opii gr. i. . . . . F.
Potassæ Nitratis gr. xvj . . . . K.B.
Fiat Pulvis hora somni sumendus.

EMMENAGOGUES.

67. ℞. Sabinæ Foliorum exsiccat:
Zingib: rad: contus: āā ℈ss . . D.
Potassæ Sulphatis ʒss . . . . . E.K.
M. Fiat Pulvis bis die sumendus.

68. ℞. Myrrhæ pulv: ℈j
Ferri Ammoniati gr. vj. . . . . E.
tere simul et adde
Syrup: Zingib: q. s. ut fiat Electuarium, de quo sumatur ad myristicæ nuclei magnitudinem bis quotidie.

69. ℞. Mist: Ferri comp: f℥ss
Aquæ Cinnamomi f℥j . . . . . M.
Ft. Haustus bis de die sumendus.

EMMENAGOGUES.

70. ℞. Tinct: Ferri Muriatis
Tinct: Aloes comp: āā f℥ss . . . E.
Tinct: Castorei f℥ ij . . . . . E.
M. de qua sumatur cochl: unum minimum ex cyatho Infus: Anthemid: Flor: ter quotidie.
Emmenagogue and *Antispasmodic.*

71. ℞. Pil: Aloes cum Myrrha
et
Pil: Galbani comp: āā ʒj . . . B.
Divide in Pil: xxiv, e quibus sumantur binæ bis quotidie.

72. ℞. Pil: Aloes cum Myrrha
et
Pil: Ferri comp: āā ʒj . . . . . E.
Sodæ Sub-Carbonatis ℈j . . . . E.L.
Divide Massam in Pilulas xxx e quibus sumantur binæ bis quotidie.

DEMULCENTS.

73. ℞. Olei Amygdal: f℥j
Acaciæ gummi ʒiij . . . . . M.B.
tere simul, et dein gradatim adde
Aquæ distillatæ f℥vi . . . . . L.
Syrup: Rhæados f℥ss . . . . M.B.
Fiat Mistura, de qua sumantur Cochlearia duo ampla ter, quaterve indies.

DEMULCENTS.

74. ℞. Olei Amygdal: f℥vj . . . . . G.
Liquoris Potassæ ♏ L . . . . . L.
Aquæ Rosæ f℥viiss . . . . .
Fiat Mistura, ut supra capienda.

75. ℞. Mistur Amygdal: f℥j . . . .
Potassæ Carbonatis gr. x G.H.
Syrupi Rhæados f℥j
Ft: haust: cum cochl: Succ: Limon: . .
in impetu effervescentiæ sumend;
Demulcent & Febrifuge.

76. ℞. Pulv: Cetacei
Pulv: Trag: com: āā ℥ss . . . B.
Syrupi Papaveris q. s. . . . . LM.
Misceantur, et fiat Linctus. Dosis cochl: minimum subinde.

77. ℞. Cetacei ʒij
Pulv: Trag: comp: ʒj . . . .
Syrup: Papaveris
Syrup: Tolu: āā f℥ij B.
Confect: Ros: ʒvj . . . . . .
Potassæ Nitratis ʒss . . . . .
Fiat Electuarium, de quo capiat ad nucis moschatæ magnitudinem.

78. ℞. Cetacei ʒij
Vitelli ovi dimidium . . . . .
Syrupi f℥ss
Aquæ Cinnamomi f℥ij B.
Aquæ distillatæ f℥iv . . . . .
Fiat Mistura, de qua capiat æger cochleare amplum frequenter.

DEMULCENTS.

79. ℞. Amyli ʒiij
Aquæ ferventis f℥iv . . . . . L.
Solve pro enemate, et adde,
si opus fuerit,
Tinct: Opii fʒss . . . . . E.

80. ℞. Decoct: Lichenis oss
Sumatur quotidie, cochleatim,
instar potus communis.

ANTACIDS AND ABSORBENTS.

81. ℞. Liquoris Potassæ fʒij
Liquoris Calcis f℥vj . . . . . B.L.
M. Cujus capiat æger, acido infestante, cochleare amplum unum, vel alterum, ex poculo jusculi bovini.

82. ℞. Magnesiæ ʒss
Aquæ Menthæ Pip: f℥iiss . . . }
Spir: Lav: comp: fʒss } B. E.
Spir: Carui fʒiv }
Syrup: Zingib: fʒij . . . . . }
Sumatur cochleare unum mediocre, p. r. n.
Antacid & Carminative.

83. ℞. Pulv: Cretæ co: cum Opio ℈j
Pulv: Catechu Extract: gr. xv. E.
Sit pulvis, post singulas sedes liquidas sumendus.
In Diarrhœa depending upon Acidity.

REFRIGERANTS.

84. ℞. Potassæ Nitratis gr. xv
Ft: Pulv: ex cyatho Aquæ perfrigidæ, illico post solutionem sumend;

85. ℞. Acidi Muriatici f℥j
Decoct: Hordei oj . . . . . L.
Syrupi f℥ij vel q. s. . . . . M.
Ad acorem compescendum, et gustum conciliandum. Sumatur quotidie, instar potus, et bibat quantum sitis exigat.
In Typhus and other Fevers.

86. ℞. Ammoniæ Muriat: ʒij
Acidi Acetici f℥ij . . . . . B.
Spir: Camphor: f℥ss . . . . E.
Misce ut fiat Lotio.

87. ℞. Liquor: Plumbi Acetat: f℥j
Acidi Acetici f℥ij . . . . . I.
Spir: tenuior f℥ss . . . . . E.
Aquæ distillatæ f℥viij . . . . . L.
Fiat lotio.

ASTRINGENTS.

88. ℞. Cort: Quercus contus: ℥ss
Aquæ ferventis f℥viij
macera per horam, et cola.
℞. Hujus Colaturæ f℥iss . . . . .
Pulv: Gallarum gr. x B. } B.
Tinct: Catechu f℥ss . . . . . }
Tinct. Cardamom: comp: f℥ss . . D.
Syrup: Cort: Aurant: f℥ss . . . M.
Fiat Haustus—

ASTRINGENTS.

89. ℞. Plumbi Superacetatis gr. iij
Opii puri gr. j . . . . . D.

Fiat massa in Pilulas tres dividenda, quarum sumatur una bis quotidie, superbibendo Haustum ex acido acetico compositum.

90. ℞. Infus: Cuspariæ f℥j
Tinct: Catechu f3j . . . . . B.
Pulv: Ipecac: gr. iij . . . . . C. } E.
Opii Pulv: gr. ss . . . . . .

Fiat Haustus

TONICS.

91. ℞. Ferri Ammoniati 3j
Extract: Gentian: . . . . . B.M.
Extract: Aloes āā 3ss . . . . E.M.

Contunde simul, et divide massam in Pilulas xxx quarum sumat binas ter quotidie.

Tonic and Purgative, in Dyspepsia, Hysteria, Mesenteric Obstructions, &c.

92. ℞. Cinchonæ pulv: subt: ℥ss
Magnesiæ Sulphat: 3vj . . . . E.

Tere simul, et divide in quatuor partes, ex quibus sumatur una, alternis horis.

Intermittents.

93. ℞. Ferri Carbonatis gr. v
Pulv: Valerian: 3ss . . . . . E.
Syrupi Zingib: q. s. . . . . D.L.

Fiat bolus.

TONICS.

94. ℞. Infus: Gentian: comp: f℥j
Liquor: Potassæ sub-carb. fʒss . C.I.E.
Tinct: Cascarillæ fʒj . . . . . B.D.
Fiat Haustus.

95. ℞. Cinchonæ cort: contus: ℥ss
Coque ex aquæ puræ f℥xvj
ad consumpt: dimid: adjectis sub finem coctionis,
Serpentariæ radicis contus: ʒij . B.
Stent per horam, et colaturæ admisce
Spir: Cinnamomi f℥iss . . . . M.
Acidi Sulphuric: diluti fʒiss . . E.
Sumantur f℥ij sexta quaque hora.
Pringle.

96. ℞. Decoct: Cinchonæ f℥ijss
Infus: Gent: co f℥j . . . . B. } B.D.
Tinct: Cascarill: fʒij . . .
Liquor: Potassæ Sub-Carb: fʒij C.I.E.
Fiat Mistura—

97. ℞. Decoct: Cinchonæ f℥vj
Tinct: Cinchonæ f℥ss . . . . A.
Confect: Aromat: ℈j . . . . B. } E.
Spir: Ammoniæ Aromat: fʒj . .
Fiat Mistura, de qua sumr. cochl: ij ampla indies.
Tonic & Stimulant.

98. ℞. Ferri Ammoniat: gr. v
Rhei rad: contrit: gr. iij . . . E.k.
Fiat pulvis, e quolibet vehiculo idoneo quotidie sumendus.

TONICS.

99. ℞. Infusi Cascarillæ f℥iss
Tinct: Cascarillæ . . . . . A.
Tinct: Zingiberis āā f℥j . . . . E.D.
Fiat Haustus, ter in die sumendus.
In Dyspepsia from Intemperance.

100. ℞. Ferri Tartarizati gr. x
Pulveris Calumbæ gr. xv . . . E.k.
Fiat pulv: quarta quaque hora sumendus.

STIMULANTS.

101. ℞. Lyttæ in pulv: trit: gr. i
Ammoniæ carbonat: . . . . . B. } L.
Confect: Aromat: āā gr. v . . B. } L.
Syrupi q. s. . . . . M.
Ut fiat bolus, quartis vel sextis horis sumendus, cum haustu Infusi Armoraceæ.

102. ℞. Ammoniæ Carbonat: ʒss
Aquæ Menth: Piperitid: f℥vij . L.B.
Syrupi Aurantii f℥ss . . . . . M.
Sumatur octava pars in languoribus.

103. ℞. Mist: Camphoræ f℥j
Spir: Etheris Sulphurici fʒij . .
Tinct: Cardamom: comp: fʒiv
Spir: Anisi fʒvj B. } B.
Olei Carui ♏ xij
Syrupi Zingib: fʒij
Aquæ Menthæ Pip: f℥vss . .
Fiat Mistura, cujus sumantur cochlearia duo ampla urgente flatu.
Flatulent Cholic.

STIMULANTS.

104. ℞. Ammoniaci Gum-Resinæ
in pulv: trit: ℥j
Aceti Scillæ q. s. . . . . I.L.
Simul bene contritis, sit Emplastrum scuto pectori.

105. ℞. Myrrhæ, in pulv: trit: ʒiss
Zinci Sulphat: gr. x . . . . . E
Confect: Rosæ q. s . . . . . L.
Ut fiant Pil: xx, e quibus sumantur binæ bis quotidie

106. ℞. Sinapeos semin: contus:
Armoraceæ Radicis āā ℥ss . . . B
Aquæ ferventis oj I
macera per horam, et cola.
℞. Colaturæ f℥vij
Spir: Ammoniæ Aromat: fʒj . B } B
Spir: Pimentæ f℥ss . . . . . .
Fiat Mistura de qua sumantur cochl: duo ampla ter die.
In Paralysis.

107. ℞. Olei Terebinth: fʒij
Mellis despumati ℥j . . . . . L.
M. ut fiat linctus, de quo sumatur cochleare parvum, nocte, maneque, cum haustu cujusvis potus tenuioris tepefacti

ANTISPASMODICS.

108. ℞. Tinct: Castorei f℥j
Ætheris Sulphurici ♏ x . . . . . B
Tinct: Opii ♏ vij . . . . . E
Aquæ Cinnamomi f℥iss . . . . . L.M.
Fiat Haustus ter quotidie sumend:

109. ℞. Moschi gr. xv
Camphoræ (Alcoholis pauxillo solutæ) B.
gr. v.
Confect: Ros: canin: q. s. ut fiat bolus.

110. ℞. Moschi ℈j
Acaciæ gummi ʒss . . . . . K.
tere optime simul, et adde gradatim
Aquæ Ros: f℥j L
Ætheris Sulphurici fʒj . . . . . B.
Fiat Haustus p. r. n. sumendus.

111. ℞. Assafœtidæ ʒj
solve terendo cum
Aquæ Menth: Pip: f℥j . . . . K
addeque
Tinct: Valerian: Ammoniat: fʒij
Tinct: Castorei fʒiij } B B.
Ætheris Sulphuric fʒj . . .
Fiat Mistura de qua Sumatur Cochlear: unum amplum secundis horis.
Signetur.—*Antihysteric Mixture.*

112. ℞. Pulv: Valerianæ ℈j
Tinct: Valerian: Ammoniat: .
Tinct: Castorei, āā fʒj } B B.
Misturæ Camphoræ: fʒxij . .
Fiat Haustus ter quotidie sumend:

113. ℞. Tabaci Folior: ℈j
Aquæ ferventis f℥viij . . . . . I.
macera, et denique cola. Fiat pro enemate.

114. ℞. Opii puri gr. j
Fiat Pilula—

NARCOTICS.

115. ℞. Camphoræ gr. xij
Extract: Hyoscyami gr. xviij . . B.L.
Fiant pilulæ xij quarum sumantur tres, omni nocte.

116. ℞. Extracti Conii ʒj
Folior: Conii exsiccat: . . . . . A.
et in pulverem tritorum, q. s.
ut fiant pilulæ, singulæ grana duo pendentes.
Initio sumat æger pilulam unam pro dosi, mane ac nocte, postea sumat binas, dein tres, et denique augeatur dosis quantum fieri potest.
In Scrophula, Schirrus, and Cancer.

117. ℞. Tinct: Opii ♏ xv
Syrup: Papaveris fʒij . . . . . B.
Spir: Cinnamomi fʒj . . . . . D.
Aquæ puræ f℥j . . . . . L.
Fiat Haustus, invadente paroxysmo caloris in febribus intermittentibus sumendus.

NARCOTICS.

118. ℞. Opii gr. iv
Extract: Hyoscyami . . . . B } B.
Extract: Conii āā gr. xv . .

Fiat massa in Pilulas sex dividenda, quarum sumat unam omni nocte.

119. ℞. Mist: Camphor: f℥j
Spir: Etheris comp: f℥ss . . . B.
Tinct: Opii ♏ x . . . . . B } B.
Syrupi Papav: f℥j . . . . .

Fiat Haustus hora decubitus sumendus.

120. ℞. Infusi Lini f℥vj
Tinct: Opii f℥j . . . . . E

Fiat Enema —

ANTHELMINTICS.

121. ℞. Cambogiæ gr. viij
Hydrarg: Sub-muriat: gr. v . . E.

Mucilag. Acaciæ q. s. ut fiat Bolus mane sumendus. *Contra Tæniam.*

122. ℞. Pulv: Stanni ℥iij
Confect: Rosæ Gall: ℥ss . . B } L.
Syrupi q. s. ut fiat Elect: . .

Capiat coch: amplum, quotidie mane, et repetatur dosis ad tres vices, et deinde capiat æger Haustum aliquem purgantem.

123. ℞. Sodæ Muriatis ℥ij
Coccinell: ℈ij . . . . . M

Fiat Pulvis, et detur drachma dimidia pro dosi, tempore matutino.

124. ℞. Ferri Carbonatis ℈j

Sumatur ex vehiculo aliquo crasso, singulis auroris.

125. ℞. Camphoræ (Alcohole solutæ) ʒj
Ol: Olivæ f℥ij . . . . . I.L.

Misce, Fiat Enema.

Injiciatur h. s. tertia quaque nocte, ad tres vices; dein repetatur alternis noctibus, ad quartam usque vicem, si opus sit.

Contra Ascarides.

126. ℞. Aloes Soccot: gr. x
Saponis Duri ʒj . . . . . L.I.

Fiat Suppositorium post Alvum exoneratam applicand.

PHARMACOLOGIA,

PART THE SECOND.

COMPREHENDING

THE MEDICINAL HISTORY AND CHEMICAL HABITUDES

OF THE

DIFFERENT ARTICLES THAT CONSTITUTE THE

MATERIA MEDICA.

"Omnium Simplicium Pharmacorum vires nosse oportet eum qui aliquot compositum est facturus."

Ætius.

PHARMACOLOGIA.

PART THE SECOND.

ABI

ABIETIS * RESINA. L. E. D. (Pinus Abies, *Resina concreta*). *Resin of the Spruce Fir.*

Olim, *Thus.—Frankincence.*† *Burgundy Pitch.*

QUALITIES. *Form*, tears or small brittle masses: *Odour*, very fragrant when burning. It has all the chemical properties of a *Resin*, and is used only for external purposes: see *Pix Arida.* OFFICINAL PREPARATIONS. *Empl: Aromatic:* D. *Empl: Galban: comp:* L. *Empl: Opii* L. *Empl: Thuris.* D.

When distilled it yields an oil, which is substituted for Oil of Turpentine, but is very inferior to it.

ABSINTHIUM. (Artemisia Absinthium) *Common Wormwood.*

QUALITIES. *Odour*, strong and peculiar. *Taste*, intensely bitter, slightly pungent, and very unpleasant, as its name ‡ implies. CHEMICAL COMPOSITION. Extractive, a small portion of resin, and a green essential oil; in the first of which its bitterness resides, in the last, a narcotic principle; hence the watery extract is not possessed of the nauseous flavour of the

* Abies ab abeo, quod in cœlum longe abeat.

† The *Frankincense* of the ancients was the *Olibanum.*

‡ From α *not*, and ἥδυς, pleasure.

plant but retains its bitterness almost entire; the narcotic principle is therefore dissipated by decoction, but its tonic and anthelmintic properties are not impaired by the process. MED. USES. The whole plant is powerfully antiseptic. Infused in ale it forms the beverage known by the name of *Purl*. Its powers as a vermifuge has bestowed upon it the name of *Wormwood*. INCOMPATIBLE SUBSTANCES. Precipitates are produced in the decoction or infusion by *Sulphate of Iron*, *Superacetate of Lead*, and some other metallic salts. *Tartarized Antimony* is not in the least affected by it. OFF: PREP: *Extract*: *Absinth*: D.

ACACIÆ GUMMI. L. (Acacia vera.) Mimosa Nilotica. E.D. *Gum Arabic*.

QUALITIES. It is dry, brittle and insipid; by exposure to the air it undergoes no other change than loss of colour. SOLUBILITY. It is soluble in water in every proportion, forming a viscid solution, (*mucilage*). One part dissolved in six of water affords a fluid of the consistence of syrup, and in two parts, a medium well calculated for the union of dry powders. Gum is also soluble in pure alkalies and lime water, as well as in vegetable acids, especially vinegar, with which it forms a mucilage that may be used as a cement, like the watery solution, and with the additional advantage of not being susceptible of mouldiness. It is insoluble in alcohol, as well as in æther and oils; for a farther history of its habitudes see *Mucilago Acaciæ*. MED. USES. It is demulcent and nutritious; although it appears in certain states of the body to pass through the bowels without change. OFFICINAL PREPARATIONS. *Mucilago Acaciæ*. L.E.D. *Emul-*

sio Mimosæ Niloticæ. E. *Emulsio Arabica.* D. *Mist. Corn. ust.* L.D. *Mist. Cretæ.* L.D. *Mist. Moschi.* L. *Confect. Amygdal.* L. *Pulv. Cret. co.* L. *Pulv. Tragacanth. co.* L. *Trochisci Carbonat. Calcis* E. *Troch. Glycyrrh. Glab.* E. *Troch. Glycrrh. cum Opio* E. *Troch. Gummos* E. ADULTERATIONS. Gum Senegal is not unfrequently substituted for it, but this may be distinguished by its clammy and tenacious nature, like the gum produced in this country from plum or cherry trees, whereas genuine *gum arabic* is dry and brittle; the fraud is of no consequence in a medical point of view.

ACETICA. L.E.D. *Preparations of Vinegar.*

These preparations consist of vegetable principles dissolved in vinegar. OFFICINAL PREPARATIONS. *Acetum Aromaticum.* E. *Acidum Acetosum camphoratum.* E.. Medicated vinegars were formerly much extolled; the first London Dispensatory contained no fewer than ten, at present the number is reduced to two, viz. *Acetum Colchici.* L. *Acetum Scillæ.* L.E.D.

ACETIS HYDRARGYRI. E. Acetas Hydrargyri. D. *Acetate of Mercury.*

QUALITIES. *Form,* small flaky crystals; *Colour,* silvery white; *Taste,* acrid. CHEMICAL COMPOSITION. Acetic Acid, and Oxyd of Mercury. SOLUBILITY. It is soluble in hot, but very sparingly in cold water, and quite insoluble in Alcohol. FORMS OF EXHIBITION. It should be always given in pills,* it is how-

* KEYSER'S ANTIVENEREAL PILLS consist of this mercurial salt, triturated with Manna.

ever seldom used. Dose, gr. j. As an external application, a solution of it, in the proportion of grs. ij. in f℥ij of rose water, has been commended as a cosmetic.

ACETOSÆ FOLIA. L.E. Rumex Acetosa.
Common Sorrel Leaves.

Qualities. *Taste*, grateful, austere and acidulous. Chemical Composition. All its qualities depend upon the presence of *Super-oxalate of Potass.* In France the plant is commonly cultivated for the use of the table.

ACETOSELLA. L. Oxalis Acetosella.
Wood Sorrel.

The qualities of this plant, like those of the preceding, depend upon *Super-oxalate of Potass.*

ACETUM (Acidum Aceticum Impurum.) *Vinegar*, L.
Acidum Acetosum, E. Acetum Vini. D.

Qualities. Too well known to require description.* Chemical Composition. Acetic acid largely diluted with water, vegetable gluten, mucilage, sugar, extractive matter, and frequently malic and tartaric acids, together with small proportions of sulphate of lime, sulphate of potass, and alcohol. Its composition however varies according to the fermented liquor from which it is obtained: e. g. wine yields a paler,

* Vinegar quenches the thirst, and is particularly refreshing after much bodily exertion. It was this property that invigorated the soldiers of Hannibal in their progress over the Alps; it is absurd to imagine that Livy meant to assert that the rocks were *dissolved* by Vinegar: the expression is only metaphorical.

purer, and stronger acid than fermented malt liquors or solutions of sugar, hence the superiority of that prepared in France and Italy. Vinegar is liable to spontaneous decomposition, or to become mouldy, and consequently for the purposes of pharmacy it should be distilled; as however the change depends upon the presence of gluten, it may if boiled be kept for a much longer time, and if powdered animal charcoal be previously added, it will become quite colourless like distilled vinegar, and that without being impaired in strength, whereas it always becomes much weaker by distillation. It is a curious circumstance that this is the only vegetable acid, except the *Prussic*, that rises in distillation in combination with water.

Adulterations. Sulphuric acid, as it does not produce any turbid appearance in vinegar, is generally the acid selected for sharpening it; but here it is necessary to caution the chemist against inferring its presence from the mere occurrence of a precipitate by an *acetate of barytes*, as stated under *Acetic Acid*, since the sulphate of lime, or the sulphate of potass, so often present in common vinegar, would, as well as free sulphuric acid, produce with this test precipitates insoluble in nitric acid. To avoid therefore this fallacy, let the vinegar be assayed for sulphuric acid in the following manner; saturate a given quantity with chalk, add distilled water, and throw the whole upon a filtre; by these means if any sulphuric acid be present, an insoluble sulphate of lime will be formed, which may be recognised by the usual tests. For the purpose of making the vinegar appear stronger, acrid vegetables, as *grains of Paradise*, *berries of Spurge Flax*, *Capsicum*, *Pellitory of Spain*, &c. are sometimes infused in it, but by tasting it with atten-

tion, the pungency of such substances may be easily detected. For the other adulterations, see *Acidum Aceticum.*

The purest vinegar which I have ever examined is that manufactured from malt, by Mr. Mackintosh of Glasgow. In the former Editions of this work it was stated, that a Vinegar had of late years appeared in the market produced from the distillation of wood, *(Pyroligneous Acid)* but that nothwithstanding its purification, which is effected by forming it into a salt with lime, and then decomposing this salt by the agency of sulphuric acid, it still retained an empyreumatic flavour by which it might be easily recognised: in justice to the skill and industry of Messrs. Beaufoy & Co. of South Lambeth, I now beg to state that I have lately examined various specimens of this acid from their manufactory, and that I find it free from those impurities which have hitherto constituted an insuperable objection to its introduction into medicine. See *Acidum Aceticum.*

ACETUM COLCHICI. L. *Vinegar of Meadow Saffron.*

Vinegar appears to be a solvent of the acrid and medicinal principle which resides in the bulb of this plant. Dose f℥ss to f℥ij in any bland fluid. See *Colchici Radix.*

ACETUM SCILLÆ. L.E.D. *Vinegar of Squill.*

This preparation is an acetic solution of the acrid matter of the Squill, upon which its medicinal efficacy depends.* Dose f℥ss to f℥ij. in cinnamon or mint water. See *Scillæ Radix.* Form. 35. 43. 104. This

* This is a very ancient preparation, thus Ausonius,
" *Scillato* decies si cor purgeris *aceto*
Anticipitesque tuum Samii Lucomonis acumen."

preparation, as well as the *Oxymel*, deposits when long kept a precipitate consisting of *citrate of lime* and *tannin*, but its medicinal efficacy is not on that account impaired.

ACIDUM ACETICUM. L. Acidum Acestosum Distillatum. E. Acetum Distillatum. D.

Acetic Acid.

Qualities. *Odour*, fainter and less agreeable than common vinegar (*Acetum*): *Taste*, less acid; *Colour*, none. Specific Gravity, varies from 1·006 to 1·0095. Chemical Composition. Acetic acid more largely diluted than that in vinegar, with very minute portions of uncombined mucilage and extractive. Solvent Powers. It is capable of dissolving all those vegetable principles which are soluble in water, and in some cases, as in *Squill*, *Colchicum*, and in several *Aromatics* and *Narcotics*, its acid appears to extend its solvent powers; at the same time it often modifies or diminishes the medicinal virtues of the substances, as for instance those of *Narcotics*; this circumstance considerably limits its pharmaceutical application; when however it is employed a portion of spirit should be always added, in order to counteract the spontaneous decomposition to which it is liable, and the acetic compound should be preserved in stopped bottles. Acetic acid does not dissolve true resins, but it has some action on gum resins. Dr. Powell states (*Translation of the Pharmacop: of London*, 1815) that one fluid ounce ought to dissolve at least thirteen grains of *white marble*; or, which is equivalent to it, 39.67 grains of crystallized *Sub-carbonate of Soda*: acid of this strength corresponds very nearly with six degrees of the Revenue Aceto-

meter, the proportions being as follow, 100 grains of Pharmacopœia strength will saturate 8,68 grains of crystallized *Sub-carbonate of Soda;* 100 grains of acid of 6° of the Acetometer will saturate 8,70 grains of that salt. ADULTERATIONS. *Sulphuric Acid* may be detected by a precipitate being produced on the addition of acetate of barytes: this test however will not answer for its detection in common vinegar, for the reason stated under that article. See *Acetum.* The presence of *Nitric Acid* may be discovered by saturating the suspected sample with pure potass, evaporating to dryness, and then treating the product with a highly concentrated alcohol, the acetate of potass will be thus dissolved, but as it exerts no action on the *Nitrate* it will be found in the residuum, and may be recognized by its deflagration, when thrown upon burning charcoal. *Copper* may be detected by the acid assuming a blue colour, when supersaturated with ammonia; and *Lead*, by a solution of sulphuretted hydrogen, producing a dark coloured precipitate. *Tin* however is the metal with which distilled vinegar is more usually contaminated, for no vegetable acid will act upon lead while any tin is present in the mixture, since the latter being more oxidable than the former, is exclusively dissolved.

PYRO-LIGNEOUS ACID. The acetic acid from wood has lately been very generally introduced to supersede the use of distilled vinegar for the purposes of Medicine and the Arts, see *Acetum.* It is at length found to be capable of such complete separation from all foreign matter as to afford a perfectly pure acetic acid, invariable in its acidifying power, and immutable in its chemical properties. The purified *Pyro-ligneous* acid, manufactured by Messrs. Beaufoy & Co. of South Lambeth, and sold under the name of "*Im-*

proved Distilled Vinegar," is perfectly free from any unpleasant taste, as well as colour and sediment; and it forms a limpid and colourless solution with ammonia. The common distilled vinegar of the shops varies essentially in strength as well as purity, differing in acidifying power from 30 to 40 per cent. in value: it is sometimes 7 degrees, and at others less than 5, by the Revenue Acetometer;* and hence has arisen the difficulty of procuring an uniform article for medical application, a difficulty which the introduction of the *pyro-ligneous* acid seems calculated to overcome, as it may be procured from the manufacturers of any degree of concentration, from 6 degrees of the Acetometer, or 2·898 per cent. of real acetic acid, to 130 degrees, or 63·09 per cent. of acid; and even of still higher strength if required; their common, or *Proof* acid is about equivalent in strength to that of the best Malt Vinegar, of which 100 parts will saturate 14½ parts of crystallized *Sub-carbonate of Soda*, and consequently contains somewhat less than 5 per cent. of real acid, and will require at least one half part of water to reduce it to the strength of the best common distilled vinegar. It is found that acetic acid of 45 per cent. real acid, dissolves Camphor and the Essential Oils very readily.

Concentrated Acetic Acid. Acidum Acetosum Forte, E. Acidum Aceticum. D.

Radical Vinegar, has not retained its place in the London Pharmacopœia, as distilled vinegar, from which it differs only in the degree of concentration and purity, is deemed sufficiently strong for all the purposes of medicine. Since however it possesses

* This instrument was invented by Messrs. Taylors for this particular purpose; the principle consists in first forming a neutral salt with dry hydrate of lime and the acid to be examined, and then taking the specific gravity of the solution.

peculiar chemical habitudes, it claims some notice in this work. The concentrated acid may be obtained from the decomposition of acetic salts, by the action of sulphuric acid. It is pungent, acrid, and volatile, and when heated with free access of air, it takes fire very readily. Its solvent powers are much greater than those of distilled vinegar; it is capable of dissolving camphor, resins, and essential oils* copiously, but they are precipitated by dilution; it combines with alcohol, and forms a species of ether; with water it unites in any proportion, heat being evolved by the mixture. Gold, platina, glass, and earthenware, can alone retain this acid without being corroded.

ACIDUM BENZOICUM. L.E.D. *Benzoic Acid.*

QUALITIES. *See Powell's Translation of the Pharmacopœia.* OFFICINAL PREPARATIONS. *Tinctura Camphoræ composita.* L.D. *Tinct: Opii Ammoniat:* E. IMPURITIES. The crystals ought to possess a brilliant white colour; they should be entirely soluble in alcohol, and when subjected to heat they should be volatilized without leaving any residuum.

* HENRY'S AROMATIC VINEGAR is merely an acetic solution of camphor, oil of cloves, of lavender, and of rosemary. A preparation of this kind may be extemporaneously made by putting ʒ j of *Acetate of Potass* into a phial with a few drops of some fragrant oil, and *m* xx of Sulphuric Acid.

THIEVES VINEGAR, or MARSEILLES VINEGAR, is a pleasant solution of essential oils and camphor, in vinegar; the Edinburgh Pharmacopœia has given a formula for its preparation under the title of "*Acetum Aromaticum.*" The repute of this preparation as a prophylactic in contagious fevers is said to have arisen from the confession of four thieves, who, during the plague of Marseilles, plundered the dead bodies with perfect security, and who upon being arrested stated on condition of their being spared, that the use of *Aromatic Vinegar* had preserved them from the influence of contagion. It is on this account sometimes called "*Le Vinaigre de quatre voleurs.*" The French Codex has a preparation of this kind, consisting of an acetic infusion of various aromatic herbs and camphor, which is termed "*Acetum Aromaticum Allietum,*" seu "*Antisepticum*, vulgo "*des Quatre Voleurs.*" p. 108.

ACIDUM CITRICUM. L. *Citric Acid.*

Concrete Acid of Lemons.

QUALITIES. *Form*, crystals which are rhomboidal prisms, white, semi-transparent, and persistent. *Taste*, extremely acid, almost caustic. SOLUBILITY. f℥j of cold water dissolves ʒ x, but if boiling, ℥ij. ℥j of the crystals dissolved in a pint of water, is about equivalent to one pint of lemon juice, the solution however if kept is liable to spontaneous decomposition. The following table of equivalents may be found of practical use; the author is aware that they do not exactly agree with the proportions of Dr. Haygarth, but they are the results of careful and repeated experiments, and as such they are submitted with confidence.

EQUIVALENT PROPORTIONS OF CONCRETE CITRIC ACID AND LEMON JUICE, NECESSARY FOR THE NEUTRALIZATION OF ALKALINE SALTS.

Citric Acid.	Lemon Juice.	A Scruple of Alkalies.
grs. x.	f ʒ iij	Carbonate of Potass
grs. xv	f ʒ iiij	Sub-Carbonate of Potass
grs. xxv.	f ʒ vij	Sub Carbonate of Ammonia

These alkaline citrates are decomposed by the *oxalic*, *tartaric*, and the stronger *mineral acids*, and by the solutions of *lime* and *barytes*. FORMULÆ 35. 51. 59. 75.

Citric acid decomposes the following salts, *viz. The Alkaline and Earthy Carbonates; the Alkaline and metallic Acetates; the Sulphurets of Earths and Alkalies, and Alkaline Soaps.* It curdles the milk of most animals, but it does not produce that effect on human milk, whether applied hot or cold. ADULTERATIONS. *Tartaric Acid*, with which it is sometimes mixed, may be detected by adding to the solution *Tartrate of Potass*, which will instantly form with it an insoluble supertartrate, and precipitate in granular crystals. *Sulphuric Acid* is known by the superacetate of lead producing a precipitate, insoluble in nitric acid. *Muriatic Acid* may be discovered in the same manner, substituting only an acidulous solution of nitrate of silver for the superacetate of lead. The presence of *Oxalic Acid* may be inferred, if the solution, when added to that of sulphate of lime, produce a precipitate. Malic acid has the power of precipitating silver, mercury, and lead, from their solutions in nitric acid, but no doubt or difficulty can arise from this circumstance, for the fact of its forming a soluble salt with lime will prevent every chance of accidental intrusion, and its price at once secures us against its fraudulent introduction; it might moreover be easily detected by throwing the suspected precipitate upon burning coals, when it would be decomposed. The juices of many other fruits besides the lemon and lime, will furnish the citric acid in abundance, and may be obtained from them by a similar process; e. g. VACCINIUM OXYCOCUS, the *Cranberry;* PRUNUS PADUS, the *Bird's Cherry;* DULCAMARA SOLANUM, the berry of the *Nightshade;* CYNOSBATUS, vel ROSA CANINA, the hep or fruit of the *Wild Briar.* There are many plants whose juices contain combinations of the CITRIC and MALIC acids in considerable abundance,

such as FRAGARIA VESCA, the *Wood Strawberry*, and the common *Raspberry;* RIBES RUBRUM, the *Red Gooseberry;* VACCINIUM MYRTILLUS, the *Bilberry;* CRATÆGUS ARIA, the *Hawthorn;* PRUNUS CERASUS, the *Black Cherry*, &c. This fact is interesting, since the juices of such fruits have been long known to possess the property of dissolving the *tartareous* incrustations on the teeth.

ACIDUM MURIATICUM. L.E.D.

Muriatic Acid.

QUALITIES. *Form*, a liquid of the specific gravity 1·16, a fluidounce of which weighs about 527 grains, and according to Dr. Powell ought, when diluted, to dissolve 220 grains of limestone. *Odour*, strong and pungent; if exposed to the air it emits white fumes. *Taste*, intensely sour and caustic; it is however the weakest of the three mineral acids; and no remarkable elevation of temperature is produced by dilution. CHEMICAL COMPOSITION. The liquid acid is a solution of muriatic acid gas in water; when of the sp. gr. 1·16, according to Davy, it contains 32·32 per cent of the gas, which recent experiments have shewn to be a compound of *Chlorine (Oxy-muriatic acid)* and hydrogen in equal volumes. It has therefore received a name expressive of its composition, and is called *Hydro-chloric** acid. We accordingly find that the former element is disengaged

* This offers a striking example of the confusion produced by the constant changes in chemical nomenclature; in the former edition of this work, the term *Hydro* was prefixed to *Muriatic Acid*, as an epithet expressive of the presence of *water*, whereas the same word is now used to denote the existence of *Hydrogen* as one of its elements.

from muriatic acid by adding any substance capable of uniting with its hydrogen. For the purpose of obtaining *Chlorine*, we may take three parts of common salt, one of black oxide of manganese, and rather less than three of strong sulphuric acid.* Accounts have been received from Spain, that in the midst of the dreadful contagion which reigned in that country, the inhabitants always escaped in those houses where fumigations of chlorine had been used. Muriatic acid gas has also been strongly recommended for the same purpose; it may be easily evolved by pouring sulphuric acid on common salt. If nitric and muriatic acids be mixed, a mutual decomposition takes place, of which water, chlorine, and nitrous acid are the results; this constitutes "nitro-muriatic acid," the *Aqua regia* of the older chemists. A bath acidulated with an acid of this kind has been recommended by Dr. Scott, as a powerful remedy for diseases of the liver in particular, and as a substitute for mercury in general. On the possible influence of this bath, I would beg to make one observation, that the extensive application of a dilute acid to the surface of the body, is capable of affecting the bowels. I have witnessed such an effect from sponging with vinegar and water. In this way the acidulated bath may occasionally produce benefit, but it is extremely difficult to conceive how it can be indebted for its utility to any other mode of operation. (See *Journal of Science and the Arts*, No. 2.) Forms of Exhibition. Muriatic acid

* Dr. Powell directs only *two* parts of acid, but this is evidently too little, for it appears by Dr. Wollaston's scale, that 8 parts of salt require 2½ of oil of vitriol for their decomposition; and in addition to this, the Oxide of Manganese will require a farther addition to convert it into a Sulphate.

should be administered in some bland fluid, as barley water, gruel, &c. (*Formula* 85). I have uniformly exhibited it with success in the most malignant cases of typhus and scarlatina, during several years extensive practice in the Westminster Hospital. *See Part* 1, *page* 117. We should be careful not to apportion its dose in a leaden or pewter spoon. The antiseptic properties of this acid have been long known; Sir Wm. Fordyce relates that a "dry-salter" acquired a large fortune from possessing a secret that had enabled him to send out provisions to India in a better state of preservation than any others of the trade; his secret consisted in adding a small quantity of muriatic acid to the contents of each cask. After a copious evacuation of the bowels, it is in my experience the best remedy for preventing the generation of worms; for which purpose the infusion of quassia, stronger than that of the Pharmacopœia, is the best vehicle. Dose ♏x to xl, frequently repeated. It may be here observed that where the permanent influence of an acid is required, a mineral one should be always preferred, as such bodies appear to be beyond the control of the digestive process,* and are incapable of being decomposed by it; whereas on the contrary it seems probable that the organs of assimilation have command over those of a vegetable nature, and generally decompose them. Dr. Marcet has very judiciously noticed this fact in his luminous work on the treatment of calculi, and I have ventured to offer some farther observations upon this subject, which may be of practical value, under the article *Potassæ*

* There is a curious illustration of this fact in the German "*Ephemerides*;" the case of a person is described who had taken so much Elixir of Vitriol that his keys were rusted in his pocket, by the transudation of the acid through his skin.

Acetas. ADULTERATIONS. *Sulphuric acid* is detected by diluting the acid with six parts of distilled water, and adding a few drops of the muriate of barytes, which occasions a white precipitate if any be present. *Iron*, by saturating a diluted portion with pure carbonate of soda, and adding prussiate of potass, which will indicate its presence by a blue precipitate. *Copper*, by the production of a blue colour when supersaturated with ammonia. The yellow tinge of the acid usually met with in commerce, may depend either upon the presence of iron, vegetable extractive, or a small portion of chlorine.

ACIDUM NITRICUM. L.E.D. *Nitric Acid.*

Aqua Fortis.

QUALITIES. A limpid liquid of the sp. gr. 1·500, a fluid-ounce of which is equal to about 11 drachms 1 scruple by weight, and ought to decompose of pure limestone an ounce; it emits white fumes of a suffocating odour. *Taste*, extremely acid; it is highly corrosive, and tinges the skin indelibly yellow. CHEMICAL COMPOSITION. When of the sp. gr. 1·500, it contains 74·895 per cent. of dry acid (whose ultimate elements are one portion of nitrogen and five of oxygen) the compliment 25·105 parts is water. It is decomposed with violent action by all combustibles, and when mixed with volatile oils, it causes their inflammation. It boils at 210, and when its specific gravity is below 1·4, it is strengthened, when stronger than 1·45 it is weakened by ebullition. USES. It is employed only as a pharmaceutical agent. ADULTERATIONS. *Sulphuric acid* may be detected by a precipitate being produced on the addition of nitrate

of barytes; in the application however of this test, Mr. Hume has shewn that unless this as well as the nitric acid be diluted, a precipitate will occur, although sulphuric acid should not be present; a circumstance which depends upon the barytic salt employed yielding its water of solution to the acid under examination, and becoming insoluble. *Muriatic acid* is discovered by nitrate of silver, affording a precipitate at first white, but becoming coloured by exposure to light; the nitric acid ought to be perfectly colourless, but to preserve it in such a state it must be closely stopped, and kept in a dark place, or it will soon be converted into the nitrous kind.

ACIDUM NITRICUM DILUTUM. L.

Acidum Nitrosum Dilutum. E.D.

Dilute Nitric Acid.

It is much to be regretted that the proportion of water directed for the dilution of this acid, varies considerably in the different pharmacopœias; that prepared according to the Edinburgh, Dublin, and former London formulæ, being in strength to that of the present Pharmacopœia of London, as 4 to 1. Dose ♏x to xl. This acid is a very powerful antiphlogistic remedy; it has been much extolled in diseases of the liver, and in syphilis. Mr. Pearson however observes that we ought not to rely upon it in any form of lues venerea, although it may be often serviceable in restraining the progress of the disease when an impaired constitution or other circumstances render the exhibition of mercury improper; when sufficiently dilute, it forms an excellent lotion for old indolent ulcers.

ACIDUM NITROSUM. E. D. *Nitrous Acid.*

Qualities. A liquid emitting fumes of a flame red colour, and of a very pungent and remarkable odour. The acid is either blue, green, straw coloured, clear orange-yellow, or deep orange-yellow, according to the proportion of nitrous acid gas* with which it is charged. Chemical Composition. This acid is improperly denominated *Nitrous*, for it is nitric acid, holding nitrous acid gas loosely combined; by dilution this last constituent is disengaged, and the acid, after passing through a succession of different colours, becomes pure nitric acid; the application of a gentle heat effects the same changes.

ACIDUM SULPHURICUM. L. E. D.

Sulphuric Acid.

Oil of Vitriol, Vitriolic Acid.

Qualities. *Form*, a thick liquid of an oily consistence, sp. gr. 1·85; a fluid-ounce weighs a fraction of a grain more than fourteen drachms. *Colour* none, but it acquires a brown tinge from the smallest portion of carbonaceous matter; mere exposure to the air is sufficient for this purpose, in consequence of the acid disorganizing and carbonating the vegetable and animal matter suspended in the atmosphere; it is therefore evident that bottles in which it is preserved ought not to have stoppers of cork, but those of glass. Chemical Composition. Like the other mineral acids, it has never been obtained in an insulated state with-

* *Nitrous acid gas* is a combination of nitrous gas and oxygen.

out water; according to Davy, the composition of the strongest acid may be thus expressed: sulphur 30, oxygen 45, water 17. It has a very powerful affinity for water, and produces when mixed with it a very considerable heat; exposed to the atmosphere it imbibes at least seven times its own weight of water, and so rapidly as to double its weight in a month; when of the sp. gr. 1·85, it rises in vapour at about 550°, and distills unaltered, whereas weaker acids by being boiled lose water, and are brought to that degree of concentration; when diluted with 12 or 13 per cent of water, an acid results of the sp. gr. 1·780, and in this state of dilution it boils at 435°, and freezes sooner than water; a knowledge of this curious fact suggests to the prudent chemist an important precaution; Mr. Parkes, in his Chemical Essays, vol. ii. relates the occurrence of a terrible accident which happened in consequence of this circumstance not having been attended to;—"Carboy after carboy burst by the expansion of the acid in the act of freezing, and had not the packed carboys that remained been immediately immersed in tepid water, not a single one would have escaped the general wreck."

Adulterations. The ordinary acid of the shops contains in general 3 or 4 per cent of saline matter, which consists of about two-thirds of sulphate of potass, and one-third of sulphate of lead. Dr. Ure observes, that even more is occasionally found in consequence of the employment of nitre to remove the brown colour given to the acid by carbonaceous matter; the amount of adulterations he observes, may be readily determined by evaporating a definite weight of the acid in a small capsule of platinum; these impurities however in a medical point are immaterial, since they are at

once separated by dilution, but in a commercial sense they deserve attention, as their presence considerably increases the specific gravity of the acid; Dr. Ure is of opinion that genuine commercial acid should never exceed 1·8485, and that any density beyond this is the effect of saline contamination. (*Journal of Science and the Arts, No. 7.*)

ACIDUM SULPHURICUM DILUTUM. L.E.D.

Dilute Sulphuric Acid.

By the dilution of this acid two objects are accomplished,—it is purified, and its dose is more easily apportioned; but it is a circumstance of regret that the strength of this preparation should so materially vary in the different Pharmacopœias.

After the acid is diluted, the sediment ought to be carefully removed, and the water employed for the purpose should be distilled, for although it be in its purest natural state, it will nevertheless contain impregnations capable of affecting the acid. Uses. In addition to the antiseptic and refrigerant virtues which it posseses in common with the other mineral acids, it has astringent properties that render it a most valuable medicine, especially in weakness and relaxation of the digestive organs, in colliquative sweats, and in internal hæmorragy; in Epistaxis and Hemopthysis it was Sydenham's favourite remedy; on the same account, when sufficiently dilute, it has been successfully used as a collyrium in the atonic stages of ophthalmia, and as an injection in protracted gonorrhæa. Dose ♏x to xl. To prevent it from injuring the enamel of the teeth it may be sucked through a quill, and the mouth should be carefully washed after each dose. *See Form.* 95. Officinal.

PREPARATIONS. *Acidum Sulphuricum Aromaticum.** E. *Infusum Rosæ.* L.

ADEPS PRÆPARATA. L. ADEPS SUI SCROFÆ, *vulgo* Axungia Porcina. E. ADEPS SUILLUS PRÆPARATUS. D.

Prepared Hog's Lard. Fat. Axunge.†

QUALITIES. *Consistence*, soft or nearly semifluid. *Odour and Taste*, none; at 97° it melts. CHEMICAL COMPOSITION. It consists of two distinct bodies which appear to exist together in a state of mechanical mixture, viz. *Stearin* (from στεαρ tallow) which is white, brittle, and in appearance somewhat resembling wax; and *Elain* (from ελαιον, oil) very similar to vegetable oil in appearance, and is liquid at 59°. According to the experiments of Braconnot, the proportion of *Elain* is to that of *Stearin*, in hog's lard, as 62 : 38. SOLUBILITY. It is insoluble in water, and alcohol; with the alkalies it unites and forms soaps. INCOMPATIBLE SUBSTANCES. *Extracts*, *Spirituous Preparations*, *Tinctures*, and *Infusions*, are incapable of uniting perfectly with lard, without some intermedium; the following substances on the contrary are capable of contracting with it a most intimate union. 1. *All dry powders*, whether of a vegetable or mineral nature. 2. *Fixed and Volatile Oils*. 3. *Balsams*. 4. *Camphor*. 5. *Soaps*. It is principally employed in the formation of ointments, plasters, and liniments.

* ELIXIR OF VITRIOL. The Preparation sold under this name is the *Acid: Sulph: Aromat. E.* and is imperfectly ætherial in its nature. It is a grateful medicine. A spurious article is often sold for it, which is nothing but the diluted acid, coloured by the addition of a tincture.

I will take this occasion to state, that the term *Elixir* is of Arabian origin, viz. *Elechschir*, or *Elikscir*, i. e. an Essence, or pure mass without any dregs.

† *Axunge*, from its being used as the grease of wheels, ab *Axe* rotarum quæ *unguuntur*.

ÆRUGO. L.D. (Sub-acetas Cupri *Impura.*) SUB-ACETIS CUPRI. E.

Verdigris.

QUALITIES. *Form*, a dry mass composed of minute crystals, not deliquescent; *Colour*, bluish-green. CHEMICAL COMPOSITION. Several constituents enter into its composition, viz. Acetate and sub-acetate of copper, carbonate of copper, and copper partly metallic and partly oxidized; it contains also the stalks of grapes and other extraneous substances. SOLUBILITY. Boiling water dissolves it in part, and produces in it a chemical change, by transforming one portion of the *sub*-acetate into the soluble acetate, and another into an oxyd of copper, which is precipitated; with cold water this substance demeans itself differently, the acetate is dissolved by it, whilst that portion which is in the state of *sub*-salt remains suspended in the form of a fine green powder. Vinegar converts all the *Ærugo* into a soluble acetate, this liquid therefore ought never to be employed for favouring vomiting in cases where an overdose has been swallowed, for the reasons stated in the first part of this work p. 138. Sulphuric acid poured on powdered *verdigris* decomposes it with effervescence, and vapours of acetic acid are disengaged. It appears from the experiments and observations of Duval and Orfila, that sugar exercises a chemical action on it, by which its solubility is diminished, and that on this account it acts as a specific against its poisonous effects. USES. It is so uncertain and violent in its operation that it is rarely employed, except externally,* when it acts as a powerful deter-

* DR. SMELLOME'S OINTMENT FOR THE EYES. It consists of half a drachm of Verdigris finely powdered and rubbed with oil, and then mixed with an ounce of yellow Basilicon, (*Ceratum Resinæ*, P. L.)

gent, and mild escharotic; and in the form of ointment, is a valuable application for many cutaneous affections, especially the aggravated kinds of Tetter. OFFICINAL PREPARATIONS. *Ærugo Præparata*, D. *Linimentum Æruginis*. L. D. ADULTERATIONS. There is a spurious article sold under the name of *English Verdigris*, which consists of sulphate of copper, triturated with super-acetate of lead; and to make the fraud still more complete, the soft mass is mixed with the stalks of Raisins, (see Page 163.)

ÆTHER SULPHURICUS RECTIFICATUS. L.

Rectified Sulphuric Æther.

QUALITIES. A colourless liquid of sp: gr: 739. *Odour*, pungent and fragrant; it is highly volatile, and when perfectly free from alcohol it boils at 98°; it is extremely inflammable, a circumstance which should be remembered when it is poured from one vessel to another by candle light. CHEMICAL COMPOSITION. When pure it consists of oxygen, hydrogen, and carbon; the rectified æther however still contains some water and alcohol, for Lovitz obtained an æther of 632. SOLUBILITY. One part requires for its solution ten of water; with alcohol and ammonia it unites in every proportion. SOLVENT POWERS. It is one of the most powerful solvents known in vegetable chemistry, as it dissolves balsams, resins, gum-resins, wax, camphor, extractive, &c.; it takes up about a twentieth of its weight of sulphur, but it exerts no solvent power upon the fixed alkalies. FORMS OF EXHIBITION. In any liquid vehicle, if in decoctions or infusions, they should be previously cooled. *See Formula* 108, 110, 111. MEDICAL USES. It is highly valuable as a diffusible stimulant, narcotic, and antispasmodic. DOSE, f ʒss

to ʒij, which, in order to produce the full effect of the remedy, must be repeated at short intervals. Æther, independent of such virtues, has another valuable property consequent upon its rapid evaporation, that of producing cold and dryness; it is therefore when externally applied and allowed to evaporate, a most powerful refrigerant, and has proved valuable in scalds or burns, in facilitating the reduction of strangulated hernia, and in diminishing excessive circulation in the brain; if however it be so confined, that its rapid evaporation is prevented, a very opposite effect is produced, and it proves stimulant, rubefacient, and even vesicatory. With regard to the other property incidental to it, that of producing dryness, I am not aware that it has hitherto been applied to any pharmaceutical purpose; the fact may be satisfactorily shewn by a very simple experiment, by rincing with æther a phial, to the interior of which drops of water obstinately adhere, when by exposing it to a current of air, it will be completely dry in a few minutes. It may be noticed in this place that a mixture of sulphuric and muriatic æthers evaporates instantaneously, and produces a degree of cold considerably below 0 of Farenheit. ADULTERATIONS and IMPURITIES. Its specific gravity affords the best indication of its purity; *Sulphuric acid* may be detected by a precipitation on the addition of a solution of barytes, and by its reddening the colour of litmus; *Alcohol*, by its forming with phosphorus a milky instead of a limpid solution. M. Gay Lussac has observed that when kept for a considerable time without disturbance, it undergoes spontaneous decomposition, and that acetic acid, perhaps some alcohol, and a particular oil, are produced from it.

ALCOHOL.* L.D. *Alcohol. Ardent Spirit.*

Qualities. A transparent, and colourless liquid of the specific gravity ·815.; it does not become solid by any known diminution of temperature; it boils at 176°. and if water be added, its boiling point is proportionably raised; hence, says Dr. Henry, the temperature at which it boils is not a bad test of its strength; it is combustible, and burns with a blue flame, leaving no residue. Chemical Composition. Alcohol, in a state of complete purity, consists of carbon, hydrogen, and oxygen, in proportions not hitherto determined with accuracy; this preparation however contains 7 per cent of water; Lovitz and Saussure succeeded in obtaining it at a specific gravity of ·791, which may be considered as nearly pure. Alcohol unites chemically with water; and caloric is evolved during this union; the quantity of alcohol and water in mixtures of different specific gravities, may be learned from Mr. Gilpin's tables, *Philosophical Transactions*, 1794, or *Nicholson's Journal*, 4*to. vol.* 1. The Edinburgh Pharmacopœia has no process for the preparation of alcohol, but it most incorrectly assigns the title to that which is the "Rectified Spirit" of the other Colleges. Solvent Powers. Alcohol dissolves soap; vegetable extract; sugar; oxalic, camphoric, tartaric, gallic, and benzoic acids; volatile oils; resins, and balsams; it combines also with sulphur, and the pure fixed alkalies, but not with their carbonates: for its other habitudes, and applications, see *Spiritus Rectificatus*.

* *Alcohol* is a term of Alchymical origin, and signified the pure substance of bodies, separated by sublimation from the impure particles, as *Alcohol Antimonii*.

ALLII RADIX. L.E.D. Allium Sativum.

Garlic.

QUALITIES. This bulbous root has when recent a fœtid smell, and acrid taste, which are extracted by watery infusion; by decoction they are nearly lost; by expression, the root furnishes almost one-fourth of its weight of a limpid juice, and by distillation, an odorous acrid essential oil is procured, and the existence of sulphur may be detected. Garlic has a considerable analogy to squill and onion, and like them, exerts a diuretic, diaphoretic, expectorant, and stimu-

‡ Garlic, Leeks, and Onions constitute a tribe of culinary vegetables that has undergone great vicissitudes in reputation: amongst the Egyptians the Onion and Leek were esteemed as divinities, thus Juvenal.

"O sanctas gentes quibus hæc nascuntur in hortis
NUMINA!"

while, by the Greeks, Garlic was detested, although their husbandmen had been from the most remote antiquity in the habit of eating it, which Æmilius Macer explains by supposing that its strong odour was useful in driving away the venomous serpents and insects by which they were infested.

Horace alludes to this custom in his 3d *Epode*, which he composed in consequence of having been made violently sick by Garlic at a supper with Mecænas.

"Cicutis *Allium* nocentius
O dura Messorum ilia!"

The most powerful antidotes to the flavour of this tribe of vegetables are the aromatic leaves and seeds of the UMBELLIFERÆ; thus the disagreeable odour of a person's breath after the ingestion of an onion is best counteracted by Parsley; and if Leek or Garlic be mixed with a combination of aromatic ingredients, its virulence will be greatly mitigated and corrected, nor does the fact seem to have escaped the observation of the husbandman in Virgil,

"*Allia*, Serpyllumque, herbas contundit olentes."
Eclog. 2. *line* 11.

And the fact itself offers an additional illustration of the important principle of combination discussed at page 104 of the present work.

lant operation; it is however but rarely used in modern practice, as it possesses no superiority over remedies less nauseous and objectionable; the bruised root, externally applied, is highly stimulant, and rubefacient. OFFICINAL PREPARATION. *Syrupus Allii.* D.*

ALOES EXTRACTUM. *Aloes.*

There are three species met with in the shops, viz.

1. ALÖE SPICATA. L. Socotorina, D. PERFOLIATA. E.	Socotorine Aloes / Cape Aloes
2. ALÖE VULGARIS. L. Hepatica. E. D.	Common or Barbadoes Aloes
3. ALÖE CABALINA. Fetid, Cabaline, or Horse Aloes.	Employed only by Farriers.

QUALITIES. The above varieties of aloes differ in their purity, and likewise in their sensible qualities; the *Socotorine* is the purest, it is in small pieces of a reddish brown colour; the *Barbadoes* is in large masses, of a lighter colour, and having an odour much stronger and less pleasant; the *Cabaline* is still more impure, and less powerful. All the kinds are characterized by an intensely bitter taste, which in the *Socotorine*, is accompanied by an aromatic flavour. CHEMICAL COMPOSITION. In this there appears to be some obscurity; M. Braconnot (*Ann. Chim. tom.* 68.) conceives it to be a substance, *sui generis*, which he terms "*bitter resin*," whilst others regard it as composed of resin, gum, and extractive, the proportions of which are supposed to vary in the different species,

* TAYLOR'S REMEDY FOR DEAFNESS.—Garlic infused in Oil of Almonds, and coloured by Alkanet Root.

but that their peculiar virtues reside in the extractive part. SOLUBILITY. It is to the slowness with which aloes undergoes solution in the *primæ viæ*, that it is indebted for the medicinal properties which distinguish this substance; by boiling water it is dissolved, but on cooling a precipitation ensues, and by long decoction it becomes quite inert; weak acids dissolve it more abundantly than water, but proof spirit is the most perfect solvent: its solubility is increased by the addition of alkaline salts and soaps, but by such a combination aloes undergoes a material change in its medicinal properties; the bitterness is diminished, its purgative effects impaired, and it ceases to operate specifically upon the large intestines, a fact so far valuable, as it enables us in certain cases to obviate its irritating action upon the rectum. MEDICAL USE. Aloes is a bitter stimulating purgative, emptying the large intestines, without making the stools thin; it likewise warms the habit, quickens the circulation, and promotes the uterine and hemorrhoidal fluxes. DOSE g. v. to xv. No greater effect is produced by a large dose than from one comparatively moderate. FORMS OF EXHIBITION. The form of pill should be preferred on account of its extreme bitterness, as well as being, for the reasons above mentioned, the one most likely to fulfil the intention of its exhibition; for in addition to what has been stated in the first part of this work, on the important influence of solubility, it may be here observed that since aloes does not undergo solution in the stomach, it is admirably adapted for the basis of remedies intended to obviate constitutional costiveness, for in our endeavours to supply the deficiencies of nature by the resources of art, we should at least attempt to imitate the modes of her operation; the natural stimulus of the intestines, the bile, is

poured into them below the stomach, and whenever it regurgitates into that organ it produces disease; so it happens with our cathartic medicines, unless we so modify their solubility that their operation cannot commence until after their passage through the stomach, we shall find that we only increase the evil we are endeavouring to obviate, and that in addition to the torpor of the intestinal canal we shall induce the stomach to participate in the disease, or excite a morbid fretfulness of that organ which will be attended with the most distressing symptoms.* *See Formulæ* 16, 17, 18. Aloes in combination with assafœtida furnishes an eligible purgative in the dyspepsia of old persons. OFFICINAL PREPARATIONS. *Pulv: Aloes comp:* L.

* ANDERSON'S PILLS consist of the Barbadoes Aloes with a proportion of Jalap, and Oil of Aniseed.

HOOPER'S PILLS.—Pil Aloës cum Myrrha *(Pil. Rufi)* Sulphate of Iron, and Canella Bark, to which is added a portion of Ivory Black.

DIXON'S ANTIBILIOUS PILLS.—Aloes, Scammony, Rhubarb, and Tartarized Antimony.

SPEEDIMAN'S PILLS.—Aloes, Myrrh, Rhubarb, Extract of Chamomile, and some Essential Oil of Chamomile.

DINNER PILLS—LADY WEBSTER'S, or LADY CRESPIGNY'S PILL.—These popular Pills are the "*Pilulæ Stomachicæ*," vulgo, "*Pilulæ ante cibum*" of the Codex Medicamentarius Parisiensis. Edito Quinto, A.D. 1758. *viz.* ℞. Aloes optimæ ʒ vj, Mastiches, et Rosarum rubrarum āā ʒ ij, Syrupi de Absinthio q, s, ut fiat massa,—the mass is divided into Pills of 8 grains each. The operation of this Pill is to produce a copious and bulky evacuation, and in this respect experience has fully established its value. It is difficult to explain the *modus operandi* of the *Mastiche*, unless we suppose that it depends upon its dividing the particles of the Aloes, and thereby modifying its solubility.

FOTHERGILL'S PILLS.—Aloes, Scammony, Colocynth, and Oxide of Antimony.

PETER'S PILLS.—Aloes, Jalap, Scammony, and Gamboge, equal part ʒ ij—Calomel ʒ i.

RADCLIFFE'S ELIXIR.—℞. Aloes Socot: ʒ vj, Cort: Cinnamon et Rad: Zedoar: āā ʒ ss—Rad: Rhei ʒ i. Coccinel: ʒ ss Syrup: Rhamni f ℥ ij Spirit: Tenuior: oj—Aquæ Puræ f ℥ v.

Pil: Alöes cum Myrrha. L.E.D. *Pil: Alöes comp. Pil: Alöes cum Assafœtida.* E. *Pil: Alöes cum Colocynthide.* E. *Pil: Cambogiæ comp: (b. k?)* L. *Pil: Rhei comp: (e)* E. *Pil: Scammon, cum Aloe.* D. *Decoctum Aloes comp:* L. *Extractum Alöes purificatum.* L.D. *Extractum Colocynthidis comp:* L.D. *Tinct. Alöes.* L.E.D. *Tinct: Alöes comp:* L.E.D. *Tinct: Alöes Ætherea.* E. *Tinct: Benzoin: comp (e)* L.E.D. *Tinct: Rhei et Aloes* E. *Vinum Alöes.* L.E.D.

Adulterations. It is frequently adulterated with common resin, but the fraud more generally committed is that of mixing with, or substituting the inferior species for the *Socotorine*, but the *Barbadoes Aloes* may, independent of its want of aromatic flavour, be distinguished from the *Socotorine* by a simple test, for the latter dissolves entirely in boiling water and alcohol, whereas the former, when treated in a similar manner, leaves a considerable residue; sometimes the *Horse Aloes* is made to appear so bright and pure, as not to be easily distinguished by the eye even from the *Socotorine*, but its rank odour, of which no art can divest it, will readily betray the fraud.

ALUMEN. (*Super-sulphas Aluminæ et Potassæ.*) Sulphas AluminæE.

Alumen. D. *Alum.*

Qualities. *Form*, octohedral crystals, whose sides are equilateral triangles; they are slightly efflorescent. *Taste*, sweet, rough, and acidulous. Chemical Composition. It is a triple, or sometimes a quadruple salt, with excess of acid, consisting of sulphuric acid and alumina, with potass, or ammonia, or frequently both of them; the nature of the alkali however does not in the least appear to affect the properties of alum. Solubility. A fluidounce of cold

water dissolves 30 grains, but if boiling four drachms; it is insoluble in alcohol. INCOMPATIBLE SUBSTANCES. *Alkalies* and *alkaline salts*, after neutralizing the excess of acid, precipitate the alumine. It is also decomposed by *carbonate* and *muriate of ammonia*, *carbonate of magnesia*, and *tartrate of potass*, *by lime-water*, *superacetate of lead*, and *the salts of mercury*, as well as by many vegetable and animal substances, especially *galls* and *kino*. It is on this account very injudicious to combine alum with any vegetable astringent with a view to increase its virtues; thus the "*Pulvis Sulphatis Aluminæ campositus*" of the Edinburgh college, is less powerful than any of the ingredients of which it is composed; and the addition of alum to the decoction of bark, undoubtedly diminishes its efficacy as an astringent injection. MEDICAL USES. Alum is internally a powerful astringent, in hæmorrhages and inordinate fluxes, and is externally useful for repellent and astringent lotions, and collyria. Van-Helmont was the first person who employed alum in uterine hemorrhage, and the success of the practice very considerably enhanced his reputation. DOSE, gr. x; in large doses it is liable to excite nausea, and to act upon the bowels. FORMS OF EXHIBITION. In solution, or in substance made into pills with extract; it is sometimes given with advantage in the form of whey (*Alum-whey—Serum Aluminosum*) made by boiling ʒij with a pint of milk, and then straining, the dose of which is a wine glass full. By briskly agitating a drachm of alum with the white of an egg, a coagulum is formed (*Alum curd, Albumen Aluminosum*) which is serviceable in some species of ophthalmia, when applied between two pieces of thin linen rag. As alum is not decomposed by sulphate of lime, hard water may be safely used

for its solution. Alum has the effect of retarding, and in some instances of preventing, the acetous fermentation in vegetables, thus when added to common *paste* it prevents its becoming sour; animal substances, as *glue*, are preserved by it in a similar manner. It has also the property of clearing turbid water, wine, and spirituous liquors, for which purpose it is extensively employed. OFFICINAL PREPARATIONS. *Liquor Alum: co.* L. *Pulv: Alum: co.* E.

ALUMEN EXSICCATUM, L. Ustum. D. *Dried Alum.* By the action of heat alum undergoes watery fusion, yields its water of crystallization, and loses more than one third of its weight; if the heat be too intense, or long continued, it is deprived of a great part of its acid. It has been recommended, in doses of a scruple, in cholic, when it has been said to operate gently upon the bowels, and to relieve the pain; I have myself experienced this good effect when the cholic has been produced by the action of lead: Dr. Grashuis, a Dutch Physician, first recommended its use in Cholica Pictonum. The preparation however is principally used as an external application, having a degree of escharotic power, but it should be remembered that, as it owes such power to an excess of acid, unless it be carefully prepared, it must be inefficient. It ought to redden syrup of violets.

ALUMEN RUPEUM. *Roche* or *Rock Alum.* This variety was originally brought from Roccha, formerly called Edessa, in Syria, in fragments about the size of an almond, covered with an efflorescence of a pale rose colour; that however which is now sold under this name is common English alum, artificially coloured. It is unimportant.

ALUMEN ROMANUM. *Roman Alum* is in irregular octohedral masses, powdery on the surface; it is the purest kind, and contains no ammonia in its composition.

AMMONIACUM. L.E.D. *Heracleum Gummiferum.* Ammoniac.

QUALITIES. *Form*, Masses composed of fragments, or tears, yellow on the surface, and white within; *Taste*, a nauseous sweet, followed by a bitter flavour; *Odour*, faint but not unpleasant. CHEMICAL COMPOSITION. Gum-resin, gluten, and some volatile matter. SOLUBILITY. It is partly soluble in water, vinegar, alcohol, æther, and the solutions of the alkalies; when triturated with water a milky liquor is formed, which is a solution of gum holding the resin in suspension, and if the yolk of an egg be employed the mixture is more permanent; water appears to be its proper solvent. USES. Stimulant, antispasmodic, and expectorant: in large doses gently purgative and sometimes diuretic; after the exhibition of smart purgatives, in combination with rhubarb, it proves valuable in mesenteric affections by correcting the viscid secretion of the intestines; dissolved in nitric acid, it is said to prove an excellent expectorant in cases where large accumulations of purulent or viscid matter exist with feeble and difficult expectoration.*— FORMS OF EXHIBITION. In solution, see *Mist: Ammoniac*, and in pills with bitter extracts, myrrh, and other gum-resins; if rubbed with camphor a mass is at once produced very suitable for pills; vinegar renders it soft, and adapts it for plasters (*Form* 104). DOSE, grs. x to xxx. OFFICINAL PREPARATIONS. *Mist: Ammoniac:* L.D. *Pil: Scillæ co:* L.E. (*b*). *Emplast: Ammoniac.* L. *Emplast: Gummos:* E. *Emplast: Ammoniac: cum Hydrargyro.* L. ADUL-

* ℞. Acid: Nitric f ʒ ij—Aquæ f ℥ viij misce, et tere Ammoniac: ʒ ij, donec solutio fit, et Emulsio evadit. *Dosis* Cochl: unum mediocre ex liquore aliquo demulcenti.

TERATIONS. Two varieties are met with in the market, that in tears, *guttæ ammoniaci*, which ought to be white, clear, and dry; and that in lumps, *lapis ammoniaci*, which sells for one-third the price of the former, being very impure, and generally adulterated with common resin, from which it may be purified by softening the mass in a bladder which is immersed in boiling water, and straining it while fluid.

AMMONIÆ SUBCARBONAS. L. Carbonas Ammoniæ. E. D.

Sub-Carbonate of Ammonia.

QUALITIES. *Form*, white, semi-transparent masses, which on exposure to air effloresce; *Odour*, pungent and peculiar; *Taste*, acrid but cooling. CHEMICAL COMPOSITION. It will be found to vary materially in its composition according to the temperature employed for its preparation; the quantity of alkali varying from 20 to 50 per cent. Mr. Phillips states that this salt, as usually prepared, contains about half its weight of carbonic acid, and that its composition may be expressed as follows,—carbonic acid 50, ammonia 39, water 11. SOLUBILITY. According to Duncan it is soluble in twice its weight of cold water; Mr. Phillips states four times; the mean of these will be found nearly correct. Its solubility however is increased by increase of temperature, but when dissolved in boiling water it effervesces, and undergoes a partial decomposition; it is quite insoluble in alcohol, and hence on the addition of spirit to a strong solution a dense coagulum is produced. INCOMPATIBLE SUBSTANCES. It is decomposed by *acids*, *fixed alkalies* and their *carbonates*, *lime*, *magnesia*, *alum*, *supertartrate of potass*, and all the *acidulous salts*, *sulphate of*

magnesia, acetate, sub-muriate, and *oxy-muriate of mercury, super-acetate of lead, tartarized iron,* and the *sulphates of iron and zinc.* If it be added to decoctions and infusions they must be previously cooled. FORMS OF EXHIBITION. Since by exposure to air its virtues are impaired, it ought not to be kept in powdered mixtures; in the form of pill it is preserved much longer, especially if it be combined with some vegetable extract. USES. It is stimulant, antispasmodic, diaphoretic, powerfully antacid, exceeding in this respect the fixed alkalies, and in large doses it is emetic. It is highly useful as a stimulant in those gastric affections which supervene habits of irregularity and debauchery; combined with opium it affords a powerful resource in protracted diarrhœa attended with debility of the alimentary canal; and in cases of muscular atony so frequently witnessed as the *sequela* of chronic rhumatisms, ammonia, in large doses offers the best remedy; I have moreover witnessed the beneficial effects of this remedy in hoarsenesses depending upon relaxed states of the throat. It is also useful in syncope and hysteria, in the form of smelling salts; with respect to its application for making saline draughts, see *Acid: Citricum:* DOSE, grs v to ℈j: to produce emesis ʒss. See *Form.* 20, 101, 102. OFFICINAL PREPARATIONS. *Liquor Ammoniæ subcarbonatis,* L. *Liquor Ammoniæ acetatis,* (*g*) L.E.D. *Cuprum Ammoniatum,* (*g*) L.E.D. ADULTERATIONS. This salt ought to be entirely volatilized by heat; if any thing remain it may be considered impure; it ought also to be free from all fetor; should this not be the case it may be corrected by subliming it in conjunction with powdered charcoal; there is at present a large quantity of this impure article in the market, which has been manufactured from the resi-

due sold by the gas light companies. When long exposed to the air, the excess of ammonia, upon which its odour depends, escapes, and an inodorous neutral carbonate remains.

AMMONIÆ MURIAS. L.E. Sal Ammoniacum. D. vulgo *Sal Ammoniac.*

Qualities. *Form*, dense striated concavo-convex cakes, which are persistent in the air, or crystallized conical masses; in this latter form it generally contains other salts, especially muriate of lime, which render it deliquescent. *Taste*, bitter, acrid, and cool. Chemical Composition. In consequence of the present unsettled opinions respecting the nature of muriatic acid and ammonia, and the changes which they undergo by combination with each other, the composition of this salt is involved in much obscurity. According to Dr. Thomson, it consists of equal volumes of muriatic acid gas and ammoniacal gas, although he has subsequently observed that from the peculiar properties of the substance, it may be a compound of *Chlorine* and *Ammonium* (the hypothetical base of ammonia). Unlike all the other ammoniacal salts, it does not undergo decomposition by heat. Solubility. f℥j of water at 60° dissolves about two drachms and a half; at 212°, it dissolves its own weight; it is also soluble in 4½ parts of alcohol; its solution in water is accompanied by considerable reduction of temperature. Incompatible Substances. The sulphuric and nitric acids unite with the ammonia, and disengage the muriatic acid, whilst ammonia is disengaged by the action of potass and its carbonate, carbonate of soda, lime, magnesia, &c. which combine with its muriatic acid; with oxymu-

riate of mercury it combines and increases its solubility, see *Hydrarg: Oxy-murias*. When united with super-acetate of lead, it decomposes it, and a muriate of lead is precipitated. It is obvious also that nitrate of silver, and all the metallic salts whose bases form insoluble compounds with muriatic acid, are incompatible with it. Uses. Rarely employed as an internal remedy, externally it is employed in lotions, either for the cold produced during its solution, in which case it should be applied as soon as the salt is dissolved, or for the stimulus of the salt, on which principle it acts as a powerful discutient in indolent tumours (*Form.* 86). It also constitutes an ingredient in a very useful plaster, in which it undergoes chemical decomposition; this plaster consists of *Soap* ℥j, *lead plaster*, ʒij, liquify them together, and add of *muriate of ammonia* ʒss. The alkali of the soap enters into combination with the muriatic acid of the muriate of ammonia, and forms thereby muriate of potass, or soda, and ammoniacal gas (on which the virtue of the plaster depends) is slowly but abundantly liberated, acting as a powerful stimulant and rubefacient; it should be applied immediately after it is formed, and be renewed every twenty-four hours, otherwise the intention is lost; (*Pharmacopœia Chirurgica.*) I have often applied this plaster with evident advantage to the chest in pulmonary affections, and I wish to recommend it to the attention of practitioners. It is very useful also in that rheumatic affection of the muscles of the chest, which is so frequently met with in persons in advanced life; during the last winter I was consulted in two cases where the distress after exercise was so considerable as to resemble angina pectoris. Officinal Preparations. *Ammoniæ Sub-carbonas* (g). L.E.D. *Liquor: Ammoniæ* (h). L.

Aqua Ammoniæ. E.D. *Hydrarg: præcip: alb:* (g). L. *Alcohol Ammoniatum,* (h). E.D. *Ferrum Ammoniat:* (g). L.E.D. ADULTERATIONS. This salt, if pure, may be entirely volatilized by a low heat; the *sulphate of ammonia* however, as it is also volatile, cannot be discovered except by the muriate of barytes, which will indicate its presence by a copious precipitate.

AMYGDALÆ DULCES.	Varieties of "Amygdalus Communis."	Sweet and Bitter Almonds.
AMYGDALÆ AMARÆ.		

QUALITIES. The *sweet almond* is inodorous, and has a sweet, bland taste; the *bitter almond,* when triturated with water, has the odour of the peach, and a pleasant bitter flavour. CHEMICAL COMPOSITION. Boullay has lately confirmed the analogy which Proust had stated to exist between the emulsion of sweet almonds and human milk, viz. the former consists of sweet oil 54, albumen 24, sugar 6, gum 3, with traces of acetic acid; the indigestible property of the almond depends upon its albuminous matter. The *bitter almond* in addition to those constituents, contains hydro-cyanic acid, (Prussic acid), in union with a peculiar volatile oil, upon which its narcotic properties depend; but this deleterious element is so modified by the natural state of combination in which it exists

* NOYAU,—*Crème de Noyau.* Bitter Almonds blanched 1 oz. Proof spirit half a pint, Sugar 4 oz. It is sometimes coloured with cochineal. The foreign Noyau, although differently prepared, is indebted to the same principle for its qualities. It is a liqueur of a fascinating nature, and cannot be taken to any considerable extent without danger; the late Duke Charles of Lorraine nearly lost his life from swallowing some "*Eau de Noyau,*" (water distilled from Peach kernels) too strongly impregnated. *Journal des Debats,* 22 *Decembre,* 1814.

with sweet oil and albumen, that they may be eaten without inconvenience. Both sorts of almonds yield by expression a large quantity of fixed oil, which is perfectly mild. See *Oleum Amygdal.* The water distilled from the bitter almond, when strongly impregnated, has been found to exert a deleterious action on the human body, and to prove fatal to many animals. The leaves of the peach tree, the pips of apples, and the kernels of fruit, all contain hydro-cyanic acid; in the thin pellicle that envelopes the kernel the prussic acid appears to be most abundantly formed; the fleshy parts of the fruit do not contain it, and even the berries of the *Lauro-cerastus* may be eaten with impunity, and yet the distilled water ‡ and oil of *cherry laurel* is the most destructive of all narcotic poisons. See *Orfila on Poisons.* Consistent with theory, the watery extract of laurel is harmless, a fact easily explained, since the narcotic acid is entirely volatilized before the fluid can assume the consistence of an extract. To counteract the poisonous effects of prussic acid, Orfila recommends, after full vomiting has been excited, the exhibition of three or four spoonsfull of oil of turpentine, in the infusion of coffee, at intervals of half an hour. M. Virey conceives that sulphate of iron in solution is the best antidote, he having observed that the salt restored a cow that was nearly killed by the essential oil of bitter almonds. M. Majendie has lately published some essays on the use of prussic acid in pulmonary con-

‡ In the year 1782 Dr. Price of Guildford professsed to convert Mercury into Gold, and his experiments were to be repeated before an adequate tribunal, but he put a period to his existence by swallowing *Laurel water. Brande's Lectures on Alchemy.*

The murder of Sir Theodosius Broughton by Laurel water, affords another instance of the deleterious effects of this vegetable oil.

sumption; there is however nothing new in its application in such cases, for Linnæus informs us that distilled laurel water was frequently used in Holland in pulmonary consumption. (*Amœnitat: Academ: vol.* 4, *p.* 40).* SOLUBILITY. By trituration with water a milky mixture is produced, (*an emulsion*), for which purpose the sweet almonds should be previously freed from their cuticle, *(blanched)*, and this ought to be performed by infusing them in tepid water, for when hot it separates a portion of their oil, as is evident from their being thus rendered yellow, and the emulsion is therefore more liable to ferment, and be decomposed. ℥ij of almonds saturate about f℥vj of water; since however this extemporaneous preparation is tedious and inconvenient, the London Pharmacopœia very judiciously directs a confection to be ready prepared, ʒj of which, when triturated with f℥j of water, immediately forms an elegant emulsion. See *Mistura Amygdal.* Almonds form a useful intermedium for suspending in water many substances which are of themselves not miscible with it, as camphor, and several of the gum-resins; they also assist in the pulverization of refractory substances, as Ipecacuan, &c. OFFICINAL PREPARATIONS. *Confectio Amygdalarum.* L. *Emulsio Camphoræ* (k). E. *Emulsio Acaciæ Arab:* E.D.

AMYGDALÆ PLACENTA. *Almond Cake* is the substance left after the expression of the oil, which when

* In this country an essay has appeared upon the subject by Dr. Granville, in which several cases are recorded that would encourage us in its administration; I must however confess, that in those cases in which I have tried its powers, similar happy results have not followed its use. Those practitioners who are desirous of experiencing the effects of this medicine, are recommended to purchase the article at Garden's in Oxford Street, as he has bestowed much pains in its preparation, and to consult the work of Dr. Granville for the necessary instructions.

ground forms ALMOND POWDER, so generally used for washing the hands.*

AMYLUM. L.E.D.

Triticum Hybernum *Amylum.*

Starch.

QUALITIES. *Form*, white columnar masses; *Odour* and *Taste*, none. CHEMICAL COMPOSITION. Fecula is one of the proximate principles of vegetable matter, and *Starch* is the fecula of wheat.‡ SOLUBILITY. It is soluble in boiling water, forming with it a semi-transparent, insipid, inodorous and gelatinous paste, very susceptible of mouldiness, but whish is retarded by the addition of alum; it is insoluble, but falls to powder in cold water; nor is it dissolved by alcohol or ether; although potass dissolves starch, yet the solution of it is not disturbed by potass, carbonate of potass, nor ammonia, but an alcoholic solution of potass produces a precipitate; acetate of lead, and infusion of galls occasion also precipitates. Starch

* ALMOND PASTE. This Cosmetic for softening the skin and preventing chaps is made as follows: Bitter almonds blanched 4 oz. the white of an egg, rose water and rectified spirit, equal parts, as much as is sufficient.

‡ The fecula of various grains are employed as articles of diet for the sick, e. g. SAGO, prepared from the pith of the *Cycas Circinalis*, its granular form is imparted to it by passing it, when half dry, through a coarse sieve. SALOP, from the *Orchis Mascula.* TAPIOCA from the root of the *Jatropa Manihot.* By expressing the root of this plant, the juice of which is extremely acrid, and baking the cake that is left, an alimentary substance is prepared called CASSAVA, the peculiar merit of which, like tapioca, is to swell and soften in water, and thus to form an excellent pudding. ARROW ROOT is from the *Maranta Arundinacea.* The arrow root however, usually sold, is the fecula of potatoes, 100 lbs. of which would yield about 10 lbs. of fecula, and it is worthy of remark that for this purpose frozen potatoes answer as well as those not spoiled by the frost,

is susceptible of several interesting and important changes; thus, if it be exposed to heat until its colour becomes yellow, its properties are so far altered that it is no longer insoluble in cold water; and according to the experiments of Saussure, if it be mixed with water, a spontaneous decomposition takes place, and a quantity of sugar is formed, amounting in weight to one half of the starch employed, in addition to which a peculiar gummy matter results, and a substance intermediate between gum and starch, to which the name of *Amidine* has been given. Starch moreover is convertible into saccharine matter by the agency of sulphuric acid. Uses. Being demulcent it is generally employed as a vehicle for the exhibition of opium in the form of enema. The ordinary blue starch is coloured by a solution of smalt and alum, and is unfit for medicinal use; formerly it was tinged yellow with saffron or turmeric, but this went out of fashion on the execution of the famous midwife Mrs. Collier, who was hanged in a ruff starched with that colour. (*Gray's Supplement.*)—Officinal Preparations. *Mucilago Amyli.* L.E.D. *Pulvis Tragacanth: comp:* (*b*) L. *Pil: Hydrargyri* (*k*) E. *Trochisci Gummos:* E.

It has been lately observed that *Iodine* is a delicate test of the presence of starch; if a drop or two of a solution of this substance in alcohol be added to an aqueous solution of starch, a blue compound is formed which eventually precipitates. Iodine may therefore be employed for ascertaining the goodness of starch, a test which is very important, for much of what is sold under the name of starch, does not possess its peculiar characters.

ANETHI SEMINA, L. E.

(Anethum Graveolens Semina.)

Dill Seed.

These seeds when dry have an aromatic sweetish odour, and a warm pungent taste, qualities which reside in an essential oil, and which is extracted by distillation with water and by digestion with alcohol; the bruised seeds yield their flavour to boiling water by simple infusion. The seeds are but rarely used. The distilled water is a valuable carminative for children.

ANISI SEMINA. L. E. D.

(Pimpinella Anisum. Semina.)

Anise Seeds.

Like the dill seeds, warm and carminative; water extracts very little of their flavour; rectified spirit the whole. It may be remarked in this place that the value of aniseed, as well as all those seeds which yield essential oil by distillation, may be estimated by their specific gravity, the heaviest yielding the largest proportion of oil; a chondrometer employed by corn-chandlers might be very conveniently applied to such a purpose. The seeds imported from Spain, which are smaller than the others, contain most oil, and are to be preferred.

ANTHEMIDIS FLORES. L. E.

(Anthemis Nobilis.)

Chamomili Flores. *Chamomile Flowers.*

Qualities. The *Odour* of the flowers is strong and fragrant; *Taste*, bitter and aromatic, with a slight degree of warmth. Chemical Composition. The active principles are essential oil, resin, and bitter extractive. Solubility. Both water and alcohol

take up the active parts of the flowers; hot water, by infusion, dissolves nearly one-fourth of their weight, but boiling dissipates the essential oil, on which account they should never form an ingredient in a decoction. Uses. The flowers given in substance are said to have cured intermittents; they are however but rarely used; externally they are applied in fomentations. See *Infusum Anthemidis.* Officinal Preparations. *Decoctum Anthemidis nobilis.* E. D. *Infusum Anthemidis.* L. *Extractum Anthemidis,* L. E. *Oleum Anthemidis.* L.* There is a great variety in the quality and price of chamomile flowers; those which are large and whitish are to be preferred as the freshest; by keeping they become invalid, and are deprived of their aromatic principle and essential oil. They are always inferior in wet seasons. The double flowered varieties are also less powerful than the single kind, since the qualities reside in the disc florets.

ANTIMONII SULPHURETUM. L.

Sulphuret of Antimony.

Qualities. This article appears in the market in conical loaves, which are dark grey externally, but internally possess a striated structure and considerable brilliancy; the Edinburgh and Dublin colleges direct this substance to be levigated with water, and kept in the state of powder; it should however never be purchased in that form, as it is not unfrequently adulterated with sulphuret of lead, whereas it cannot contain such admixture when its form is characteristically crystalline and striated. Chemical Compo-

* Chamomile Drops. The nostrum sold under this name is a spirit flavoured with the essential oil of Chamomile.

SITION. Antimony 100, Sulphur 35·572. From the time of Basil Valentine to the present, this preparation has been known in the market by the name of *Antimony*, a name which it is evident can only with propriety be applied to the pure metal. SOLUBILITY. It is insoluble in water and alcohol; since however it is slightly acted upon by vegetable acids, cups were formerly made of it, which imparted to wine that stood in them for some time, an emetic quality. USES. It is principally employed for the preparation of the other antimonial combinations, for which purpose it is more eligible than the metal itself, as being less contaminated with metallic impurities. Its medicinal energies depend altogether upon the state of the stomach, and must therefore be extremely uncertain; when it meets with any acid in the stomach, it acts with extreme violence, a circumstance which requires precaution. In times of remote antiquity it was used by females as a black pigment for staining the eye-lashes; it is at present given to horses, mixed with their food, to make their coats smooth. OFFICINAL PREPARATIONS. Dr. Black constructed a table representing a view of all the preparations whose basis was antimony; many of these however have fallen into disuse, and the nomenclature of all is changed. The following arrangement of the medicines prepared from the sulphuret of antimony,* is presented to us by Mr. Thomson, in his London Dispensatory. I. BY TRITURATION, *Sulphuretum Antimonii Præparatum*. E. D. 2. BY THE ACTION OF HEAT WITH PHOSPHATE OF LIME,

* The Sulphuret of Antimony is an ingredient in SPILSBURY'S DROPS. See *Hydrargyri Oxymuriat*. Dr. Duncan also observes that it seems to constitute a quack remedy which has acquired some reputation in Ireland for the cure of cancer, where it is used as an external application to the sore.

(oxidized) *Pulvis Antimonialis*, L. D. *Oxidum Antimonii cum Phosphate Calcis.* E. 3. By the Action of Alkalies, (oxidized), *Antimonii Sulphuretum Præcipitatum.* L. E. *Sulphur Antimoniatum Fuscum.* D. 4. By the Action of Acids, (oxidized), *Antimonii Oxydum*, L. *Oxydum Antimonii Nitro-muriaticum.* D. *Antimonium Tartarizatum.* L. *Tartris Antimonii, olim Tartarus Emeticus.* E. *Tartarum-Antimoniatum*, sive *Emeticum.* D. *Liquor Antimonii Tartarizati.* L. *Vinum Tartritis Antimonii.* E.

Adulterations. The importance of employing this article in a state of great purity for the preparation of so many active and valuable medicines, is obvious. It ought to be entirely volatilized by a red heat; *Lead* is discovered by its imparting to the antimony a foliated, instead of a striated texture, and from not being vaporizable; *Arsenic*, by the garlic odour emitted when thrown upon live coals; or by the numerous tests mentioned under the history of that article; *Manganese* and *Iron*, from not being vaporizable, and from other tests: the most usual adulteration is black oxide of iron, or the scoriæ of that metal, "*Smithy dust.*"

ANTIMONII SULPHURETUM PRÆCIPITATUM. L.E.

Sulphur Antimoniatum Fuscum. D.

Precipitated Sulphuret of Antimony.

Qualities. *Form*, a brilliant orange coloured powder; *Taste*, slightly styptic, but inodorous. Chemical Composition. Very complicated attractions are exerted during the preparation of this substance; the result of which is an hydro-sulphuret of Oxide of

Antimony, with excess of sulphur. SOLUBILITY. It is quite insoluble in water. USES. According to the dose, it is diaphoretic, cathartic, or emetic; it is, however, less certain than many other preparations, and, unless in combination with mercury for cutaneous affections, is not very often employed. INCOMPATIBLE SUBSTANCES. All acids and acidulous salts increase its emetic properties; when therefore acid is suspected to prevail in the primæ viæ, it should be combined with soap, magnesia, (*Form*: 64) or aromatic confection; on the contrary, the confection of roses, and vehicles containing acids, should be carefully avoided. FORM OF EXHIBITION. Pills. DOSE, grs. I to V. OFFICINAL PREPARATIONS. *Pilulæ Hydrargyri Sub-Muriatis* (*f*) L. ADULTERATIONS. It is often sophisticated with chalk and other extraneous matter; it ought not to effervesce with acids; it should be entirely vaporizable by heat, and its colour should be that of bright orange. A spurious article is vended which consists of sulphur and sulphuret of antimony coloured with Venetian red.

ANTIMONIUM TARTARIZATUM. L.

Tartris Antimonii. E. Tartarum Antimoniatum. D.

Tartar Emetic.

QUALITIES. *Form*, crystals whose primitive form is the regular tetrahedron, although it assumes a variety of secondary forms. *Colour*, white. *Odour*, none. *Taste*, slightly styptic and metallic; on exposure to the air, the crystals slightly effloresce; thrown upon burning coals, they become black and afford metallic antimony. CHEMICAL COMPOSITION. This is involved in much doubt and obscurity; it is stated in the various dispensatories to be a triple salt, con-

sisting of tartaric acid, oxide of antimony, and potass, and which therefore, says Mr. Thomson, on the principles of the reformed nomenclature, ought to be termed a *tartrate of antimony and potass*. The truth of these views, however, is extremely questionable. I am inclined to believe with Gay Lussac, that in the various metalline compounds, of which supertartrate of potass is an ingredient, this latter substance acts the part of a simple acid; an opinion which receives much support from the great solvent property of cream of tartar, and from the striking fact that it is even capable of dissolving various oxides which are insoluble in tartaric acid, of which the protoxide of antimony is an example. According then to this view, tartar emetic is a salt composed of bi-tartrate (*super-tartrate*) of potass, which acts the part of an acid, and protoxide of antimony: from the experiments of Mr. Phillips, it would appear that 100 parts of the bi-tartrate will dissolve 70 of the protoxide. In this state of doubt it must be admitted that no name can be more appropriate than *Antimonium Tartarizatum*. SOLUBILITY. Much discrepancy of opinion exists upon this subject, owing probably to the variation and incidental impurities to which this salt is liable. Dr. Duncan, who selected very pure specimens for examination, states that it is soluble in three times its weight of water at 212°, and in fifteen at 60°. This solution, when the salt is pure, is perfectly clear and transparent, but if long kept, unless a considerable portion of spirit be added, it undergoes decomposition; a precipitate indeed sometimes takes place very rapidly, but this is generally tartrate of lime, an incidental impurity, derived from the super-tartrate of potass. INCOMPATIBLE SUBSTANCES. *Mineral Acids, Alkalies, and their Carbonates, and many of the Metals, Soaps,*

Hydro-Sulphurets, and many infusions and decoctions of bitter and astringent Vegetables, e. g. f℥j. of the decoction of yellow bark is capable of completely decomposing ℈j of this salt, and of rendering it inert. Berthollet has accordingly recommended the immediate exhibition of this decoction when an overdose of the salt has been taken. Infusion and tincture of galls throw down curdled and inert precipitates of a dirty white colour, inclining to yellow. Rhubarb is equally incompatible: the extract of this substance therefore never ought to be employed in forming pills of tartar emetic: but it deserves notice that this salt is not decomposed by the infusions of Gentian or Wormwood. The *Alkaline Sulphates*, provided they be perfectly neutral, produce no disturbance in solutions of *tartar emetic*, and therefore cannot be considered incompatible with them; if there be any excess of acid, as in *alum*, *bi-sulphate of potass*, &c. then its decomposition is effected, and a white insoluble sulphate of antimony is precipitated. It appears therefore that the famous "Emeto-purgative" of the French school, consisting of sulphate of soda, and tartarized antimony in solution, is by no means the unchemical mixture which some have considered it to be, and that it really produces its effects from the operation of its original ingredients, and not from that of the compounds, (*Sulphate of Antimony, Tartrate of Soda, and Sulphate of Potass*) which have been erroneously supposed to result. Forms of Exhibition. Solution is its best form, see *Liquor Antimonii Tartariz.* Dose. It either vomits, purges, or sweats, according to the quantity exhibited, thus gr. ¼ will, if the skin be kept warm, promote a diaphoresis; gr. ½ will procure some stools first, and sweating afterwards; and gr. j will generally vomit and then purge, and lastly

sweat the patient; in very minute doses, as gr. $\frac{1}{10}$ or $\frac{1}{12}$ combined with squill and ammoniacum, it acts as an expectorant, (see *Formula* 1, 2, 3, 8, 60. It is decidedly the most manageable, and the least uncertain of all the antimonial preparations, and the practitioner would probably have but little to regret, were all the other combinations of this metal discarded from our pharmacopæias. Tartar Emetic, when triturated with lard, in the proportion of ʒiss or ʒij to ℥j of the latter, forms a very powerful rubefacient, occasioning a pustular eruption on the skin, and proving very serviceable in deep-seated inflammations: or the application may be made by dusting a piece of adhesive plaster with tartarized antimony, taking care to leave a margin untouched that it may more firmly adhere. Officinal Preparations. gr. j is contained in f℥ss of *Liquor Antimonii Tart:* L. and *Vinum Tartratis Antimonii.* E.* Adulterations. It should be always purchased in its crystalline form; and a solution of it in distilled water ought to furnish a copious gold coloured precipitate with sulphuret of ammonia; a precipitate soluble in nitric acid, with acetate of lead; and a white and extremely thick precipitate, dissolving with facility in pure nitric acid, with lime water. If the crystals deliquesce, the presence of other salts may be inferred.

AQUA. Water.

Water, from its extensive powers as a solvent, never occurs in a state of absolute purity, although the nature and degree of its contamination must neces-

* Norris's Drops. A solution of Tartarized Antimony in Rectified Spirit, and disguised by the addition of some vegetable colouring matter. I am credibly informed that the original recipe contained Opium, but that which I have examined, and which was procured from a respectable agent, yielded no indications of its presence.

sarily vary according to circumstances and situation. It is generally found holding earthy matter in a state of mechanical suspension, or saline and other bodies in chemical solution. The usual varieties of common water are classed and defined by Celsus; and modern chemists have not found any reason to reject the arrangement. "*Aqua levissima pluvialis est; deinde fontana, tum ex flumine, tum ex puteo; posthœc ex nive, aut glacie; gravior his ex lacu; gravissima ex palude.*"

1. Rain Water. *Aqua Pulvialis*, when collected in the open fields, is certainly the purest natural water, and consequently of the least specific gravity; the bodies which it holds in solution, are carbonic acid, a minute portion of carbonate of lime, with traces of muriate of lime. Dew is said to be water saturated with air.

2. Spring Water. *Aqua Fontana*, in addition to the substances detected in rain water, generally contains a small proportion of muriate of soda, and frequently other salts; but the larger springs are purer than smaller ones, and those which occur in primitive countries, and in siliceous rocks, or beds of gravel, necessarily contain the least impregnation. An important practical distinction has been founded upon the fact, that the water of some springs dissolves soap, whilst that of others decomposes, and curdles it; the former has been termed *soft*, the latter *hard* water; soft water is a more powerful solvent of all vegetable matters, and is consequently to be preferred for domestic as well as medicinal purposes; the brewer knows well from experience how much more readily and copiously *soft* water will dissolve the extractive matter of his malt. Horses by an instinctive sagacity always prefer soft water, and when by necessity or inattention they are confined to that which is *hard*,

their coats become rough and ill-conditioned, and they are frequently attacked with the gripes. Pigeons also refuse hard water when they have been accustomed to that which is soft.*

3. River Water. *Aqua ex Flumine*, being derived from the conflux of numerous springs, and rain-water, generally possesses considerable purity; that the proportion of its saline ingredients should be small, is easily explained by the precipitation which must necessarily take place from the union of different solutions; it is, however, liable to hold in suspension particles of earthy matter, which impair its transparency.

4. Well Water. *Aqua ex Puteo*, is essentially the same as spring water, being derived from the same source; it is, however, more liable to impurity from its stagnation, or slow infiltration;† hence our old wells furnish much purer water than those which are more recent, as the soluble particles are gradually washed away. Mr. Dalton observes that the more any spring is drawn from, the *softer* the water becomes.

5. Snow Water. *Aqua ex Nive*, has been supposed‡ to be unwholesome, and in particular to pro-

* Hard water has a tendency to produce diseases in the spleen of certain animals, especially sheep; this is the case in the eastern side of the island of Minorca, as we are informed by Cleghorn. The mischievous tendency of bad water, where it cannot be corrected by some chemical process, would seem to be best counteracted by bitter vegetables. Virey supposes that this circumstance first induced the Chinese to infuse the leaves of the Tea Plant.

† Dr. Percival observes that bricks harden the softest water, and give it an aluminous impregnation; the common practice of lining wells with them is therefore very improper, unless they be covered with cement.

‡ The same strumous affection occurs at Sumatra, where Ice and Snow are never seen, while on the contrary, the disease is quite

duce Bronchocele, from the prevalence of that disease in the Alps, but it does not appear upon what principle its insalubrity can depend; the prejudice however is a very ancient one, for Hippocrates observes that snow or ice water is unwholesome, in consequence of its finer particles being evaporated and lost during its solution: it appears to differ only from rain water in being destitute of air, to which water is certainly indebted for its briskness, and perhaps for many of its good effects upon animals and vegetables. The same observations apply to *Ice Water*.

6. Lake Water. *Aqua ex Lacu*, is a collection of rain, spring, and river waters, contaminated with various animal and vegetable bodies, which from its stagnant nature have undergone putrefaction in it.

7. Marsh Water. *Aqua ex Palude* being the most stagnant is the most impure of all water, and is generally loaded with decomposing vegetable matter.

To what extent the impurities of water are capable of influencing their salubrity, has been a subject of interesting inquiry from the age of Hippocrates to the present day. To many of these natural contaminations, too much importance has been certainly attached; it is an affected refinement to suppose that the presence of minute portions of such earthy and calcareous salts, as generally occur in solution, can impart any noxious quality to water;* whilst on the

unknown in Chili and Thibet, although the rivers of these countries are chiefly supplied by the melting of the Snow with which the mountains are covered.

* I take this opportunity of observing that I have made analyses of several of those springs in Cornwall, which have from time immemorial enjoyed a reputation in the neighbourhood for curing diseases, amongst which were the waters of Holy-well, so named from its supposed

contrary, animal and vegetable impurities, or earthy bodies in a state of mechanical suspension, cannot fail to prove injurious, and must be regarded as the true "SCELERA AQUARUM." Guided by false analogies many have supposed that they recognised the origin of all calcareous diseases in the earthy impurities of water; the researches however of chemistry have removed this delusion, by demonstrating that the substances found in water never enter into the composition of urinary calculi. Metallic and other accidental contaminations are necessarily highly injurious, and the water in which their presence is suspected, should be submitted to the most careful examination.

For the purification and preservation of water numerous methods have been adopted; the mechanical impurities may be removed by filtration, which is performed through porous stones, or alternate layers of sand or charcoal; muddy water may be also cleared by adding a few grains of alum to each pint,* and in that proportion, the water is not rendered in the least disagreeable: when water has contracted a putrid smell, it may be rendered sweet by agitating it with a small portion of magnesia, or with black oxide of manganese, in the proportion of 1½ parts to 250 parts of water. Dr. Black observes that nitrate of silver, which is one of the most antiseptic substances known,

virtues, and those of Permiscen Bay, equally extolled for their medicinal qualities. But I have only been able to detect minute quantities of carbonate of lime, derived from infiltration through banks of calcareous sand. *See Transactions of the Royal Geological Society of Cornwall, Vol. I.*

* I am informed by a respectable chemist in this town, that he sells a large quantity of alum for this very purpose, as well as to publicans for the sake of clearing their spirituous liquors; for the same end, we are told, that the wine merchants in Paris put into each cask of wine as much as a pound of alum.

will preserve water from putrefaction for ever, and that it may at any time be separated therefrom in a few minutes by adding a small lump of common salt; this fact in itself is curious, but the experiment is too hazardous to be recommended. As that peculiar property of water which is termed *hardness*, generally depends upon the presence of *sulphate of lime*, the addition of an alkaline carbonate twenty-four hours previous to its being used, will be found to restore it, or if it should depend upon *super-carbonate of lime*, long ebullition without any addition will be found sufficient for its cure.

Water when kept for a long time in casks, especially on long voyages, is partially decomposed, and a volume of carburetted hydrogen is evolved,* imparting to such water the peculiar smell and taste which characterise it; this decomposition may in a great degree be obviated by charring the interior of the water casks; it is however to a great degree prevented in the Navy by substituting iron tanks for wooden vessels. In Pharmacy it ought to be re-

* This is particularly the case with respect to the water of the River Thames; for as it contains but a small proportion of saline matter, it is remarkably soft, although it holds suspended mud, and vegetable and animal debris, which occasion it to undergo a violent change on being kept: a large volume of carburetted and sulphuretted hydrogen gases is evolved, and it becomes black and insufferably offensive; upon racking it off however into large earthen vessels, and exposing it to the air, it gradually deposits a quantity of black slimy matter, and becomes as clear as crystal, and perfectly sweet and palatable, and is exceedingly well adapted for sea store. "The New River Water" contains a small proportion of muriate of lime, carbonate of lime, and muriate of soda; it differs also in its gaseous contents, 100 cubic inches of New River Water contain 2·25 of carbonic acid, and 1·25 of common air, whereas the water of the Thames contains rather a larger quantity of common air, and a smaller proportion of carbonic acid.

membered that whenever common water is employed it should not be *hard;* filtered rain water may be recommended as the most eligible on such occasions.

AQUA DISTILLATA. L.E.D. Distilled Water.

Qualities. *Taste*, vapid from the absence of air, and slightly empyreumatic in consequence probably of the presence of a small quantity of extractive matter which has undergone partial decomposition; a fluid-ounce weighs 454½ grains. Medicinal Use. In extemporaneous prescriptions, distilled water should be always ordered whenever the formula contains any of the following substances:—*Acidum Sulphuricum; Acidum Citricum; Antimonium Tartarizatum; Argenti Nitras; Cuprum Ammoniatum; Ferrum Tartarizatum; Hydrargyri Oxy-murias; Liquor Ammoniæ; Liquor Plumbi Acetatis; Liquor Potassæ; Plumbi Super-Acetas; Solutio Muriatis Barytæ; Vinum Ferri; Zinci Sulphas; Ferri Sulphas.* Distilled water ought also to be employed in preparations where much water is evaporated, as in the formation of extracts, since the residual matter of common water will remain mixed with the product of the process, and uselessly add to its bulk, or even in some cases produce in it chemical changes; unless however under such circumstances, common water purified by filtration should be ordered, as the air which it contains imparts to it a pleasant and sprightly flavour; in making infusions or decoctions, it is very important that the water should be free from those impurities which impart to it *hardness*, and which render it a far less powerful solvent of vegetable matter, nor indeed can resinous substances be mixed with such water,

even when assisted by a mucilaginous medium; on which account, in prescribing emulsions, it may perhaps be prudent to direct the employment of distilled water. TESTS OF ITS PURITY. Its transparency ought not to be disturbed by the addition of nitrate of silver, or muriate of barytes.

AQUA MARINA. Sea Water.

Until the late able researches of Dr. Murray, we possessed but an imperfect knowledge of the composition of sea water, it is not therefore surprising that the analysis performed by different chemists should be found to be so materially at variance; the true cause of such discordance is now easily understood, for it appears, that in the examination of a mineral water or any compound saline solution, the substances obtained from it are not necessarily the original ingredients, but frequently the products of new combinations established by the operation of analysis, and that consequently the nature of the results obtained may vary according to the modes in which such analysis has been conducted, or even according to the degree of dilution in which the saline substances exist.* The

* The law which determines such combinations has been investigated with singular ingenuity and success by Dr. Murray, (*Transactions of the Royal Society of Edinburgh*, 1816.) Berthollet had already established the important fact, that combinations are often determined by the force of cohesion, in such a manner, that in principles acting on each other, those on which this force operates most powerfully, in relation to the fluid which is the medium of action, are combined together; hence from a knowledge of the solubility of the compounds which substances form, we may predict what combinations will be established when they act on each other, *those always combining which form the least soluble compounds.* It is for the extension of these views, and for the useful application of them that we are indebted to Dr. Murray, who justly observes that

elements of the salts contained in a pint of sea water are, *Lime* 2·9, *Magnesia* 14·8, *Soda* 96·3, *Sulphuric Acid* 14·4, *Muriatic Acid* 97·7. total 226·1 grains, and supposing these elements to be combined in the modes which Dr. Murray's views appear to establish, the saline contents of a pint of sea water may be expressed as follows, *Muriate of Soda* 159·3, *Muriate of Magnesia* 35·5, *Muriate of Lime* 5·7, *Sulphate of Soda* 25·6 grains, total 226·1 grains; besides such saline contents, it is contaminated with various animal and vegetable bodies, in consequence of which it becomes,

if the force of cohesion can so far modify chemical attraction, as to establish among compound salts dissolved in any medium, those combinations whence the least soluble compounds are formed, we are entitled to conclude that the reverse of this force, i. e. the power of a solvent, may produce the opposite effects, or cause the very reverse of these combinations to be established, so that in a concentrated medium the least soluble will be formed, and in a dilute one, the more soluble compounds will be established. Hence follows the simple rule by which the actual state in which saline bodies exist in a solution may be determined, viz. *that in any fluid containing the elements of compound salts, the binary compounds existing in it will be generally those which are most soluble in that fluid, and the reverse combinations will only be established by its concentration favouring the influence of cohesion.* It appears that by simply evaporating a saline solution we may produce changes in its composition, and obtain products which never existed in its original state of dilution; thus suppose *muriate of magnesia* and *sulphate of soda* to be dissolved in water, as is actually the case in the water of the ocean, and the solution to be concentrated by evaporation from heat; the combinations of *sulphate of magnesia* and *muriate of soda*, being on the whole less soluble in water, this circumstance of inferior solubility, or the force of cohesion thus operating, actually determines the formation of these compounds, and the production of sulphate of magnesia from the bittern is to be explained upon this principle. Since it appears therefore that the influence of solubility is most important, temperature, to whose dominion it is under all circumstances subject, must necessarily be alike powerful; let us exemplify this fact by the action of the very salts under consideration; it has been just stated that *muriate of magnesia* and *sulphate of soda*, decompose each other in a *concentrated* solution at a high

when long kept, highly offensive; it ought also to be stated that Dr. Wollaston has discovered the presence of a minute proportion of potass in sea water. MEDICAL USE. As a cathartic a pint is the ordinary quantity, which should be taken in the morning, at two doses, with an interval of half an hour between each; this quantity contains half an ounce of purgative salt, of which about three fourths are muriate of soda, but it is much more active than a similar portion of any artificial combination. In procuring sea water for medicinal purposes, there is a precaution, the importance of which experience has suggested to me, that it be not hastily drank on the beach, before the particles of sand, with which under such circumstances it is generally mixed, are allowed to subside; from the neglect of this precaution I have witnessed serious consequences. The most important advantages of sea water are derived from its external use as a bath.

AQUÆ DISTILLATÆ. L.D.
AQUÆ STILLATITIÆ. E. *Distilled Waters.*

These are water impregnated with the essential oils of vegetables, and are principally designed as grateful

temperature, producing muriate of soda and sulphate of magnesia, but at temperatures below 32°. the reverse actually takes place, muriate of soda and sulphate of magnesia reacting, and being converted into sulphate of soda and muriate of magnesia; a fact evidently owing to the relation of the solubility of these salts to temperature. Muriate of soda has its solubility scarcely altered, either by heat or cold, sulphate of soda is, in these respects, completely the reverse, hence at an elevated temperature, muriate of soda is the least, and sulphate of soda the most soluble salt, whilst at low temperature, the reverse of this happens. All the circumstances of this investigation are most interesting; the medical practitioner will at once perceive its importance, as enabling him to appreciate the real nature of saline solutions, and even in many instances, to preserve their identity. See *Aquæ Minerales.*

vehicles for the exhibition of more active remedies; ample directions for preparing them are given in the several Pharmacopœias, and if they be rectified by redistillation they may be kept for several years; the usual mode of preserving them is by adding spirit, which has also the incidental advantage of preventing them from being frozen, during the winter season. Some recommend a film of the essential oil to be diffused over the water's surface. They may be extemporaneously prepared by adding to water what have been called *Essences*, which consist of essential oil and alcohol, or by rubbing any essential oil with ten times its weight of sugar, or, what answers still better, of magnesia; when however they are so prepared they never retain their transparency. The properties of each water may be learnt by referring to the vegetable from which it is distilled.

AQUÆ MINERALES. Mineral Waters.

Although all waters that flow from the earth, are, as they contain mineral bodies in solution, strictly speaking, *mineral* waters; yet this term is especially applied to such only as are distinguished from spring, lake, river, or other water, by a peculiarity in colour, taste, smell, or any obvious properties, or by the medicinal effects which they produce, or are known to be capable of producing.

To the medical practitioner the history of these waters is most interesting and instructive, involving highly important subjects of chemical and physiological inquiry. These waters are without doubt indebted for their medicinal virtues to the operation of the substances which they hold dissolved, but this is so materially aided by the peculiar state of dilution in which they exist, as well as by the mere bulk, and

temperature of the water itself, as to render extremely doubtful the success of every attempt to concentrate their powers by evaporation. To what extent dilution may modify the chemical condition of saline solutions has been satisfactorily demonstrated by the researches of Dr. Murray (See *Aqua Marina*), and to what degree an increase in the solubility of any remedy may influence its medicinal properties has been considered at some length, in the First Part of this work, (*page* 132.) It is certain that, in general, soluble salts are capable of exerting a much more powerful effect upon the animal economy, than those which are insoluble; on which account, the earthy muriates, especially that of lime, are amongst the most active ingredients of mineral waters. Although chemical analysis has frequently from its own imperfection failed in ascertaining their presence, it seems probable that *muriate of lime* and *sulphate of soda* exist in all those springs that furnish, by the usual methods of examination, *sulphate of lime* and *muriate of soda;* for the same reasons it is equally probable that iron, which in certain waters has been supposed from the analysis, to exist as a *carbonate*, is in its native solution a true *muriate;* this is undoubtedly the fact with respect to the Bath waters. Is it then surprising, that medical practitioners should hitherto have failed in their attempts to emulate, by artificial arrangements, the medicinal efficacy of active mineral springs? For the investigation of the true composition of mineral waters the researches of Dr. Murray furnish a simple and elegant formula. *Determine by precipitants the weight of the acids and bases, suppose them united in such a manner that they shall form the most soluble salts; and these salts will constitute the true saline constituents of the water under examination.*

Mineral waters admit of being divided into four classes, viz.

1. Acidulous; owing their properties chiefly to carbonic acid; they are tonic and diuretic, and in large doses produce a transient exhilaration; the most celebrated are *Pyrmont*, *Seltzer*, *Spa*, *Carlsbad* and *Scarborough*.

2. Chalybeate; containing iron in the form of *sulphate*, *carbonate*, or *muriate;* they have a styptic, inky taste; *Hartfell* near *Moffat*, *Peterhead*, *Tunbridge*, *Brighton*, *Cheltenham*, *Bath*, *Lemington Priors*, *Castle Horneck*, near *Penzance*, &c.

3. Sulphureous Waters, derive their character from a sulphuretted hydrogen, either uncombined or united with lime, or an alkali, *Enghien*, *Aix la Chapelle*, *Harrowgate*, *Moffat*.

4. Saline; mostly purgative, and are advantageously employed in those hypochondriacal and visceral diseases that require continued, and moderate relaxation of the bowels, *Cheltenham*, *Lemington*, *Seidlitz*, and all brackish waters.

Some springs, as those of *Bath*, *Matlock*, and *Buxton*, owe their virtues rather to temperature than to any other cause, and others, as *Malvern*, to the diluent power alone of the water.

ARGENTI NITRAS. L. Nitras Argenti. E.D.

Fused Nitrate of Silver, olim, *Lunar Caustic*.

Qualities. Fused nitrate of silver is in small cylinders of a dark grey colour, and presenting, when broken across, a crystalline structure. *Odour*, none; *Taste*, intensely bitter, austere and metallic; it tinges the skin indelibly black; when perfectly free from copper, it is not deliquescent. Chemical Composition; oxide of silver 70. nitric acid 30. Solubi-

LITY. In an equal weight of water, at 60° it is also soluble in alcohol. INCOMPATIBLE SUBSTANCES. *Fixed alkalies* and *alkaline earths*, the *muriatic*, *sulphuric*, and *tartaric* acids, and all the salts which contain them; *Soaps*, *arsenic*, *hydro-sulphurets*, *astringent vegetable infusions*, *undistilled waters*. The solutions of nitrate of silver are not disturbed by ammonia, the *ammoniaco-nitrate* being very soluble; nitrate of silver tinges the skin and hair black, and has been frequently employed for the latter purpose;* it likewise forms the basis of permanent ink.‡ MEDICAL USE. Tonic, antispasmodic, and escharotic; it is said to prove efficacious in epilepsy, but during a trial for several years in the Westminster hospital, I never could discover its virtues; many of the cases in which it has been supposed to have been successful, probably derived advantage from the purgative medicines which were simultaneously administered. It possesses a bitter taste, and it has been said to act like vegetable bitters upon the digestive organs, and to offer a resource in dyspeptic complaints. It is principally useful as an external application, and may be considered as the strongest and most manageable caustic that we possess, whilst in solution it acts as a useful stimulant in indolent ulcers, and being possessed of the power of coagulating animal matter, it does not spread to any extent, and is therefore extremely convenient where a large eschar is to be

* For the same purpose the French employ a pomatum prepared with the oxide of bismuth, and it is said to answer the intention.

‡ PERMANENT INK FOR MARKING LINEN. This preparation is a solution of nitrate of silver thickened with *sap green*, or *cochineal*. The *Preparing Liquid*, with which the linen to be marked is previously wetted, is a solution of soda, boiled with gum, or some animal mucilage. It is a curious circumstance that if *potass* be used for this purpose, the marking ink will run.

avoided. Forms of Exhibition. For internal use in pills made with crumb of bread, with the addition of some sugar, to prevent the mass from being too hard. Dose, gr. $\frac{1}{8}$, gradually increased to gr. j. Adulterations. *Copper* may be always suspected when it deliquesces, and is to be immediately detected by its solution assuming a blue colour, when supersaturated with ammonia. The sticks should be preserved in closely stopped phials, and covered with soft and dry paper. Antidote. When this substance has been taken in excess, muriate of soda is its true antidote; indeed so completely does it decompose, and separate it from water, that if a saturated solution of nitrate of silver be filtered through common salt, it may be afterwards drunk with impunity. This circumstance alone, would of necessity render nitrate of silver a very uncertain remedy; and yet it is evident that the basis of this salt is occasionally absorbed, for there are several cases upon record, in which the oxyd of silver has been deposited in the rete mucosum, and given a purple hue of a very singular appearance to the patient; I have lately witnessed an instance of this kind in a lady who had taken large doses of the nitrate, for the purpose of curing a dyspeptic complaint.

ARMORACIÆ RADIX. L.E. (*Cochlearia Armoracia*)

Raphanus Rusticanus, D. *Horse Radish Root.*

Qualities. *Taste*, hot and acrid; *Odour*, pungent. Chemical Composition. All its virtues depend upon an essential oil. Solubility. Both water and alcohol extract its active principles, but they are dissipated by decoction. Medical Uses. As a stimulant in paralysis it is often useful; Sydenham found

it successful in dropsies which were consequent on intermittent fevers; Cullen recommends a syrup made with the infusion of horse radish, to remove that species of hoarseness which depends upon local relaxation; Dr. Withering extolls an infusion of this root in milk as a cosmetic both safe and effectual. INCOMPATIBLE SUBSTANCES. *Alkaline Carbonates; Oxy-muriate of Mercury; Nitrate of Silver;* the *Infusion of Galls*, and of *Yellow Cinchona Bark*, produce precipitates with the infusion of this root. FORMS OF EXHIBITION. In substance scraped or swallowed whole, or in infusion. DOSE of the substance ʒj, of an infusion f℥ij. OFFICINAL PREPARATIONS. *Infusum Armoraciæ comp:* L. *Spiritus Armoraciæ comp:* L. D.

ARSENICI OXYDUM. L. Oxydum Arsenici. E. Arsenicum. D. *White Arsenic*, vulgo *Arsenic*. *Arsenious Acid.*

QUALITIES. *Form*, shining semivitreous lumps, breaking with a conchoidal fracture, and when reduced to powder, bearing some resemblance to white sugar; *Taste* acrid and corrosive, leaving an impression of sweetness. *Specific gravity* 5·, it is volatilized at the temperature of 383 *Fah:* and in the state of vapour is quite inodorous, although it is asserted in many chemical works of authority to yield a smell like that of garlic; the fact is that the alliaceous or garlic-like smell is wholly confined to *metallic* arsenic in a state of vapour, and whenever the arsenious acid yields this odour, we may infer that its decomposition has taken place; this happens when it is projected upon ignited charcoal, or when heated in contact with those metallic bodies which readily unite with oxygen, as *Antimony* and *Tin*. It is stated by Orfila and other chemists, that if it be projected upon heated copper the allia-

ceous odour is evolved; this however takes place only when the copper is in a state of ignition, at which temperature its affinity for oxygen enables it to reduce the arsenious acid, for I find by experiment that if a few grains of this substance be heated on a plate of copper, by means of a spirit lamp or blowpipe, no odour is perceptible, for the whole of the acid is dissipated before the copper can acquire a sufficiently exalted temperature to deoxidize it. If the arsenious acid be heated on a plate of zinc, the smell is not evolved until the metal is in the state of fusion; if instead of these metals we employ in our experiments those of gold, silver, or platina, no alliaceous smell whatever is produced, at any temperature. It is probable that arsenical vapours which yield this peculiar odour are less noxious than those which are inodorous, but I am not aware that the knowledge of this fact can be applied to any purpose of practical importance.* CHEMICAL COMPOSITION. This sub-

* It will probably afford a satisfactory explanation of the circumstance mentioned by Dr. Percival, that *the workmen who solder silver filligree with an arsenical alloy, are never affected by the fumes.* Dr. Percival does not appear to have been in the least aware of the probable reason of this fact; he says, "This solder is melted by the flame of a lamp directed by a blow pipe; the greatest part of the arsenic is evaporated by the blast and flame, and some part also of the rest of the solder, and yet the men appear to enjoy as good health, and to live as long as other artists! Amongst other examples of the truth of this observation, I lately saw in the manufactory at the Soho near Birmingham, a man of more than fifty years of age, who had soldered silver filligree for thirty-five years, and had regularly, during that period, passed from eight to ten hours daily in his occupation, and yet he was fat, strong, active, cheerful, and of a complexion by no means sickly; neither he nor his brother artists use any means to counteract the effect of their trade." Dr. Rotheram, in a letter to Dr. Percival, comments upon this fact, and says, "how far the fluxes used in soldering the filligree may fix the parts of the arsenic, or from what other cause these workmen might escape, I dare not say, but I should notwithstanding strongly suspect

stance possesses many of the essential habitudes of an acid, as for instance, that of combining with the pure alkalies to saturation; it is therefore very properly denominated *Arsenious Acid.* It may be farther acidified by distilling it with nitrous acid, and the compound which results is a white concrete substance termed *Arsenic Acid*; from experiments on the quantity of oxygen absorbed by metallic arsenic, during its conversion into these two compounds, instituted by Proust and Davy, it appears that the *arsenious* acid consists of about 25 of oxygen and 75 of metal, and the *arsenic* acid of 33 of oxygen, and 67 of metal, or the quantity of metal being the same, that the oxygen in the latter compound is to that in the former nearly as three to two. SOLUBILITY. We have but lately been set right upon this point, Klaproth has shewn that it requires for its solution 400 parts of water at 60°, and only 13 at 212°, and moreover, that if 100 parts of water be boiled on the arsenious acid, and suffered to cool, it will retain three grains in solution, and deposit the remainder in tetrahedral crystals; this fact shews the importance of employing boiling water in every chemical examination of substances supposed to contain arsenic acid. It is soluble in alcohol and oils; with lime water it produces a white precipitate of *arsenite of lime*, which is soluble in an excess of arsenious acid; with magnesia it forms a soluble *arsenite*, which proves very virulent. The poisonous effects of arsenious acid are so amply detailed in medical works, that it would be superfluous to

the fumes of this very volatile and caustic mineral to be very prejudicial."—I have shewn in the preceding page that arsenious acid is readily decomposed when heated in contact with an oxidable metal, and I apprehend that this fact will explain the reason why the fumes of the alloy in question are disarmed of their virulence.

dwell upon them in this place; it may however be interesting and useful to record an account of the pernicious influence of arsenical fumes upon organized beings, as I have been enabled to ascertain in the copper smelting works of Cornwall and Wales; this influence is very apparent in the condition both of the animals and vegetables in the vicinity; horses and cows commonly lose their hoofs, and the latter are often to be seen in the neighbouring pastures crawling on their knees and not unfrequently suffering from a cancerous affection in their rumps, whilst the milch cows, in addition to these miseries, are soon deprived of their milk; the men employed in the works are more healthy than we could *a priori* have supposed possible; the antidote upon which they all rely with confidence, whenever they are infected with more than an ordinary portion of arsenical vapour, is *sweet oil*, and an annual sum is allowed by the proprietors in order that it may be constantly supplied; this opinion is not solitary, for Tachenius relates that the poisonous effects, such as convulsions, gripes, and bloody stools, with which he was seized from exposure to the fumes of arsenic, were relieved by milk and oil.

It deserves notice that the smelters are occasionally affected with a cancerous disease in the scrotum, similar to that which infests chimney-sweepers, and it is singular that Stahl in describing the putrescent tendency in the bodies of those who die from this poison, mentions in particular the gangrenous appearance of these parts. It is a very extraordinary fact that previous to the establishment of the copper works in Cornwall, the marshes in their vicinity were continually exciting intermittent fever, whereas since that period a case of ague has not occurred in the neighbourhood; I have heard it remarked by the men in the works,

that the smoke *kills* all fevers. The fact is here stated without any other comment than that the agricultural improvements which have taken place in the district are not sufficient to afford any clue to the explanation of the circumstance. MEDICAL USES. Much has been said upon this subject, and the propriety and safety of its exhibition has been often questioned; there can be no doubt but that the greatest circumspection is required in the practitioner who administers it, and it ought not, in my opinion, to be employed until other remedies have failed; that it is capable of accumulating in the system is very evident, and this, in certain habits, may predispose the patient to serious diseases; the form in which it is most manageable and least dangerous, is that of solution. See *Liquor Arsenicalis*. Some practitioners have exhibited it in substance, made into pills, by rubbing one grain with ten of sugar, and then beating the mixture with a sufficient quantity of crumb of bread to form ten pills, one of which is a dose. The Chinese and other oriental nations form the sulphuret of arsenic (*realgar*) into medical cups, and use lemon juice, after it has stood some hours in them, by way of cathartic. As an external application, arsenic has long been extolled in the cure of cancers.*

* PLUNKETT'S OINTMENT, consists of arsenious acid, sulphur, and the powdered flowers of the *Ranunculus Flammula*, and *Cotula Fœtida*, levigated and made into a paste with the white of an egg.

PATE ARSENICALE. This favourite remedy of the French surgeons consists of 70 parts of cinnabar, 22 of *sanguis draconis*, and 8 of arsenious acid, made into paste with saliva, at the time of applying it. This combination, observes a periodical writer, is similar, with the exception of the ashes of the soles of old shoes, to that recommended by Father Cosmo under the name of "*Pulvis Anti-carcinomatosa*."

DAVIDSON'S REMEDY FOR CANCER, Arsenious acid, and powdered Hemlock.

Adulterations. It is frequently sophisticated with chalk, gypsum, or sulphate of barytes; the fraud is instantly detected by its not being entirely volatilized by heat, or by any insoluble residuum occurring in preparing the *Liquor Arsenicalis*, according to the directions of the pharmacopœia. To many the adulteration of so active a substance may seem unimportant, but in consequence of its being thus rendered a medicine of variable activity, it is one of the most dangerous frauds which can be committed; a very unpleasant circumstance lately occurred from such a cause in one of our public institutions: arsenic had been obtained from the shop of a respectable chemist, who had not usually supplied the establishment, for the purpose of preparing the arsenical solution; the article happened to be less adulterated than that which had been previously employed; the solution however was prepared in the usual way, and the usual dose was continued, when the patients were soon seized with violent pains in the bowels, and the cause was not detected until by an examination of the bottle the usual sediment was not discovered.

Antidotes. Late researches have shewn that *sulphuret of potass*, on which physicians have placed so much reliance, merits no confidence. The great indication to be fulfilled in all cases of poisoning is to excite vomiting, and to administer liquids, which are the least liable to act as solvents of the acrid matter, on

Singleton's Eye Salve, or Golden Ointment. Under this name is sold a preparation which consists of sulphuret of arsenic (*orpiment*) with lard, or spermaceti ointment. The *Unguentum Hydrargyri Nitrico Oxydi* of the London College, is also sold under the same title.

In Paris Arsenic forms the basis of several blistering cerates. Such applications cannot be safe. The Arsenical Amulets which were worn during the Plague of London (see page 37) are said by some cotemporary writers to have occasionally produced mischievous effects.

which account lime water presents itself as a very appropriate fluid.

Methods of detecting the presence of Arsenious Acid.

1. *By its reduction to a metallic state.* Mix a portion of the suspected powder with three times its weight of *black flux* (consisting of finely powdered charcoal one part, dry carbonate of potass, two parts) put the mixture into a thin glass tube, hermetically closed at one end, about eight inches in length, and one fourth of an inch in diameter; should any of the powder adhere to the sides of the tube, it must be carefully brushed off with a feather, so that the inner surface of its upper part may be perfectly clean and dry; the closed end of the tube, by way of security, may be thinly coated with a mixture of pipe clay and sand, but this operation is not absolutely necessary; the open extremity is to be loosely plugged with a piece of paper; the coated end must be now heated on a chafing dish of red hot coals, when the arsenic, if present, will sublime, and be found lining with a brilliant metallic crust the upper part of the tube; a portion of this reduced metal, if it be arsenic, will, when laid on heated iron, exhale in dense fumes which are characterised by a strong smell of garlic.

It merits particular notice, that in reducing by the above process the arsenious acid to the state of metal, the presence of potass in the flux is very essential, since it forms immediately an *arsenite of potass*, and thereby fixes the arsenious acid, and prevents it from being volatilized before the temperature is sufficiently high to enable the charcoal to decompose it; an ignorance of this fact has not unfrequently proved a source of disappointment and fallacy.

Another method of identifying *white arsenic* by metallization, is to form at the moment of its reduction, an alloy with copper, this is easily effected in the following manner,—Mix the suspected powder with black flux, as in the former experiment, and place the mixture between two polished plates of copper, bind them tight together by iron wire, and expose them to a low red heat; if the included substance contained arsenic, a silvery white stain will be left on the surface of the copper, which is an alloy of the two metals. If in this, as in the former experiment, charcoal be employed without the addition of a fixed alkali, the result may, for the same reason which it is needless to repeat, prove unsatisfactory.

2. *By the application of certain Reagents, or Tests, to its Solutions.*

A great and important question has arisen in medical jurisprudence, whether any chemical proofs of the presence of *white arsenic*, short of its actual reduction to the state of metal, can be depended upon, or ought to be received as evidence in the courts of criminal law. After a full experimental investigation of the subject, and an impartial review of all the facts which bear upon the question, I feel no hesitation in declaring it to be my conviction, that *white arsenic may be detected without any fear of fallacy, by a proper application of certain tests*, and that the contrary opinion is entirely founded in error, and unsupported by experiment, as will more fully appear in the sequel.

(A) *Fused Nitrate of Silver*, or *Lunar Caustic*—For this test we are indebted to Mr. Hume of London, who first gave it to the public in the Philosophical Magazine for May 1809, vol. xxxiii. His method of applying it is as follows: Into a clean Florence flask introduce two or three grains of the suspected powder,

to which add about eight ounces of rain or distilled water, and heat the solution until it begins to boil, then while it boils frequently shake the flask, and add to the hot solution a grain or two of sub-carbonate of potass, agitating the whole to make the mixture uniform. Pour into a wine glass about two table spoonsfull of the solution, and touch the surface of the fluid with a stick of lunar caustic. If arsenic be present, a beautiful yellow precipitate will instantly proceed from the point of contact, and settle towards the bottom of the glass as a flocculent and copious precipitate.

By this test the 60th part of a grain may be satisfactorily recognised in two ounces of water. The presence of some alkali is essential to the success of the experiment, since arsenious acid is unable by the operation of simple affinity to decompose the nitrate of silver.* The validity of this test has been questioned on the following grounds, which shall be fairly examined in order.

Objection I. *The alkaline phosphates are found to produce precipitates with silver, analogous in colour and appearance to the arsenite of silver.* This is undoubtedly the case when the experiment is performed in the manner just stated, but there are other reagents which will immediately distinguish these bodies, as will be seen under the history of the *Ammoniaco-nitrate of silser;* I have also shewn that there is a mode of so modifying the application of the silver test

* If any trifling opacity occur in a simple solution of arsenic, when assayed by the nitrate of silver, it may be considered as the effects of some casual impurities; this is further demonstrated by bringing over the surface of the arsenical liquid, a piece of blotting paper, or a stopper, moistened with a solution of ammonia, when there will instantly form a copious yellow precipitate of arsenite of silver.

itself, that no error or doubt can arise in the use of it from the presence of phosphoric salts.† My method consists in conducting the trial on writing paper, instead of in glasses, thus—drop the suspected fluid on a piece of white paper, making with it a broad line; along this line a stick of lunar caustic is to be slowly drawn several times successively, when a streak is produced of a colour resembling that known by the name of *Indian Yellow;* and this is equally produced by the presence of arsenic and that of an alkaline phosphate, but the one from arsenic is rough, curdy, and flocculent, as if effected by a crayon, that from a phosphate homogeneous and uniform, resembling a water colour laid smoothly on with a brush; but a more important, and distinctive peculiarity soon succeeds, for in less than two minutes the phosphoric yellow fades into a *sad green*, and becomes gradually darker, and ultimately, quite black; while on the other hand, the arsenical yellow remains permanent, or nearly so, for some time, when it becomes brown. In performing this experiment the sun-shine should be avoided, or the transitions of the colour will take place too rapidly. It would be prudent also for the inexperienced operator to perform a similar experiment on one fluid known to contain arsenic, and on another with a phosphoric salt, as a standard of comparison. In this way the nitrate of silver, without the intervention of any other test, is fully capable of removing every ambiguity, and of furnishing a distinguishing mark of difference between the chemical action of arsenic and the phosphates. Mr. Hume states that he has repeated this experiment to his entire satisfaction,* and that, in a late unfortunate

† Annals of Philosophy, vol. 10. p. 60.

* London Medical and Physical Journal, January 1818.

case of poisoning, he derived considerable information by its application. The laborious author of the London Dispensatory accepts it as an excellent test, but observes that it is rendered more luminous by brushing the streak lightly over with liquid ammonia immediately after the application of the caustic, when if the arsenic be present, a bright queen's yellow is produced which remains permanent for nearly an hour: but that when the lunar caustic produces a white-yellow before the ammonia is applied, we may infer the presence of some alkaline phosphate, rather than that of arsenic. One of the great advantages of this test is the very small quantity that is required for examination; it would be well therefore for the operator to perform the experiment in both ways on a separate paper.

Objection 2. *The Muriates produce precipitates with silver so copious and flocculent, as to overcome every indication which the presence of arsenic would otherwise afford.* Dr. Marcet proposes to obviate this difficulty, by adding to the fluid to be examined dilute nitric acid, and then cautiously to apply the nitrate of silver until the precipitation ceases; in this way the muriatic acid will be entirely removed, whilst the arsenic, if it be present, will remain in solution, and may be rendered evident by the affusion of ammonia, which will instantly produce the yellow precipitate in its characteristic form. This mode however it must be confessed appears complicated, and requires some chemical address for its accomplishment; it should be also known that the yellow precipitate thus produced, is not always permanent, for it is soluble in the nitrate of ammonia formed during the process. Under these circumstances, it is surely preferable to precipitate at once from the suspected fluid all the sub-

stances which nitrate of silver can affect, and then to expose the mixed and ambiguous precipitate so obtained to a low heat in a glass tube, when the arsenious acid will be immediately separated by sublimation; in this way the presence of muriates may even in certain cases be serviceable, especially if the quantity of arsenic be minute, for by increasing the bulk of the precipitate we shall decrease the difficulty of its examination. By this process also I should propose to meet the embarrassments which are stated to arise from the influence of various animal and vegetable substances, as milk, broth, wine, &c. so frequently present in the suspected liquid, and which are known to alter the character of the arsenical indications.

It has been stated that in consequence of the inability of arsenious acid to decompose nitrate of silver by simple elective attraction, the presence of an alkali becomes indispensible in the examination, for which purpose Dr. Marcet has suggested the superior advantages which will attend the use of ammonia in cases where the arsenic has not been previously combined with a fixed alkali, since it does not, when added singly decompose nitrate of silver, a circumstance which in using the fixed alkalies is very liable to occasion fallacy. This led Mr. Hume to improve his original plan, by forming at once a triple compound, an *ammoniaco-nitrate of silver*,* which is a triumph in

* The following is the formula for its preparation. Dissolve ten grains of lunar caustic in ten times its weight of distilled water, to this add, *guttatim*, liquid ammonia, until a precipitate is formed: continue cautiously to add the ammonia, repeatedly agitating the mixture until the precipitate is nearly redissolved. The object of allowing a small portion to remain undissolved is to guard against an excess of ammonia. Wherever the test is used, the liquid to which it is added ought to be quite cold.

the art of analysis, for whilst it obviates the necessity of ascertaining the exact proportion of alkali required in each experiment,* it possesses the valuable property of not in the least disturbing the phosphate of soda.

(B) *Sulphate of Copper.* Like the preceding test this requires also, for its success, that the arsenious acid should be combined with some alkali, in which case, by the operation of double elective attraction, an arsenite of copper is thrown down of a very striking and characteristic colour, being that of the well known pigment called *Scheele's green;* if arsenic be not present in the liquid so assayed, and a fixed alkali has been employed, the result will be a delicate *sky blue*, instead of the *grass green* precipitate.

Mr. Hume avails himself also of the peculiar property of ammonia to form a triple metallic salt, and has employed it with copper: he takes the sulphate or acetate of that metal and by the same process forms another test. In using this however care must be taken that it be not too highly concentrated, for in that state it will not produce precipitation. Much controversy has taken place on the subject of sulphate of copper as a test for arsenic, and it has been stated with more confidence than truth, that a *decoction of onions* has the property of imparting to the copper precipitate, which is produced by a fixed alkali, a colour and appearance analogous to that which is occasioned by arsenic. This opinion was boldly advanced and supported on a most important trial at the Lent assizes for Cornwall in 1817. Since this

* This is very important, for an excess of ammonia redissolves the yellow precipitate, and therefore defeats the object of the test. The fixed alkalies, in excess, have not such a property.

event an opportunity* has occurred which has enabled

* The great impression made upon the public mind in Cornwall by the above trial, produced a disposition to regard the cause of every sudden death with more than usual jealousy.

In consequence of a report having arisen that a young woman had died after an illness of forty-eight hours, and been hastily buried at Madron, the magistrates of that district issued their warrant for the disinterment of the body, and requested my attendance at the examination. It appeared upon dissection that the immediate cause of death had been inflammation of the intestines; the stomach was found to contain a considerable portion of liquid, which was carefully collected and examined; no solid matter could be discovered in it. It appeared to consist principally of the remains of a quantity of penny-royal tea, which had been the last thing administered to the deceased; this was divided into several portions, and placed in separate wine glasses, and submitted, in the presence of the sheriff and other gentlemen, to a series of experiments, amongst which the following may be particularized, as bearing upon the question at issue.

1st. A few drops of a solution of sub-carbonate of potass were added to the liquid, in one of the glasses, when its colour, which was before of a light hazel, was instantly deepened into a reddish yellow; the sulphate of copper was then applied, when a precipitate fell down, which every one present immediately pronounced to be of a *vivid green* hue, but on pouring off the supernatant liquid, and transferring the precipitate on white paper, it assumed a blue colour, without the least tinge of green; the explanation of the phenomenon, and the fallacy to which it gave rise, was obvious; the yellow colour imparted to the liquid by the alkali, was the effect of that body upon vegetable extract, and will generally take place on adding it to the infusions of vegetable substances.

2nd. To another portion of the liquid, the ammoniaco-nitrate of silver was added; a slight turbidness arose, but no yellow precipitate occurred.

3rd. After adding a fixed alkali, the surface of the liquid was touched with a stick of lunar caustic, but no yellow precipitate was produced.

4th. The liquid was next assayed in a watch glass, for a *phosphate of soda*, by endeavouring to form a triple salt with magnesia and ammonia, as suggested by Dr. Wollaston; the result proved that *phosphate of soda* was not present. It is unnecessary to pursue the relation of the experiments; I conceive that sufficient evidence has been adduced to establish the truth of the explanation. I have frequently repeated the first experiment, substituting for the gastric infusion, a decoction of onions, and with similar results.

me to examine this alleged fact, by a fair and appropriate series of experiments, the result of which satisfactorily proved that the opinion was grounded on an optical fallacy, arising from the *blue* precipitate assuming a *green* colour, in consequence of having been viewed through a yellow medium. The phosphoric salts may also, under similar circumstances, be mistaken for arsenic, for the intense blue colour of the phosphate of copper will thus necessarily appear green. This instance of optical fallacy is not solitary, for *corrosive sublimate* has been said to possess the character of an alkali because it turns the syrup of violets green, whereas this change is to be attributed solely to the combination of the yellow hue of the sublimate with the blue colour of the violet.

Whenever therefore such a source of fallacy can be suspected, the operator would do well to repeat his experiment on white paper, in the manner I have before proposed, and the results which are obtained in glasses should always be examined by day light, and viewed by reflected, and not by transmitted light.

There are several other tests by which arsenic may be identified. The process described in the Dublin Pharmacopœia for the preparation of *Arsenias Kali*, the arseniate, or rather super-arseniate of potass, which has been long known under the name of "the arsenical salt of Macquer," has been strongly advised as a collateral proof; it consists in decomposing the nitrate of potass by the arsenious acid, but since this problem requires that the suspected poison should be in a solid and palpable form, it is impossible to examine its pretensions to our confidence, without being reminded of the story so often told to us in our infancy, of catching a bird by laying salt upon its tail.

It is necessary to observe in this place that the *arseniate*, like the *arsenite of potass*, or that of *ammonia*, is obedient to the silver test, but that instead of the yellow precipitate, which is produced by the latter salt, we obtain by the former a red or brick-coloured one.

In taking an impartial review of all the evidence which the investigation of this subject can furnish, it must appear to the most fastidious that the silver and copper tests above described are capable, under proper management, of furnishing striking and infallible indications, and that in most cases, they will be equally conclusive, and in some even more satisfactory in their results, than the metallic reproduction upon which such stress has been laid, and for this obvious reason, that unless the quantity of metal be considerable, its metallic splendour and appearance is often very ambiguous and questionable. It has to my knowledge happened to a medical person, by no means deficient in chemical address, to ascribe to the presence of arsenic that which was no other than a film of very finely divided charcoal: in this state of doubt the last resource was to ascertain whether it yielded, or not, upon being heated, an alliaceous odour. Surely an unprejudiced judge would prefer the evidence of sight as furnished by the arsenical tests, to that of smell, as afforded in the last experiment. No one will attempt to deny that it is the duty of the medical practitioner who is called upon to decide so important a question as the presence of arsenic, to prosecute by experiment every point which admits the least doubt; he should also remember that in a criminal case, he has not only to satisfy his own conscience, but that he is bound, as far as he is able, to convince the public mind of the accuracy and truth

of his researches, and he fails in his duty if he omits, through any false principle of humanity, to express the strong conviction which the success of his experiments must necessarily have produced in his mind. Let it however be remembered, that the application of chemical reagents on solutions suspected to contain arsenic, throws no obstacle whatever in the way of the metallic reduction of that body, but on the contrary, it furnishes preparatory steps in the process, since the precipitates which are thus produced may be collected, and easily decomposed, as before stated.

ASARI FOLIA. L. E. D. *Asarum Europæum.*

Asarabacca Leaves.

Qualities. The leaves, when recent, are nauseous, bitter, and acrimonious, and prove violently purgative and emetic, properties which are impaired by keeping. Chemical Composition, a peculiar acrid principle, not well understood. Solubility, water by infusion extracts their sensible properties, but they are lost by decoction. Uses. As an errhine; Dr. Cullen has remarked that they form the most useful species of this genus of local stimulants. Dose, gr. iij to v. repeated every night until the full effect is produced. Officinal Prep. *Pulvis Asari compositus.* E. D.

ASSAFŒTIDA.* L. E. D.

Ferula Assafœtida. *Gummi Resina.*

Qualities. *Form*, small irregular masses, adhering together, of a variegated texture, and containing many little shining tears of a whitish, reddish,

* Assafœtida was used by the Ancients as a condiment, under the name of σιλφιον, *Laserpitium*, (Pliny); and according to Kempfer, the Persians use it for the same purpose.

or violent hue. *Taste*, bitter and sub-acid. *Odour*, fœtid and alliaceous, but this latter property is very much impaired by age. CHEMICAL COMPOSITION. Gum (or according to Brugnatelli, *extractive*) 60, resin 30, and essential oil 10 parts. SOLUBILITY. It yields all its virtues to alcohol and ether; if triturated with water it forms a milky mixture, but which is not permanent, unless some intermede be employed for the suspension of the gum-resin; for this purpose egg may be added, in the proportion of one yolk to a drachm of assafœtida, or a permanent mixture may be effected by carefully triturating the gum resin with double its weight of mucilage. If ʒvj of assafœtida be triturated with ʒss of camphor, a mass results of a proper consistence for a plaster; if triturated with carbonate of ammonia, it is easily reduced to powder, but undergoes no other change. FORMS OF EXHIBITION; in mixture or in pills. DOSE, gr. v to ℈j. *Form.* 111. MED. USES, stimulant, antispasmodic, expectorant, and anthelmintic; in coughs, attended with pulmonary weakness, and a tendency to spasm, it is very beneficial; in cases of flatulent cholic, it has in the form of enema, acted like a charm. OFFICINAL PREP. *Mist: Assafœtid:* L. D. *Tinct: Assafœtid:* L. E. D. *Spir: Ammoniæ fœtid:* (*b*) L. E. D. *Tinct: Castorei comp:* (*b*) E. *Pil: Aloes cum Assafœtid:* (*e*) E. *Pil: Galbani comp:* (*b*) L. *Enema Fœtid:* D. IMPURITIES. Its characteristic odour should be powerful, and when broken, its fracture ought to exhibit a bluish-red appearance. It ought not to be brittle.

BALSAMUM PERUVIANUM. L. E. D.

(Myroxylon Peruiferum). *Peruvian Balsam.*

QUALITIES. *Form*, a viscid liquid of a reddish brown colour. *Odour*, fragrant and aromatic. *Taste*,

hot and bitter. CHEMICAL COMPOSITION. Resin, volatile oil, and benzoic acid; it is therefore a true *balsam:* this term was formerly applied to every vegetable resin having a strong scent, and the fluidity of treacle, and which was supposed to possess many medicinal virtues; it is now restricted to those resins which contain the benzoic acid in their composition, of which there are only three, viz. the Balsams of *Peru*, *Tolu*, and *Benzoin*. SOLUBILITY, water when boiled upon it dissolves only a portion of benzoic acid; ether is its most complete solvent; alcohol dissolves it completely, but the quantity of this menstruum must be considerable. PROPERTIES, stimulant, and tonic, on which account in certain chronic affections of the lungs, it has been found a serviceable expectorant; Sydenham gave it in Pthisis, but wherever any inflammatory action is to be apprehended Dr. Fothergill wisely cautions us against its use. FORMS OF EXHIBITION, diffused in water by means of mucilage, or made into pills with any vegetable powder. DOSE, gr. v to ʒj. ADULTERATIONS, a mixture of resin and some volatile oil with benzoin, is often sold for Peruvian Balsam, and the fraud is not easily detected, and is probably of but little importance.

BALSAMUM TOLUTANUM. L.E.D.

(Toluifera Balsamum). *Balsam of Tolu.*

QUALITIES. *Form*, a thick tenacious liquid becoming concrete by age, in which state it is usually found in the shops. *Taste*, warm and sweetish. *Odour*, extremely fragrant, resembling that of lemons. CHEMICAL COMPOSITION. Volatile oil, resin, and benzoic acid. SOLUBILITY. It is soluble in alcohol, forming a tincture which is rendered milky by

water, but no precipitate falls. When dissolved in the smallest quantity of a solution of potass, its odour is changed into one that resembles clove pink. FORMS OF EXHIBITION. It may be suspended in water by means of mucilage, or yolk of egg, but it is rarely employed except on account of its agreeable flavour;* its virtues are similar to those of the balsam of Peru. OFFICINAL PREP. *Tinct: Benzoini comp:* L.E.D. *Tinct: Toluiferi Balsam:* E.D. *Syrup: Tolut:* L.

BELLADONNÆ‡ FOLIA. L.E.D.

(Atropa Belladonna). *Deadly Nightshade.*

QUALITIES. The leaves are inodorous. *Taste*, slightly nauseous, sweetish, and subacrid; their peculiar properties are not lost by drying. CHEMICAL COMPOSITION. Vauquelin found that the leaves contained a substance analogous to albumen, salts with a base of potass, and a bitter principle on which its narcotic properties depended, and more lately the presence of an alkaline element has been detected, which has received the appellation of *Atropia*, the sulphate of which crystallizes very beautifully. SOLUBILITY. Water is the most powerful solvent of its active matter. USES. It is a powerful sedative and narcotic, both as an internal medicine and as an external application. FORMS OF EXHIBITION. Every part of the plant is poisonous, and the berries from their beautiful appearance have often tempted the

* TOLU LOZENGES.—Sugar 8 oz. Cream of Tartar 1 oz. Starch 2 drachms. Tinct. Toluiferæ Balsami E. one fluid drachm, mucilage of Gum Tragacanth q.s.

‡ *Belladonna*, so called from its being used as a cosmetic by the Italian women.

unwary; the leaves however furnish the most convenient and powerful form of exhibition; externally, they may be used as a poultice, internally, one grain of the dry leaves powdered, and gradually increased to 10 or 12 grains, or the leaves may be infused in boiling water in the proportion of four grains to two fluid-ounces, which may be given as a dose. A little of this infusion dropped into the eye permanently dilates the pupil, for which intention it has been successfully applied previous to the operation of the cataract. The extract of this plant, since its active principle is fixed, ought to possess activity, but as it occurs in commerce it is found to be very uncertain and variable, a circumstance which entirely depends upon the manner in which it has been prepared.* An overdose of belladonna produces the most distressing and alarming symptoms, and so paralising is its influence, that vomiting can be hardly excited by the strongest doses of tartarized antimony; in

* The root of this plant seems to partake of the same qualities as the leaves, but is perhaps less virulent,

> "Or have we eaten of the *insane root*,
> That takes the reason prisoner."
>
> *Macbeth.*

The Belladonna is supposed by Sauvage to be the plant that produced such extraordinary effects upon the Roman soldiers during their retreat, under the command of Anthony, from the Parthians, when they are said to have "suffered great distress for want of provisions, and were urged to eat unknown plants; among others they met with a herb that was mortal: he that had eaten of it lost his memory and his senses, and employed himself wholly in turning about all the stones he could find, and after vomiting up bile fell down dead." (*Plutarch's Life of Anthony.*) The Scotch historian Buchanan relates, "that the Scots mixed a quantity of the juice of the Belladonna (*Solanum Somniferum*) with the bread and drink which by their truce they were to supply the Danes with, which so intoxicated them that the Scots killed the greatest part of Sweno's army."

such cases, vinegar will be found the best antidote, after the exhibition of which, emetics are more likely to perform their duty, for physiological reasons explained at page 155. OFFICINAL PREP. *Extract: Belladonnæ.* L. *Succus spissatus Atropæ Belladonnæ.* E.

BENZOINUM. L.E. Benzoe. D. (Styrax Benzoin) vulgo, *Benjamin.*

QUALITIES. *Form*, brittle masses, composed of white and brownish, or yellowish fragments; *Odour*, fragrant; *Taste*, scarcely perceptible. When heated, it exhales benzoic acid in the form of crystals. CHEMICAL COMPOSITION. Resin, and a large proportion of benzoic acid. SOLUBILITY. It is readily dissolved by alcohol and ether, and is again separated from them by water; solutions of lime, and the fixed alkalies separate the benzoic acid from it, which can afterwards be recovered from such solutions by the addition of an acid. USES. It is considered expectorant, and was formerly used in asthma, and other pulmonary affections; it has however fallen into disuse, and is now principally employed in perfumery, and odoriferous fumigations.* OFFICINAL PREP. *Acidum Benzoicum.* L.E.D. *Tinct: Benzoini comp:*‡

* FUMIGATING PASTILLES. *Benzoin* genrally constitutes the chief ingredient in these compositions, to which may be added any variety of odoriferous substances; the following formula may be offered as a specimen: ℞. *Benzoin* ʒ j, *Cascarillæ* ʒ ss, *Myrrh* ℈ j, *Olei nuc. moschat. al. Caryophyll.* ā ā gr. x. *potassæ nitratis* ʒ ss, *carb. ligni* ʒ vj, *mucilag. gum. Trag.* q. s.

‡ VIRGIN'S MILK.—A spirituous solution of Bonzoin mixed with about twenty parts of *rose water*, forms a cosmetic long known by this name. Under the same title also a very different preparation is sold, *vid. Liquor Plumbi acetatis.*

L.E.D. Impurities. It is found in the market in various degrees of purity, the best is yellowish, studded with white spots; the worst is full of dross, and very dark or black.

CALAMI RADIX. L. Acori Calami Radix. E. Acorus. D. (Acorus Calamus) *Sweet Flag Root.*

Qualities. This root is full of joints, crooked, and flattened on the sides, internally of a white colour, and loose spongy texture. *Odour*, fragrant and aromatic. *Taste*, bitter and pungent, qualities which are improved by exsiccation. Chemical Composition. The principles in which its qualities reside appear to be essential oil, and bitter extractive; the root likewise contains fecula, which is copiously precipitated from its infusion by sub-acetate and acetate of lead. Watery infusion extracts all its virtues, but decoction impairs them. Spirit is also an appropriate solvent. Uses. It is not employed so frequently as it deserves; it would be a useful addition to many of the compound infusions of vegetable stomachics. Dose. A cupfull of the infusion made by adding ʒvj of the dried root to f℥xij of boiling water.

Friar's Balsam, Wade's Drops, Jesuit's Drops.—These preparations are nothing more than the *Tinctura Benzoini composita.*

Pectoral Balsam of Honey.—Is the tincture of *Benzoin*, or that of *Tolu.*

Essence of Coltsfoot.—This preparation consists of equal parts of the *Balsam of Tolu*, and the *Compound Tincture of Benzoin*, to which is added double the quantity of *rectified Spirit of Wine;* and this forsooth is a *Pectoral for Coughs!* If a patient with a pulmonary affection should recover during the use of such a remedy, I should certainly designate it as a lucky Escape, rather than as a skilful Cure.

CALUMBÆ RADIX. L. *Plantæ adhuc Anonymæ.*
Colomba Radix. E.D. *Calumba Root.*

Qualities. *Form*, the dried root imported into this country is in transverse sections; the bark is thick, and easily detached; the wood is spongy and yellowish; the pieces are frequently perforated, evidently by worms. *Odour*, slightly aromatic. *Taste* bitter, and somewhat acrid. Chemical Composition. Cinchonin, bitter resin, and starch, in addition to which, M. Planche has found a peculiar animal-like substance. Solubility. Boiling water takes up about one-third of its weight, but proof spirit appears to be its most perfect menstruum. Incompatible Substances. No change is occasioned in the infusion by the solutions of nitrate of silver, sulphate of iron, muriate of mercury, or tartarized antimony; but precipitates are produced by the *infusion of galls and yellow Cinchona bark*, by *sub-acetate and acetate of lead; oxy-muriate of mercury;* and *lime-water.* The infusion very soon spoils. Dose of the powdered root gr. xv to ʒss; of the infusion f℥iss to f℥ij. Uses. It is one of the most valuable tonics and stomachics which we possess. It seems to be superior to many others, from not possessing astringent, and stimulant powers, on which account it is singularly eligible in certain pulmonary and mesenteric affections; it may be given in combination with chalybeates, aromatics, saline purgatives, or with rhubarb, as circumstances may require. Officinal Preparations. *Infus: Calumbæ.* L. *Tinct: Calumbæ.* L.E.D. It becomes worm-eaten by age, and, in that condition, should be rejected. Those pieces which have the brightest colour, and the greatest specific gravity, are the best.

The root of *white briony*, tinged yellow with the tincture of Calumba, has been fraudulently substituted for this root.

CAMBOGIA. L. (*Stalagmitis Cambogioides.*) Gambogia. E.D.
Gamboge.

Qualities. *Form*, lumps of a solid consistence, breaking with a vitreous fracture; *Odour*, none; *Colour*, deep yellow, bordering on red, and becoming, when moistened, a brilliant light yellow. *Taste* slightly acrid, but which is not experienced unless it be allowed to remain long in the mouth. Chemical Composition. One part of gum, and four parts of a brittle resin; but this knowledge throws no light on the nature of its cathartic property. Solubility. When triturated with water two thirds of its substance are speedily dissolved, and a turbid solution results; alcohol dissolves nine tenths, and forms a yellow transparent tincture, which is rendered turbid by the addition of water; sulphuric ether dissolves six tenths of the substance; it is also soluble in alkaline solutions, and the resulting compound is not rendered turbid by water, but is instantly decomposed by acids, and the precipitate so produced is of an extremely brilliant yellow colour, and soluble in an excess of acid. Incompatible Substances. No bodies appear to produce in gamboge such a chemical change as to destroy the chemical properties which distinguish it, but by a mechanical admixture, its solubility, and consequently its operation, may be materially modified. Dr. Cullen found that the inconvenience arising from its too rapid solubility, and sudden impression upon the stomach, might be obviated by diminishing the dose, and repeating it at short intervals as directed in *Form*: 26. Forms of Exhibition. No form is

more judicious than that of pill. Dose, gr. 2 to gr. 6. Uses. It is a powerful drastic cathartic, and hydragogue, very liable to excite vomiting, and from this peculiar action upon the stomach it has been frequently employed with success in the expulsion of teniæ (*Form:* 121.) and it accordingly enters as an ingredient into many of the empirical compositions which are sold for the cure of tape worms.* Off: Prep: *Pil: Cambogiæ comp:* L. There is a considerable difference in the degree of purity in which this substance occurs in the market; it should be estimated by its clearness and brilliancy.

CAMHPORA. L.E.D. (*Laurus Camphora.*‡)
Camphor.

Qualities. *Form*, a white brittle substance, unctuous to the touch, but possessing at the same time a degree of ductility which prevents its being easily

* The Specific of Herrenschwand, which formerly excited so much interest in Germany, consisted of 10 grains of *Camboge* with 20 of *Sub-carbonate of Potass;* although it is said, that on its being analyzed by order of Elizabeth of Russia, there were also found in it both Mercury and Arsenic.

Camboge is also the basis of the Specific of Clossius.

Golden Spirit of Scurvy Grass. This is merely a solution of *Cambege* in the *Spir: Armoraciæ: comp:*

‡ Although the Camphor of commerce is generally furnished by the *Laurus Camphora*, yet it is abundantly yielded by many other plants. It is said that what is imported from Sumatra is the product of the *Dryobolans Camphora.* It is also contained in the roots of the *Cinnamon, Cassia*, and *Sassafras laurels*, and in those of *Galangale, Zedoary*, and *Ginger;* in *Cardamom seeds* and *Long Pepper.* The essential oils of *Lavendar, Sage, Thyme, Peppermint, Rosemary*, and those of many other labiate plants yield camphor by distillation. Camphor may be also artificially formed by driving a stream of muriatic acid gas through oil of turpentine; this factitious product however, is to be distinguished from native camphor in not being soluble in weak nitric acid, and also in not being precipitated by water from its solution in strong nitric acid.

pulverised, unless a few drops of spirit be previously added. *Odour*, peculiar, fragrant, and penetrating. *Taste*, bitter, pungent, and aromatic. *Specific gravity* ·9887, it therefore swims on water; it is so volatile that during warm weather a considerable proportion will evaporate, especially if at the same time the atmosphere be rather moist, for the reason stated at page 139. It is readily ignited, and burns with a brilliant flame and much smoke; it melts at 288°, and boils at 400. CHEMICAL COMPOSITION. It is a proximate vegetable principle, resembling the essential oils in many of its habitudes, and it will probably be found hereafter to be a compound of an essential oil with some vegetable acid. SOLUBILITY; water may be said to dissolve about a nine hundredth part of its weight, or f℥j rather more than gr. ½, but its solvent power is considerably increased by the addition of carbonic acid gas; camphor is also rendered more soluble by trituration with magnesia; it is soluble in an equal weight of alcohol, but is again separated by the addition of water; it is also dissolved by oils, both fixed and volatile,* especially if their temperature be a little raised, and by sulphuric and other ethers, but strong acetic acid may be said to be its most powerful solvent. By repeatedly distilling it with nitric acid it is converted into *Camphoric acid*, an acid distinguished by peculiar properties, and composing, with alkalies and earths, a class of salts called *Camphorates*, but which do not possess any medicinal value. The alkalies do not produce any effect upon camphor. INCOMPATIBLE SUBSTANCES.

* AN ODONTALGIC REMEDY in great repute consists of a solution of camphor in oil of turpentine, a fluidounce of which will dissolve two drachms.

It is not affected by any substance with which we can combine it. FORMS OF EXHIBITION. It is preferable in the form of mixture, since it is very liable in the solid state to excite nausea, and from swimming on the contents of the stomach, to occasion pain at its upper orifice. If a larger dose be required than that which water can dissolve, an additional proportion may be suspended by means of sugar, almonds, yelk of egg, or mucilage, for which purpose three times its weight of gum arabic is required. If Camphor be first dissolved by trituration in a very small portion of oil, it readily mixes with mucilage of gum arabic, and may then be conveniently blended with liquids. It has also the property of uniting with gum-resins, and of converting them into soft, and uniform masses; hence they may sometimes be conveniently applied for diffusing it in water; it may be formed into pill masses by stiff mucilage, fœtid gums, or by a confection. MEDICINAL USE. In moderate doses it exhilirates without raising the pulse, and gives a tendency to diaphoresis; and under certain conditions of the body, when opium fails, it promotes sleep. As its effects are transient, its dose should be repeated at short intervals. FORMULÆ 10, 48, 53, 59, 103, 109, 112, 115, 119, 125. Camphor is said to correct the bad effects of opium, mezereon, lyttæ, and the drastic purgatives, and diuretics. DOSE gr. ij to ℈j. In excessive doses it occasions anxiety, vomiting, syncope, and delirium; these violent effects are best counteracted by opium. OFF: PREPARATIONS. *Mistura Camphoræ.* L.D. *Emulsio Camphorata.* E. *Spiritus Camphoræ* L.E.D. *Tinctura Camphoræ comp:* L.E.D. *Acidum Acetosum Camphoratum.* E.D. *Linimentum Camphoræ* L.E.D. *Liniment: Camphoræ comp*: L. *Liniment: Saponis. (e)* L.E.D. ADULTERATIONS.

It has been stated that pure camphor may be known by placing it upon hot bread, when it will turn moist, whereas an adulterated specimen becomes dry—but with what can it be adulterated?

CANELLÆ CORTEX. L.E.D. (*Canella Alba Cortex*)
Canella Bark.
Wild Cinnamon.

QUALITIES. *Form*, it occurs in quilled and flat pieces; the former are of a whitish yellow colour, considerably thicker than cinnamon; the latter, which are probably the bark of the larger branches, or of the stem of the tree, are yellow on the outside, and pale brown within. *Odour*, resembling that of cloves. *Taste*, warm, pungent, and slightly bitter. CHEMICAL COMPOSITION. Its virtues depend upon an essential oil, and a bitter resin. SOLUBILITY. Water extracts only the bitterness, but proof spirit both the bitterness and aroma. MEDICAL USES. As a warm stimulant to the stomach, and as a corrigent to other medicines. In America it is considered as a powerful antiscorbutic. DOSE of the powdered bark gr x to ʒss. OFFICINAL PREP. *Tinc. Gentian. comp. (a, c)* E. *Vinum Aloes, (b, d)* L.D. *Pulv. Aloes cum canella, (d)* D.

CAPSICI BACCÆ. L.E.D. (Capsicum Annuum.)
Berries of the Capsicum.

QUALITIES. *Form*, pods, long, pointed, and pendulous; *Colour*, when ripe, a bright orange red. *Odour*, aromatic and pungent. *Taste*, extremely acrimonious and fiery. SOLUBILITY. Its qualities are partially extracted by water, but more completely by ether and spirit. CHEMICAL COMPOSITION. Cinchonin, resin, mucilage, and an acrid principle said to be alkaline.* INCOMPATIBLE SUBSTANCES. The Infu-

* *Journal de Physique, p.* 173, 1820.

sions of capsicum are disturbed by *Infusion of Galls; Nitrate of Silver*; *Oxy-muriate of Mercury; Acetate of Lead; the Sulphates of Iron, Copper and Zinc; Ammonia, Carbonate of Potass and Alum*, but not by sulphuric, nitric, or muriatic acid. MEDICAL USES. It is a most powerful stimulant to the stomach, and is unaccompanied with any narcotic effect; as a gargle in cynanche maligna, and in relaxed states of the throat it furnishes a valuable remedy; combined with purgatives, it proves serviceable in dyspepsia; and in various diseases attended with cold feet, it has been recommended to wear socks dusted with Cayenne Pepper, *see Formula* 16. FORMS OF EXHIBITION. It may be given, made into pills with crumb of bread, or in the form of tincture, diluted with water; for the purpose of a gargle, a simple infusion in the proportion of gr j to f℥j of boiling water, or f℥vj of the tincture to f℥viij of the *Infusum Rosæ*, may be directed. DOSE, of the substance gr vj to x, of the tincture f℥j to f℥ij in an aqueous vehicle. OFF: PREP: *Tinct: Capsici:* L.D.*

Cayenne Pepper is an indiscriminate mixture of the powder of the dried pods of several species of capsicum, but especially of the Capsicum *baccatum*,(Bird pepper.)

ADULTERATIONS. Cayenne pepper is generally mixed with *muriate of soda*, which disposes it to deliquesce. *Red Lead* may be detected by digesting it in acetic acid, and adding to the solution sulphuret of ammonia, which will produce, if any lead be present,

* RYMER'S CARDIAC TINCTURE. In the former editions of this work an erroneous account of this medicine has been given, in consequence of a spurious specimen having been examined: the following analysis is now confidently presented to the profession. It is an infusion of Capsicum, Camphor, Cardamom seeds, Rhubarb, Aloes, and Castor in Proof Spirit, with a very small quantity of Sulphuric acid.

a dark coloured precipitate; or the fraud may be discovered by boiling some of the suspected pepper in vinegar, and after filtering the solution adding to it sulphate of soda when a white precipitate will be formed, which, after being dried and exposed to heat, and mixed with a little charcoal, will yield a metallic globule of lead.

CARBO LIGNI. L. E. D. *Charcoal.*

Qualities. It is a black, inodorous, insipid, brittle substance; when newly prepared it possesses the property of absorbing very considerable quantities of the different gases; it is also capable of destroying the smell and taste of a variety of vegetable and animal substances, especially of mucilages, oils, and of matter in which *extractive* abounds; and some medicines are said to be even deprived of their characteristic odour by remaining in contact with it, as Valerian, Galbanum, Balsam of Peru, and Musk. The use of charring the interior of water casks, and of wrapping charcoal in cloths that have acquired a bad smell, depends upon this property; for the same reason it furnishes a very excellent tooth powder,* for which purpose, that which is obtained from the shell of the cocoa nut is to be preferred. None of the fluid menstrua with which we are acquainted have any action whatever as solvents upon carbon.† Medical Uses. It is antiseptic, and has been administered internally, to correct the putrid eructations which sometimes attend dyspepsia, but in order to produce this effect it should

* Lardner's Prepared Charcoal consists of cretaceous powder, or chalk finely powdered, rendered grey by the addition of charcoal, or ivory black.

† Concentrated Solution of Charcoal. A preparation is sold under this absurd name for cleaning the teeth.

be newly prepared, or such as has been preserved from the access of air, for it operates by absorbing the putrid gas, as well as by checking the decomposition of the undigested element. Dose, grs x to ʒj. It has been lately asserted to possess powers as an antidote to arsenic; if this be true, its action can only be mechanical by absorbing like a sponge the arsenical solution, and thereby defending the coats of the stomach from its virulence.‡ Charcoal, when mixed with boiled bread, forms a very valuable poultice for foul and gangrenous sores.

Charcoal is prepared for the purposes of medicine and the arts, from a variety of substances, viz.

Burnt Sponge, *Spongia Usta.* L. Consists of charcoal with portions of phosphate, and carbonate of lime, and sub-carbonate of soda; it has been highly commended in bronchocele and scrophulous complaints, in the form of an electuary, or in that of a lozenge, and it has been lately asserted that it owes its powers to the presence of iodine.

Vegetable Æthiops. *Pulvis Quercus marinæ.* From the *fucus vesiculosus*, or bladder wrack, used as the preceding.

Ivory Black. *Ebur Ustum.* From ivory shavings burned; used as a dentifrice and a pigment, under the name of "*blue-black*," for its hue is bluish; but bone black is usually sold for it.

Lamp Black. *Fuligo Lampadum.* By burning

‡ I apprehend that this property will explain how charcoal acts as a test for arsenic, which was discovered by Mr. Thomson. See London Dispensatory, second edition, page 53. "Into the suspected solution stir a moderate quantity of charcoal powder; allow it to settle, then pour off the supernatant liquid, and when the powder which remains is dry, sprinkle some of it on a hot poker, when, if the solution contained arsenic, the odour of garlic will be rendered sensible.

resinous bodies, as the refuse of pitch, in furnaces of a peculiar construction.

Wood Soot. *Fuligo ligni*, collected from chimnies under which wood is burnt. It contains sulphate of ammonia, which imparts to it its characteristic bitterness. It has been considered antispasmodic, and a tincture was formerly prepared of it.

CARDAMOMI SEMINA. L.D. (Elettaria Cardamomum.)

Amomum Repens. E. *Cardamom Seeds.*

Qualities. *Odour*, aromatic and agreeable; *Taste*, warm and pungent, but unlike the peppers, they do not immoderately heat the stomach. Solubility. Water, alcohol and æther extract their virtues; the two latter most completely, and the result is transparent, whereas the watery infusion is turbid, and mucilaginous. Chemical Composition. Fecula, mucilage, and essential oil. Medical Uses. They are carminative and stomachic, and prove grateful adjuncts to bitter infusions; they are principally employed to give warmth to other remedies. Dose of the powder, gr. vj to ℈j. Officinal Prep: *Extract: Colocynth: comp: (d)* L.D. *Tinc. Cardamomi*, L.E.D. *Tinct: Cardamom: comp:* L.D. *Tinct: Cinnamomi, co. (b)* L.E. *Tinct. Gentian, co. (e)* L. *Tinct. Rhei, (d)* L.E.D. *Tinct. Rhei cum Aloe, (d)* E. *Tinct: Sennæ, (d)* L.D. *Spir. Ether. Aromat. (b)* L. *Vinum Aloes socot. (d)* E. *Confect. Aromat. (b)* L. *Pulv. Cinnamom co. (b)* L.E.D. *Pil. Scilliticæ, (d)* E. *Infus Sennæ*, D *(d)*.

Cardamom seeds should be kept within their husks, or their virtues will soon be considerably impaired; they are frequently mixed with *grains of paradise*, which are much hotter and more spicy, and less aromatic in their flavour.

CARICÆ FRUCTUS. L.D. Fici Caricæ Fructus, E.
The preserved Fruit of the Fig.

QUALITIES of the dried fig are too well known to require description. The fig consists almost entirely of mucilage and sugar. USES. It has been already stated that the most ancient cataplasm on record was made of figs, (2 Kings chap. xx. 7.) they are employed medicinally in many demulcent decoctions, as *Decoctum Hordei comp.* L.D. They are gently aperient; it is curious to learn that they constituted the chief part of the food of the ancient Athletæ.

CARYOPHYLLI. L.
(Eugenia Caryophyllata. *The unopened flowers dried.*)
Caryophilli Aromatici Germen, E.
Caryophilli aromat. Calyx, D. *Cloves.*

Cloves are the unexpanded flowers or flower-buds of the clove tree, which are first obtained when the tree is six years old; they are gathered in October and November before they open and when they are still green, and are dried in the sun, after having been exposed to smoke, at a heat of 120°, till they assume a brown hue. It is a curious fact that the flowers when fully developed are quite inodorous, and that the real fruit is not in the least aromatic. QUALITIES. *Form*, that of a nail, consisting of a globular head, formed of the four petals of the corrolla, and four leaves of the calyx not yet expanded; and a germen situated below nearly cylindrical, and scarcely an inch in length. *Odour*, strong, fragrant, and aromatic. *Taste*, acrid, aromatic and permanent.

SOLUBILITY. Water extracts their odour, but little of their taste; alcohol and ether take up both completely. MEDICAL USES They are more stimulant than any of the other aromatics; they are sometimes

given alone, but more generally as a corrigent to other medicines. OFFICINAL PREP. *Infusum Caryophyllorum*, L. *Spir. Lavand. co.* D. FRAUDS. The Dutch frequently mix the best cloves with those from which the oil has been drawn.

CARYOPHILLI OLEUM. This essential oil, in consequence of the resinous matter which it holds in solution, has a specific gravity of 1·020, and consequently sinks in water. When the oil has a hot fiery taste, and a great depth of colour, it is adulterated. It is imported from the spice islands. On account of its stimulant properties, it is added to griping extracts, or used as a local application in the tooth ache. Vauquelin obtained from the leaves of the *Agathophyllum ravensara* an essential oil, in every respect similar to that of cloves.

CASCARILLÆ CORTEX. L.D. (Croton Cascarilla.)
Croton Eleutheria E.
Cascarilla Bark.

QUALITIES. *Form*, curled pieces, or rolled up into short quills; its fracture is smooth and close, of a dark brown colour; *Odour*, light and agreeable; when burning, it emits a smell resembling that of musk, which at once distinguishes it from all other barks. *Taste*, moderately bitter, with some aromatic warmth. CHEMICAL COMPOSITION. Mucilage, extractive, resin, volatile oil, and a large proportion of woody fibre. SOLUBILITY. Its active constituents are partially extracted by alcohol and water, and completely by proof spirit. MEDICAL USES. Carminative and tonic; it is an excellent adjunct to cinchona, rendering it by its aromatic qualities more agreeable to the stomach, and increasing its powers. It is valuable in dyspepsia and flatulent cholic, in

dysentery and diarrhœa, and in the gangrenous thrush peculiar to children. FORMS OF EXHIBITION. It is most efficacious in substance; it may however be given in the form of infusion, or tincture. Decoction dissipates its aromatic principle; the extract therefore merely acts as a simple bitter. (*Formulæ* 96, 99.) DOSE of the powder, grs xij to ʒss. OFFICINAL PREPARATIONS. *Infus. Cascarill.* L. *Tinct. Cascarill.* L.D. *Extract. Cascarill.* D.

CASSIÆ PULPA. L.E.D. Cassia Pulp. (Cassia Fistula, *Lomentorum Pulpa.*)

The fruit is a cylindrical pod scarcely an inch in diameter, but a foot or more in length; the exterior is a hard brown bark; the interior is divided into numerous transverse cells, each of which contains an oval seed imbedded in a soft black pulp. QUALITIES. *Odour*, faint and rather sickly. *Taste*, sweet and mucilaginous. SOLUBILITY. Nearly the whole of the pulp is dissolved by water, partially by alcohol and sulphuric ether. CHEMICAL COMPOSITION. Sugar, gelatine, gluten, gum, and a small portion of resin, extractive, and some colouring matter. USES. It is gently laxative, and is adapted for children and very delicate women, but it should be always given in combination with manna or some other laxative, or it is apt to induce nausea, flatulence and griping. OFFICINAL PREPARATIONS. *Confectio Sennæ.* L. There are two kinds of this drug in the market; that from the West Indies, the pods of which are generally large, rough, thick rinded, and contain a nauseous pulp; and that from the East Indies, which is to be

* ESSENCE OF COFFEE. The Cassia pulp is said to form the basis of this article.

preferred, and which is distinguished by smaller and smoother pods, and by their containing a much blacker pulp. The pulp ought not to have a harsh flavour, which arises from the fruit having been gathered before it was ripe, nor ought it to be sour, which it is very apt to become by keeping.

CASTOREUM, L.E.D. (Castor Fiber, (*Rossicus.*) *Castor.* *Concretum sui generis.*)

This substance is secreted by the beaver, in bags near the rectum.* QUALITIES. *Odour*, strong and aromatic. *Taste*, bitter, sub-acrid, and nauseous. *Colour*, reddish brown. CHEMICAL COMPOSITION. Volatile oil, resin, mucilage, extractive, iron, and small portions of the carbonates of potass, lime and ammonia. Laugier also detected the presence of benzoic acid. SOLUBILITY. Its active matter is dissolved by alcohol, proof spirit, and partially by water; the tincture made with alcohol is the least nauseous, and the most efficacious; the spirit of ammonia is also an excellent menstruum, and in many cases improves its virtues. FORMS OF EXHIBITION. It may be given in substance, as a bolus, or in the form of tincture, but its exhibition in the form of extract or decoction is chemically incorrect. DOSE, grs x to ℈j, and in clysters to ʒj. MEDICAL USES. It is antispasmodic, and seems to act more particularly on the uterine system. It certainly proves beneficial as an adjunct to antihysteric combinations; it was highly esteemed by Van Swieten, De Haen, and many other German practitioners. Baglivi states that it counteracts the narcotic powers of opium, but this is not the case.

* The ancients erroneously considered them as the testicles of the beaver.

Off: Prep. Tinct. Castorei.† L.E.D. Adulter: It is sometimes counterfeited by a mixture of dried blood, gum ammoniacum, and a little real castor, stuffed into the scrotum of a goat; the fraud is detected by comparing the smell and taste with those of real castor; and by the deficiency of the sebaceous follicles, which are always attached to genuine specimens. There are two kinds in the market the Russian and Canadian, the former however, which is the best, has become extremely scarce; it may be distinguished from the latter, by being larger, rounder, heavier, and less corrugated on the outside.

CATAPLASMATA. *Poultices.*

Cataplasms are generally extemporaneous preparations, and are calculated to fulfil several different indications, viz. 1, as Stimulants. *Cataplasma Sinapis*, L. D. 2, Antiseptics. *Cataplasma Fermenti.* L. A powerfully antiseptic cataplasm may be made by stirring finely powdered charcoal into a common linseed meal poultice. 3, Sedatives. The most efficient of which are composed of *Conium*, *Digitalis*, or *Hyoscyamus*. 4, Emollients. For which purpose the common farinaceous poultice is the most eligible. The consistence of a cataplasm ought to be sufficiently tenacious to prevent its spreading farther than is designed, and yet not so hard as to occasion any mechanical irritation.

Every substance, whether liquid or solid, may become an ingredient in this species of composition; and although the direction of them is more frequently left to the nurse than to the medical practitioner, yet

† Bateman's Pectoral Drops consist principally of the Tincture of Castor, with portions of camphor and opium, flavoured by anise seeds, and coloured by cochineal.

in adapting them to each particular case, some share of chemical knowledge and address will be necessary. For example, care must be taken not to reduce into pulp, by decoction, substances that contain volatile principles; and in preparing active liquids to be added to linseed meal, so as to produce a proper consistence, we ought always to be directed by their chemical composition.

CATECHU EXTRACTUM, L.E.D.

(Acacia Catechu, *Extractum.*)

Catechu. olim *Terra Japonica. Japan Earth.*

Qualities. There are two varieties of cathechu in the market, the one of a light yellowish, the other of a chocolate colour; they differ only in the latter having a more austere and bitter taste. Chemical Composition. Tannin, gallic acid, a peculiar extractive matter, mucilage and earthy impurities. Solubility. It is almost totally dissolved both by water and spirit. Incompatible Substances. Its astringency is destroyed by alkaline salts; and precipitates are produced by metallic salts, especially by those of iron. Medical Uses. It is a most valuable astringent. Forms of Exhibition. In infusion, tincture, or powder. *(Form.* 88, 90.*)* In the form of a lozenge, from its gradual solution, it may be very advantageously applied in relaxed states of the uvula and fauces; I have found this remedy successful in cases where the *sulphate of zinc* was inefficient. From its great astringency it also forms an excellent dentifrice, especially when the gums are spongy; for this purpose I have employed equal parts of powdered catechu, and peruvian bark, with one fourth the quantity of the powder of myrrh. Dose, grs. x to ℈j. Officinal Prep. *Infus. Catechu, Tinct. Catechu,* L.E.D. *Electuarium Mimosæ Catechu,* E.D.

CERA. L. E. D. *Wax.*

It is admitted into the list of the Materia Medica under two forms, viz.

1. Cera Flava. *Yellow, or Unbleached Wax.*

Qualities. *Odour*, faintly honey-like; it is brittle yet soft; when chewed, it does not, if pure, adhere to the teeth; it melts at 142°, and burns entirely away. Chemical Composition. It is the honeycomb of the bee melted with boiling water, pressed through cloth bags, and ultimately cast into round cakes for the market. Whether it be an animal product, or a vegetable substance merely collected by the bee, has been a question of dispute; the former opinion is probably correct, although wax is certainly produced as a secretion by many plants. The yellow wax contains a portion of pollen which imparts to it its colour, and increases its fusibility. Solubility. It is insoluble in water, and in cold alcohol or ether, but it is soluble in boiling alcohol and ether, in fixed oils, and in alkalies. Uses. It is chiefly employed in the composition of external applications. Adulterations. *Earth* or *peas-meal* may be suspected when the cake is very brittle, and the colour inclines to grey; *Resin* is detected by putting it in cold alcohol, which will dissolve the resinous part without acting on the wax. *Tallow* is discovered by the greater softness and unctuosity of the cake, and by its suffocating smell when melted: when this latter substance is employed, turmeric is added to disguise its paleness.

2. Cera Alba. *White, Bleached, or Virgin's Wax.*

Qualities. This substance differs only from the former, in being colourless, harder, heavier, and less fusible. Uses. It is said to be demulcent, and very useful in dysentery, but it is rarely used. Forms of Exhibition. It may be formed into a mixture by

melting it with one third of its weight of soap, and then gradually adding to it any mucilaginous liquid. ADULTERATIONS. *White Lead* may be detected by melting the wax in water, when the oxide will fall to the bottom of the vessel; *tallow* may be suspected when the cake wants its usual translucency.

CERATA, L.E. Cerates.

These compositions are characterized by a degree of consistence, intermediate between that of plasters, and that of ointments. As this consistence is obtained from the wax which they contain, they very properly derive from that substance the generic appellation of *Cerates*.

CERATUM SIMPLEX. L. A simple application to excoriations and sores.

CERATUM CALAMINÆ. L. (*Ceratum lapidis Calaminaris. P.L.* 1787. *Ceratum epuloticum. P.L.* 1745). Ceratum Carbonatis Zinci Impuri. E. Unguentum Calaminare. D.—These preparations have been long known under the name of *Turner's Cerate;* they form the basis of many extemporaneous cerates, in some of which nitric oxide of mercury, and in others, the liquor of sub-acetate of lead, are introduced.

CERATUM CETACEI. L. (*Ceratum Spermatis ceti. P. L.* 1787. Ceratum Album, P. L. 1745). Ceratum Simplex. E. It furnishes a soft and cooling dressing, and constitutes a convenient basis for more active combinations, as in the following instance.

CERATUM LYTTÆ. L. (*Ceratum Cantharides. P.L.* 1787). The basis of this preparation is spermaceti cerate *six parts*, to which is added of powdered flies *one part*: as it is intended to promote a purulent

discharge from a blistered surface, it may be reduced in strength according to circumstances.

Ceratum Plumbi Super-acetatis. L. (*Unguentum Cerussæ Acetatæ, P.L.* 1787.) This is cooling for burns, excoriations, and inflamed surfaces.

Ceratum Plumbi Compositum. L. *Cerat: Lithargyri acetati compositum. P.L.* 1787). This is "*Goulard's Cerate,*" and is applicable to the same cases as the former cerate; the camphor which enters into its composition imparts a gently stimulating power to it; it proves extremely serviceable in chronic opthalmia of the tarsus, and for the increased secretion of tears, which so frequently affects the eyes of persons advanced in years.

Ceratum Resinæ. L. (*Ceratum resinæ flavæ, P.L.* 1787. *Ceratum citrinum.* 1745. *Yellow Basilicon*). Unguent: Resinosum, E. Unguent: Resinæ albæ. D. It is stimulant, digestive, and cleansing, and affords a very excellent application for foul and indolent ulcers.

Ceratum Sabinæ. L. *Savine Cerate.* It is intended to keep up a purulent discharge from a blistered surface; in practice however it is often found to fail from the difficulty of obtaining it good, since the acrid principle of the plant is injured by long boiling, and by being previously dried; the ointment also loses its virtue by exposure to the air.

Ceratum Saponis. L. This preparation was much used and recommended by the late Mr. Pott; in preparing it the greatest possible caution is required; the fire should never be too rapidly applied, the stirring should be uniform and incessant, and the heat should only be sufficient to keep the two compositions liquid at the time when they are united. The original intention of the cerate was to afford, when spread upon linen, a mechanical support to

fractured limbs, and to keep the points of the bone in due apposition, while in consequence of the *acetate of lead* which is formed in the first stage of the process for its preparation, it possesses the virtues of a saturnine dressing. As a mechanical agent it may prove at once effectual and dangerous, for if it be applied before all inflammation and swelling have entirely disappeared, the inflamed vessels may be completely strangulated by its unrelenting pressure, and high erysipelatous inflammation and a rapid state of gangrene may be the result.

Besides the above Cerates, there are many magistral* preparations, of great practical value, and I must refer the surgical student for an account of them to that very useful little manuel, entitled "*Pharmacopœia Chirurgica.*"

CETACEUM. L. Spermaceti E. D. (Physeter Macrocephalus, *Concretum sui generis.*)

QUALITIES. *Form*, flakes, which are unctuous, friable, and white. *Odour* and *taste*, scarcely perceptible. *Sp. Grav.* 9.433. It melts at 112°. CHEMICAL COMPOSITION. It is a peculiar modification of fatty matter. SOLUBILITY. It is insoluble in water and cold alcohol, but soluble in hot alcohol, ether, and oil of turpentine, but it concretes again as the fluids cool; in the fixed oils it is completely soluble. The alkaline carbonates do not affect it, but it is partially dissolved

* KIRKLAND'S NEUTRAL CERATE. Is formed by melting together ℥ viij of Lead Plaster with f ℥ iv of olive oil, into which are to be stirred ℥ iv of prepared chalk, when the mixture is sufficiently cooled f ℥ iv of acetic acid, and ʒ iij of pulverized super-acetate of lead are to be added, and the whole is to be stirred until nearly cold.

MARSHALL'S CERATE. ℞. Palm Oil ℥ v. Calomel ℥ i, Super-acetate of Lead ℥ ss, Nitrate of Mercury ℥ ij.

in the pure alkalies, and with hot ammonia it forms an emulsion which is not decomposed on cooling. Uses. It is demulcent and emollient, but it possesses no advantages over the bland oils. Forms of Exhibition. It may be suspended in water by means of mucilage or yolk of egg. (*Formulæ* 76, 78, 79.) Officinal Prep. *Ceratum Simplex.* E. *Ceratum Cetacei.* L. *Unguent. Cetacei.* L.D. From exposure to hot air, it becomes rancid; but it may be again purified, by being washed in a warm solution of potass.

CINCHONA. L. E. D. *Bark. Peruvian Bark. Jesuit's Bark.*

Notwithstanding the labours of the Spanish botanists, the history of this important genus is still involved in considerable perplexity, and owing to the mixture of the barks of several species,* and their importation into Europe under one common name, it is extremely difficult to reconcile the contradictory opinions which exist upon the subject, nor indeed would such an investigation be consistent with the plan and objects of this work. Under the trivial name *officinalis*, Linnæus confounded no less than four distinct species of cinchona, and under the same denomination the British Pharmacopœias, for a long period, placed as varieties the three barks known in the shops; this error indeed is still maintained in the

* There are no less than twenty-five distinct species of Cinchona, independent of any additions which we may owe to the zeal of Humboldt and Bonpland; and Mr. A. T. Thomson, in his London Dispensatory, states that in a large collection of dried specimens, of the genus Cinchona, in his possession, collected in 1805, both near Loxa and Santa Fé, he finds many species which are not mentioned in the works of any Spanish botanist.

Dublin Pharmacopœia, but the London and Edinburgh colleges have at length adopted the arrangement of Mutis, a celebrated botanist, who has resided in South America, and held the official situation of Director of the exportation of bark for nearly forty years.

Cinchonæ Cordifoliæ* Cortex. L.E. Cortex Peruvianus. D. Heart-leaved Cinchona Bark, commonly called *Yellow* Bark.

Cinchonæ Lancifoliæ Cortex. L.E. Cortex Peruvianus. D. Lance-leaved Cinchona Bark, common *Quilled* bark.—*Pale* bark.

Cinchonæ Oblongifoliæ Cortex. L.E. Cortex Peruvianus. D. Oblong-leaved Cinchona Bark, called *Red* bark.

Qualities. The *odour* and *taste* of these three species are essentially the same, although they differ in intensity. They are all bitter, sub-astringent and aromatic, but the flavour of the *Yellow* bark is incomparably the most bitter, although less austere and astringent, whilst the red bark has a taste much less bitter, but more austere and nauseous than either of the other species. Chemical Composition. No vegetable substance has been more frequently, or more ably submitted to analysis, and an attempt has even been made by Vauquelin to establish a classification upon the different effects which reagents produce upon the different kinds of bark; but the intermixture of the barks, as they occur in commerce, throws insuperable obstacles in all our researches, and we are compelled to rest satisfied with general results. The following may be stated as the known

* Mr. A. Thomson regards this as the species which yields the common *pale* bark of the shops, and states, upon the authority of Mutis and Zea, that the Cinchona *Lancifolia* yields the *Yellow* bark.

constituents of cinchona. Cinchonin, (a peculiar vegetable principle discovered by Dr. Maton, and characterized by its power of producing a precipitate with the infusion of nut-galls,) resin, extractive, gluten, tannin, a small portion of volatile oil, and some salts whose base is lime, one of which is found only in *yellow* bark, and has been discovered to contain a peculiar vegetable acid, which Vauquelin denominated *kinic*, but which Dr. Duncan more properly calls *cinchonic* acid. In the *red* bark, Fourcroy detected also a portion of citric acid, some muriate of ammonia, and muriate of lime. Upon which of these principles the tonic and febrifuge virtues of bark depend, has not been satisfactorily explained. Deschamps attributes them to cinchonate of lime, and asserts that two doses of thirty-six grains each will cure any intermittent.* Westring considers tannin as the active constituent, whilst M. Seguin assigns all its virtues to the principle which precipitates tannin, and which he mistook for gelatine. Fabroni however concludes from his experiments that the febrifuge property does not belong essentially and individually to the astringent, the bitter, or any other soluble principle, since the quantity of these increases by protracted ebullition, whilst the virtues of the decoction evidently decrease. This argument however will not go far, when we learn that by long boiling, important chemical changes are produced in the liquid. In the midst of these difficulties, experience interposes her aid, and demonstrates that the virtues of bark must depend upon the combination of all its principles,

* Essential Salt of Bark. The preparation sold under this empirical title, is an extract prepared by macerating the bruised substance of bark in cold water, and submitting the infusion to a very slow evaporation.

for no preparation however carefully made or scientifically combined, will equal, in efficacy, bark in the state of powder; even the ligneous fibre, which the chemist pronounces to be inert and useless, may produce its share of benefit, by modifying the solubility of the other ingredients, or by performing some mechanical duty which we are at present unable to appreciate; and the views which I have offered in the first part of this work (p. 125) may be fairly adduced in support of such an opinion. SOLUBILITY. Cold water extracts its bitter taste, with some share of its odour; when assisted by a moderate heat, the infusion is stronger, but becomes turbid as it cools; the infusion cannot be kept, even for a short time, without undergoing decomposition, and being spoiled; wine also extracts the virtues of bark, and it is prevented by this substance from becoming sour, a fact which probably depends upon the avidity with which bark combines with oxygen, and which seems to throw some light upon the cause of its antiseptic virtues. The colouring matter of wine is precipitated by bark, as it is by charcoal in the course of a few days. By decoction the active matter of cinchona is in a great degree extracted, but if the process be protracted beyond eight or ten minutes, it undergoes a very important chemical change; it combines with oxygen, becomes insoluble, and medicinally considered, it is rendered inert; on this account, the extract is necessarily a very inefficient preparation; if we attempt to redissolve it, not more than one half is soluble in water. Vinegar is a less powerful solvent than water; the active matter of bark is rendered more soluble by the addition of mineral acids, and by the earths and alkalies, these latter bodies deepen its colour; *lime water* has been recommended as a solvent, and it

affords an excellent form for children and dyspeptic patients; for the same reason we obtain a stronger and perhaps a more efficient preparation, by triturating it with magnesia, previous to the process of infusion. Alcohol is a very powerful solvent, but the great activity of this menstruum so limits its dose that we are prevented from exhibiting a sufficient quantity of the bark in the form of tincture; it furnishes however an excellent adjunct to other preparations.

Incompatible Substances. Precipitates are produced by the *salts of iron*, *sulphate of zinc*, *nitrate of silver*, *oxymuriate of mercury*, *tartarized antimony*, *solutions of arsenic*, *&c.* Any considerable portion of a tincture produces also a precipitation, which sometimes does not immediately take place, and the medicinal value of the bark is probably not impaired by it. As the infusions of *nut-galls* and some other vegetable astringents precipitate the cinchonin from bark, it becomes a question how far such liquids are medicinally compatible; saline additions, as *alum*, *muriate of ammonia*, *&c.* have been frequently proposed, but in many of such mixtures decompositions arise which must deceive us with regard to the expected effects.

Forms of Exhibition. No form is so efficient as that of powder, but where the stomach rejects it, it must be administered in *infusion* or *decoction*, with the addition of its *tincture*. (Formulæ 92, 95, 96, 97.) In cases where it is necessary to join cordials, an infusion of bark in Port wine is a popular and very useful form for its administration.* Dose of the pow-

* It was under this form that the celebrated empiric Talbot, used to administer it in the paroxysms of Intermittents, and so successful was his practice, that Louis XIV. was induced to purchase at a large price the secret of his specific.

der, gr. v to f℥ij or more, of the infusion or decoction f℥ij. MEDICAL USES. It is powerfully tonic and antiseptic; it was introduced into practice for curing intermittent fevers, but since that period, it has been generally used in diseases of debility, in fevers of the typhoid type, and in gangrene. It was first conjectured to be useful in gout by Sydenham, and Dr. Haygarth has strongly recommended its exhibition in acute rheumatism; when however it is used in these diseases, the greatest attention ought to be paid to the state of the bowels, and purgatives should be occasionally interposed. In Dyspepsia, the use of the purer bitters is to be greatly preferred to that of the bark. OFFICINAL PREP. *Infus. Cinchonæ*, L.E.D. *Decoct. Cinchon.* L.E.D. *Extractum Cinchon.* L.E. *Extract. Cinchonæ resinosum.* L.D. *Tinct. Cinchonæ*, L.E.D. *Tinct. Cinchonæ comp.* L.E.D. ADULTERATIONS. The frauds committed under this head are most extensive; it is not only mixed with inferior barks, but frequently with genuine bark, the active constituents of which have been entirely extracted by decoction with water. In selecting cinchona bark, the following precautions may be useful; it should be dense, heavy and dry, not musty, nor spoiled by moisture; a decoction made of it should have a reddish colour when warm; but when cold, it should become paler, and deposit a brownish red sediment. When the bark is of a dark *colour* between red and yellow, it is either of a bad species, or it has not been well preserved. Its *taste* should be bitter, with a slight acidity, but not nauseous, nor very astringent; when chewed, it should not appear in threads, nor of much length; the *odour* is not very strong, but when bark has been well cured, it is always perceptible, and the stronger it is, provided it be pleasant, the

better may the bark be considered. In order to give bark the form of *quill*, the bark gatherers not unfrequently call in the aid of artificial heat, by which its virtues are deteriorated; the fraud is detected by the colour being much darker, and upon splitting the bark, by the inside exhibiting stripes of a whitish sickly hue. In the form of powder, cinchona is always found more or less adulterated. During a late official inspection of the shops of apothecaries and druggists, the Censors repeatedly met with powdered cinchona having a harsh metallic taste, quite foreign to that which characterizes good bark. Much has been said of late concerning the probability of the genuine species of the cinchona tree becoming extinct; in consequence of which some succedaneum has been anxiously sought for; the bark of the broad-leaved willow, *Salix Caprea*, has been proposed for this purpose. Vogel recommends the root of *Geum urbanum avens;* others propose that of the *Datisca canabina.*

The *Cinchona Caribæa* of the Edinburgh Pharmacopœia is said by Dr. Wright, to whom we are indebted for our knowledge of it, to have satisfactorily answered in all cases where the Peruvian bark was indicated.

M. Ré, Professor of the Materia Medica at the Veterinary School at Turin, has announced that the *Lycopus Europœus* of Linnæus, called by the peasants of Piedmont the *Herb China*, is a complete succedaneum for Peruvian Bark.* The success with which bark has been imitated by medicinal combina-

* This plant is found in abundance in Piedmont, principally in the marshes, where of course it is most needed. Nature is very kind in this respect, for the particular situation which engenders endemic diseases, is generally congenial to the growth of the plants that operate as antidotes to them.

tion has already been noticed in the first part of this work, p. 125, and in addition to what is there stated, the testimony of Dr Young may be introduced, who says, "the Ash, not being astringent, I have sometimes added to it some tormentil and ginger, with which it made an excellent tonic, and even according to the experiments of some of my friends, seemed to cure quartan agues."

CINNAMOMI CORTEX. L. E. D. (Laurus Cinnamomum.) *Cinnamon.*

All the qualities of cinnamon depend upon the presence of an *essential oil.* It is principally employed to cover the taste of nauseous medicines. ADULTERATIONS. It is sometimes intermixed with cinnamon from which the oil has been drawn; the fraud is detected by the weakness of the odour and taste of the specimen; sometimes it is mixed with *cassia*, but this is soon discovered, for cassia is thick and clumsy, breaks short, and smooth, and has a remarkably slimy taste, whereas the fracture of cinnamon is shivery, and its flavour warm and clean. Cinnamon ought not to leave a mawkish taste in the mouth, this circumstance denotes an inferior quality; there is an inferior kind imported into Europe from China, through the hands of private merchants; this is distinguished by being darker coloured, rougher, denser, and by breaking shorter; the taste is also harsher, more pungent, and ligneous, without the sweetness of the Ceylon cinnamon. DOSE of the cinnamon in powder is from grs. x to ℈j. OFFICINAL PREP. *Aqua Cinnamomi*, L.E.D. *Spir. Cinnamomi*, L.E.D. *Tinct. Cinnamomi*, L.E.D. *Tinct. Cinnamom. co.* L. *Pulv. Cinnamom. comp.* L.E.

Cinnamomi Oleum. It is principally imported from Ceylon: it 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 one of the most powerful stimulants which we possess. Dose, *m* i to iij, on a lump of sugar.

COCCUS. L.E. (Coccus Cacti.) Coccinella. D.

Cochineal.

It is an insect imported from Mexico and New Spain, and has the appearance of a wrinkled berry or seed of a deep mulberry colour, with a white powder between the wrinkles. Uses. Its medicinal virtues are now entirely discredited, and it is only employed for the sake of its colouring matter, for the purpose of a dye; it was known to the Phœnicians, and was the *tolu* of the Jews. Its watery solution is of a violet crimson, its alcoholic of a deep crimson, and its alkaline of a purple hue; the colour of the watery infusion is brightened by acids, cream of tartar, and alum, and at the same time partly precipitated. Dr. John has given the name of *Cochenelin* to this colouring principle, which M. M. Pelletier and Caventou have lately obtained in a perfectly pure state, as a very brilliant purple red powder with a granular crystalline appearance; these chemists propose to call it *Carmine*, but as Mr. Children very justly observes, if we adopt the term, its termination should be altered, to avoid confounding the pure colouring matter with the pigment in common use. It may be called *Carmina*, a more harmonious name than Cochenelin, (Ann: de Chimie, vol. viii). Incompatible Sub-

STANCES. The colouring matter is decomposed by *sulphate of iron, sulphate of zinc*, and *acetate of lead.* OFFICINAL PREP: *Tinct: Cardamom: comp:* L.D. *Tinct: Cinchon: comp:* L.D. *Tinct: Gentian, comp:* E. *Tinct: Cantharid:* D. ADULTERATIONS. It is invariably adulterated with pieces of dough, formed in moulds, and coloured with cochineal. I understand that this fraud gives employment to a very considerable number of women and children in this metropolis. A cargo of the counterfeit article was some time since exported, in order to obtain the drawback; by throwing a suspected sample into water, we shall dissolve the spurious ones, and ascertain the extent of the adulteration.

COLCHICI RADIX. L.E.D. (Colchicum Autumnale.)

The *Bulb* of the Meadow Saffron.

QUALITIES. When recent it has scarcely any *odour*, but its *taste* is bitter, hot and acrid. CHEMICAL COMPOSITION. Its properties reside in a milky juice, and depend upon an essential oil; it contains also extractive matter, which, when in solution, undergoes a chemical change, similar I apprehend to that which takes place in the infusion of Senna, and it would appear with similar inconvenience. Sir Everard Home ascertained that this deposit, in the vinous infusion, excites nausea and griping, but that it may be removed without destroying the efficacy of the medicine. An alkaline element similar to that which exists in the Hellebore *(Veratrine)*, has been lately found in it, and it moreover appears to exist in combination with gallic acid. *(Annales de Chimie, tom.* xiv. *Mai*, 1820). This alkaline body would seem to

display its greatest energies by its action upon mucous surfaces; in small portions it excites violent sneezing, and when applied to the membrane of the stomach immediate vomiting and purging are the result. The virtues of this bulb are very variable, according to the place of growth and season of the year. Since the last edition of this work, I have been favoured with some valuable observations upon this subject by Mr. Alexander Gordon; he says that it is in its greatest perfection from the beginning of June until the middle of August. † It is also necessary to extract the virtues of the bulb as soon as it is gathered, for although removed from the earth, the developing process of vegetation continues, and the substance undergoes a corresponding series of chemical changes, and finally becomes as inert as if it had remained in the ground. It is a problem of some importance to discover a method of destroying the vegetable life of the bulb, without, at the same time, injuring its virtues, for I apprehend that a want of attention to the above precaution frequently renders the vinous infusion inactive. The flower of the *meadow saffron* is very poisonous to cattle. SOLUBILITY. Vinegar and wine * are the best menstrua for extracting its active qualities; by decoction its essential oil is dissipated.

† The Profession will shortly receive from the pen of Mr. A. T. Thomson, a very complete history of this plant, deduced from an extensive series of chemical and phisiological experiments.

* EAU MEDICINALE DE HUSSON. After various attempts to discover the active ingredient of this Parisian remedy, it is at length determined to be the *colchicum autumnale* which several ancient authors, under the name of *hermodactyus*, have recommended in the cure of gout, as stated in the historical preface to this work. The following is the receipt for preparing this medicine. Take two ounces of the root of *colchicum*, cut it into slices, macerate in four fluid ounces of Spanish white wine, and filter.

Dr. WILSON'S TINTURE FOR THE GOUT. This is merely an infusion of *colchicum*, as Dr. Williams of Ipswich has satisfactorily shewn. Since the discovery of colchicum being the active ingredient of the *eau medicinale*, numerous empirical remedies have started up, containing the principles of the plant in different forms.

Medicinal Uses. It has been much extolled on the continent as a remedy in dropsy, especially in hydrothorax, and in humoral asthma; its operation however as a diuretic, is less certain than squill. As a *specific* in gout its efficacy has been fully ascertained; it allays pain, and cuts short the paroxysm. Incompatible Substances. In my opinion, acids, and all oxygenating substances render the vinous infusion drastic; on the contrary, alkalies render its principles more soluble, and its operation more mild, but not less efficacious. Magnesia may judiciously accompany its exhibition. Dose of the saturated vinous infusion, the only form in which its successful operation can be ensured, f℥ss to f℥j, whenever the patient is in pain. Officinal Prep. *Acetum Colchici* L. *Oxymel Colchici*, D. *Syrupus Colchici Autumnalis*, E.

Colchici Semina. Dr. Williams of Ipswich has lately published an account of the efficacy of the *Seeds* of Colchicum, which he says possess all the virtues of the root, without its pernicious qualities; the form in which he administers them, is in that of a vinous infusion.*

COLOCYNTHIDIS PULPA. L.E.D.

(Cucumis Colocynthis.)

Colocynth. *Bitter Cucumber.*

Qualities. The medullary part of this fruit, which is alone made use of, is a light, white, spongy body. *Taste*, intensely bitter and nauseous. *Odour*, when dry, none. Chemical Composition. Muci-

The expressed juice of the colchicum is used in Alsace to destroy vermin in the hair: it is very acrid, and excoriates the parts to which it is applied.

* This Preparation, or the Seeds, may be procured for trial, from the house of Savory, Moore, & Davidson, of New Bond Street.

lage, resin, bitter extractive, and some gallic acid. SOLUBILITY. Alcohol and water alike extract its virtues, but the active principle resides both in the portion soluble in water, and in that which is insoluble. MEDICINAL USES. It is a very powerful drastic cathartic, and was employed by the ancients in dropsical and lethargic diseases. Many attempts have been made to mitigate its violence, which is best effected by triturating it with gummy farinaceous substances, or the oily seeds; the watery decoction or infusion is much less severe, and has been recommended in worm cases, but it is rarely employed, except in combination with other purgatives. Mixed with paste or other cements, it is used to keep away insects, which it does by its extreme bitterness. DOSE, grs. iv to x. INCOMPATIBLE SUBSTANCES. The infusion is disturbed by *sub-acetate*, and *acetate of lead; nitrate of silver; sulphate of iron*, and by the *fixed alkalies*. OFFICINAL PREP. *Extract. Colocynth.* L. *Extract. Colocynth. comp.* L.D. *Pil. Aloes cum Colocynth.* D.E. When the fruit is larger than a St. Michael's orange, and has black, acute pointed seeds, it is not good.

CONFECTIONES. L. *Confections.*

Under this title the London College comprehends the *conserves* and *electuaries* of its former Pharmacopœia, and of the present Edinburgh and Dublin Pharmacopœias; but in strict propriety, and for practical convenience, the distinction between *conserves* and *electuaries* ought to have been maintained. Saccharine matter enters into each of these compositions, but in different proportions, and for different objects. In conserves it is intended to preserve the virtues of

recent vegetables; in electuaries, to impart convenience of form. See *Electuaria.*

Confectio Amygdalarum. L. This preparation affords an expeditious mode of preparing the almond emulsion; it should be used in the proportion of a drachm to each fluid ounce of distilled water.

Confectio Aromatica. L. *Electuarium Aromaticum.* E.D. This is a very useful combination of various aromatics, to which the London and Dublin colleges have added a *carbonate of lime;* this circumstance makes the preparation a judicious constituent for the exhibition of active salts, liable to be invalidated by the presence of acid in the stomach, but, at the same time, it renders it incompatible with *acids, antimonial wine, &c.* These observations do not of course extend to the *aromatic electuary* of the Edinburgh pharmacopœia.

Confectio Opii. L. *Electuarium Opiatum.* E. This is a combination of aromatics with opium, intended as a substitute for the *Mithridate,* and *Theriaca* of the old pharmacopœias. It is highly useful in flatulent cholic and diarrhœa, and in all cases where a stimulant narcotic is indicated. One grain of opium is contained in grs. 36 of the London, and in grs. 43 of the Edinburgh preparation.

Confectio Rosæ Caninæ, olim *Conserva Cynosbati.* Its acidity depends upon uncombined citric acid, a circumstance which it is essential to remember when we direct its use in combination. The hip, or fruit of this plant, beat up with sugar, and mixed with wine, is a very acceptable treat in the north of Europe.

Confectio Rosæ Gallicæ. *Confection of the Red Rose.* Principally used as a vehicle for more active medicines. It is sometimes brightened by the addition of a small proportion of sulphuric acid, this

is a circumstance of great importance, where the confection is used for making the Mercurial Pill. See *Pillulæ Hydrarg.*

Confectio Scammoneæ. L.D. It is a stimulating cathartic, and may be given in the dose of ʒss to ʒj.

Confectio Sennæ. L. E. D. olim *Electuarium Lenitivum.* It is gently laxative, and is an excellent vehicle for the exhibition of more powerful cathartics. (*Form.* 12.) When properly made, it is an elegant preparation, not apt to ferment, nor to become acescent; the directions of the pharmacopœia are however rarely followed. Jalap blackened with walnut liquor, is frequently substituted for the more expensive article cassia; and the great bulk of it, sold in London, is little else than prunes, figs, and jalap. I understand that a considerable quantity is also manufactured in Staffordshire, into which unsound and spoilt apples enter as a principal ingredient. The preparation sold at Apothecaries Hall is certainly unique in excellence. Dose ʒij or more.

The above are the principal confections which are employed in modern practice, for happily the shops are at length disencumbered of those nauseous insignificant conserves, unknown to the ancients, but which were ushered into use by the Arabian physicians, and which continued for so many years to disgrace our dispensatories and to embarrass our practice. The French, in their new Codex Medicamentarius, have limited their electuaries to a number not exceeding nine; they have however made up in complexity for deficiency in number; the *Electuarium de croco*, which is intended to answer the same ends as our confectio aromatica, has no less than twelve ingredients, although the force of the combination depends entirely upon carbonate of lime, cinnamon, and saffron, and so it is with the rest.

CONII FOLIA. L. E. Conium Maculatum.
Cicuta. D. *Hemlock.*

Qualities. The leaves, when properly dried, have a strong and narcotic odour, and a slightly bitter and nauseous taste: the fresh leaves contain not only the narcotic, but also the acrid principle: by exsiccation, the latter is nearly lost, but the former undergoes no change; the medicinal properties of the leaves are therefore improved by the operation of drying. Chemical Composition. The medicinal activity of the plant resides in a resinous element, which may be obtained in an insulated form, by evaporating an ethereal tincture made with the leaves, on the surface of water; it has a rich dark green colour, and contains the peculiar odour and taste of hemlock in perfection; a dose of half a grain will produce vertigo and head-ache. It may be distinguished by the name of *Conein.* The watery extract of this plant can therefore possess but little power, a fact which Orfila has fully established by experiment. No part of the plant is entirely destitute of efficacy, though the leaves possess the most activity. Solubility. Alcohol and ether extract its virtues. Incompatible Substances. Its energies are greatly diminished by vegetable acids; hence vinegar is its best antidote. Medical Uses. It is a powerful sedative, and has been deservedly commended for its powers in allaying morbid irritability: according to my own experience, it is, in well directed doses, by far the most efficacious of all palliatives, for quieting pulmonary irritation. It has been extolled also in the cure of schirrus and cancer, and it will without doubt prove in such cases a valuable resource, from its sedative influence. Forms of Exhibition. The

dried leaves, powdered, and made into pills, (*Form.* 116, 118.) The powder ought to have a fine lively green colour. Dose, gr. iij. gradually increased, until some effect is produced. Several different plants have been mistaken for, and employed in the place of hemlock, such as *Cicuta Virosa*, (the water hemlock.) *Æthusa Cynapium*, *Caucalis anthriscus*, and several species of *Chærophyllum*. Officinal Prep. *Extract. Conii.* L. E. D.

CONTRAJERVÆ RADIX. L. E.

(Dorstenia Contrajerva Radix.) *Contrajerva Root.*

The qualities of this plant are alike extracted by spirit and water; the watery decoction, however, is very mucilaginous; as it contains no astringent matter, the salts of iron do not affect it. Dose of the powdered root, gr. v to ʒss, but it is rarely used. Has it any virtues? The Spanish Indians have long used it as an antidote to poisons; the Spanish word *contrahiérba* signifies antidote. Officinal Prep. *Pulv. Contrajerv. co.* L.

COPAIBA. L. E. (Copaifera Officinalis.)

Balsamum Copaibæ. D.

Copaiba, *Copaiva*, or *Capivi Balsam.*

Qualities. *Consistence*, that of oil, or a little thicker. *Colour*, pale golden yellow. *Odour*, fragrant and peculiar. *Taste*, aromatic, bitter, and sharp. *Spec. Grav.* 0.950. Chemical Composition. It is improperly denominated a balsam, for it contains no benzoic acid, but consists of resin and essential oil. Solubility. It is insoluble in water, but soluble in ten parts of alcohol, and in expressed and essential oils; with the pure alkalies it forms white sapo-

naceous compounds which are soluble in water, forming opaque emulsions. MEDICAL USES. Stimulant, diuretic, and laxative; it seems to act more powerfully on the urinary passages than any of the other resinous fluids, hence its use in gleets and in fluor albus. Its use gives the urine an intensely bitter taste, but not a violet smell, as the turpentines do. FORMS OF EXHIBITION. Diffused in soft or distilled water by yolk of egg, or by twice its weight of mucilage(f℥ss to every f℥j of water, forms an elegant mixture, or it may be given dropped on sugar, and in this latter form it is certainly more disposed to act on the urinary organs, than when exhibited in that of an emulsion. ADULTERATIONS. A considerable quantity sold in London is entirely *factitious*. A curious trial took place some time since, between the owner of certain premises that were burnt down, and the Governors of the Sun Fire Office, in consequence of the latter refusing to indemnify the proprietor for his loss, because the fire had been occasioned by his *making* Balsam of Copaiba. This article is also adulterated with mastiche and oil; M. Bucholz asserts that if it does not dissolve in a mixture of four parts of pure alcohol, and one of rectified ether, we may infer its adulteration; *rape oil* is also frequently mixed with it, in which case if dropped into water, the drops will not retain their spherical form, as they invaribly will, if pure.

CORNUA. L. E. D. Cervus Elaphas.

Stag's, or *Hart's Horn.*

The horns of the stag differ only from bone, in containing less of the phosphate of lime, and a larger proportion of gelatine; by boiling, they yield a clear, transparent, and flavourless jelly, in quantity about

one-fourth of the weight of the shavings employed; to obtain which we should boil ℥iv in f℥vij of water, until reduced to f℥vj. ADULTERATIONS. This article is often sophisticated with the shavings of mutton bone; the fraud is detected by their greater degree of brittleness. They were formerly so much used for the preparation of ammonia, that it was commonly called *Salt*, or *Spirit of Hartshorn.*

CRETA PRÆPARATA. L.D.

Carbonas Calcis Preparatus. E. *Prepared Chalk.*

This is common chalk, the coarser particles of which have been removed by the mechanical operation of washing. It consists of carbonate of lime, with various earthy impurities. The Dublin Pharmacopœia directs a chemical process for obtaining a perfectly pure carbonate, *(Creta Præcipitata)*, but it appears to be an unnecessary refinement. MEDICAL USES. It is antacid and absorbent, on which account it is useful in acidities of the primæ viæ and in diarrhœas, after removing all irritating matters by previous evacuation. From its absorbent properties, it is a good external application to ulcers discharging a thin ichorous matter. DOSE, grs. x to ℈ij, or more. It is almost unnecessary to state that it must not be combined with acidulous salts; I have however seen a formula for a powder, intended as an astringent, in which chalk and alum entered as ingredients. OFFICINAL PREP. *Hydrargyrus cum creta.* L. *Pulvis cretæ comp.* L.E. *Pulv. Opiatus.* E. *Mist Cretæ.* L.E. *Trochisci Carbonatis Calcis.* E. *Confectio Aromatica.* L.E.

CROCI STIGMATA. L.E. (Crocus Sativus.) Crocus. D.
Saffron.

QUALITIES. *Form*, cakes, consisting of the stigmata of the flower, closely pressed together. *Odour*, sweet, penetrating, and diffusive. *Taste*, warm and bitterish. *Colour*, a rich and deep orange red. CHEMICAL COMPOSITION. One hundred parts consist of sixty-two of extractive, the remaining parts are chiefly ligneous fibre, with small portions of resin and essential oil. Bouillon Lagrange, and Vogel, have examined this extractive matter very accurately, and from the circumstance of its watery infusion assuming different colours when treated with different agents, they have named it *polychroite*. Thus chlorine and light destroy its colour, sulphuric acid changes it to indigo which gradually becomes lilac, and nitric acid gives it a green hue. SOLUBILITY. It yields its colour and active ingredients to water, alcohol, proof spirit, wine, vinegar, and in a less degree to æther; the watery infusion and the vinous tincture soon grow sour, and lose their properties, and the solution in vinegar becomes quickly colourless. MED. USES. It is now never employed but for the sake of its colour or aromatic flavour, as an adjunct to other substances. It is much used in foreign cookery to colour rice, &c. OFFICINAL PREP. *Syrup. Croci.* L. *Tinct. Croci sativi.* E. *Confect. Aromat.* L.D. *Pil. Aloes cum Myrrha.* L. *Tinct. Aloes comp.* L. E. D. *Tinct. Cinchonæ comp.* L.D. *Tinct. Rhei.* L. *Tinct. Rhei comp.* L. ADULTERATIONS. It is not unfrequently sophisticated with the fibres of smoked beef, or the petals of flowers, especially of the marigold, (*Calendula Officinalis,*) and of the safflower, (*Carthamus Tinctorius.*) The former of these frau-

dulent ingredients is indicated by the unpleasant odour which arises when the saffron is thrown upon live coals; the latter, by infusing the specimen in hot water, when the expanded stigmata may be easily distinguished from the other petals of substituted flowers; a deficiency of colour and odour in the infusion indicates that a tincture or infusion has already been drawn from the saffron, and that it has been subsequently pressed again into a cake. In the market is to be found saffron from Sicily, France, and Spain, besides the English; that which is imported from Spain is generally spoiled with oil, in which it is dipt with the intention of preserving it. The cake saffron sold in some of the less respectable shops, consists of one part of saffron and nine of marigold, made into a cake with oil, and then pressed; it is sold in considerable quantities for the use of birds, when in moult.

CUBEBÆ.* (Piper Cubeba.) *Cubebs.*

This Indian spice formerly held a place in our materia medica, and entered into the composition of *mithridate* and *theriaca*, but being inferior in pungency and aromatic warmth to pepper, it fell into disuse. Lately, however, it has been ushered into surgical practice for the cure of gonorrhœa, with all the extravagance of praise which usually attends the revival of an old or the introduction of a new medicine. It has been pronounced to be a specific in this complaint, if taken in the early stages, in the dose of a dessert spoonful three times a day, in a sufficient quantity of water. The Indians have been long acquainted with

* Cūbĕba—India *Cubab;* Avicennæ Kebâba. It makes short the penultima, because Actuarius and other modern Greeks call it κυπεπερ, κόμπεπερ, and κομβεβα.

the influence which cubebs exerts upon these organs; thus Garcias, "*Apud Indos cubebarum in vino maceratarum est usus ad excitandam venerem.*" As the qualities of this spice do not reside in volatile elements, an extract made with rectified spirit will be found to possess the whole of its virtues. The French, in their new *Codex Medicamentarius*, have introduced the cubebs into their list of materia medica.

CUPRI SULPHAS. L.E.D. Sulphate of Copper. vulgo *Blue Vitriol. Blue Copperas.*

QUALITIES. *Form*, crystals, which are rhomboidal prisms. *Colour*, a deep rich blue. *Taste*, harsh, acrid, and styptic; they slightly effloresce; when treated with sulphuric acid, no effervescence occurs, a circumstance which at once distinguishes this salt from *Œrugo*. CHEMICAL COMPOSITION. According to the latest experiments, it is an *oxy-sulphate*, consisting of one proportional of peroxide with two proportionals of sulphuric acid, and when crystallized, it contains ten proportionals of water; its beautiful colour depends on this last ingredient. SOLUBILITY. It is soluble in four parts of water at 60, and less than two at 212°; the solution shews an excess of acid by reddening litmus. In alcohol it is insoluble. INCOMPATIBLE SUBSTANCES. *Alkalies and their carbonates; subborate of soda; acetate of ammonia; tartrate of potass; muriate of lime; nitrate of silver; sub-acetate, and acetate of lead; oxy-muriate of mercury; all astringent vegetable infusions and tinctures.* Iron immersed in the solution, precipitates copper in a metallic form; hence the exhibition of the filings of iron has been proposed as an antidote.* MEDICAL USES. It is

* It may be here observed, that Copper, in its metallic form, exerts no action upon the system. A most striking instance of this fact oc-

emetic, from grs. ij to xv. tonic, gr. $\frac{1}{4}$; it is, however, but rarely used internally; externally it is employed as an escharotic, and, in solution, as a stimulant to foul obstinate ulcers.* OFFICINAL PREPARATIONS.

curred, during my hospital practice, in the case of a young woman who swallowed six copper penny pieces with a view of destroying herself; she was attended by Dr. Maton and myself in the Westminster Hospital for two years, for a disease which we considered visceral, but which was evidently the effect of *mechanical* obstruction, occasioned by the coin. After a lapse of five years she voided them, and then confessed the cause of her protracted disease, during the whole course of which no symptom arose which could in any way be attributed to the poisonous influence of copper. Mr. A. T. Thomson relates also two cases of halfpence being swallowed by children, in one of which the copper coin remained six months in the intestines, and in the other two months. The filings of copper were formerly a favourite remedy in rheumatism, a drachm of which has been taken with impunity for a dose. It appears therefore that metallic copper does not undergo any change in the digestive organs by which it is converted into a poison, notwithstanding the presence of substances, which, out of the body, would at once render it destructive, as we have too many cases to shew, from the careless use of copper utensils in cookery. It is, however, a very important fact, that copper cannot be dissolved while tin is coexistent in the mixture, hence the great use of tinning copper utensils; and farther, it is asserted that untinned coppers are less liable to be injurious when pewter spoons are used for stirring, than when silver ones are employed for that purpose; the explanation of this fact is obvious. For the same reason, M. Proust has shewn that the tinning of kitchen utensils, which consists of equal parts of tin and lead, cannot be dangerous from the presence of the latter metal, since it is sufficient that the lead should be combined with tin, in order to prevent it from being dissolved in any vegetable acid; for the tin, being more oxidable than the lead, is exclusively dissolved, and prevents the second from being attacked. In short, the lead cannot appropriate to itself an atom of oxygen, but the tin would carry it off in an instant.

* BATES'S AQUA CAMPHORATA.—Sulphate of copper is the base of this preparation, which was so strongly recommended by Mr. Ware. The following was his recipe: ℞. *Cupri Sulph. Boli Gallic, a. a.* gr. xv. *Camphoræ* gr. iv, *solve in aq. fervent.* f ℥ iv, *dilueque cum Aquæ Frigidæ.* oiv *ut fiat Collyrium.*

Solut. Cupri Sulphat. comp. E. *Cuprum Ammoniatum (g.)* L.E.D. *(Form. 6.)*

CUPRUM AMMONIATUM. L.D.

Ammoniaretum Cupri. E. *Ammoniated Copper.*

QUALITIES. *Form*, a violet coloured moss, which on exposure to air becomes green, and is probably converted into a carbonate. *Taste*, styptic and metalline. *Odour*, ammoniacal. CHEMICAL COMPOSITION. It is a triple salt, a sub-sulphate of oxide and copper, and ammonia. The Edinburgh College is certainly incorrect in calling it an *ammoniuret*. SOLUBILITY, f℥j of water dissolves ℈j of this salt. MED. USES. It is tonic, and antispasmodic. Dr. Cullen first proposed its exhibition in epilepsy, and it has frequently been employed with evident advantage in that disease. It has been also given in chorea, after a course of purgatives. FORMS OF EXHIBITION. It may be formed into pills with bread; to which an addition of sugar has been recommended, to prevent them from becoming hard; but we must remember that recent experiments have shewn that sugar has the power of counteracting the operation of copper. DOSE, gr. ¼ cautiously encreased to grs. v. twice a day. OFFICINAL PREPARATIONS. *Liquor Cupri Ammoniati.* L.

CUSPARIÆ CORTEX. L. (Cusparia febrifuga.)

BONPLANDIÆ TRIFOLIATÆ CORTEX. E.

ANGUSTURA, CORTEX. D.

Cusparia, or Angustura Bark.

QUALITIES. *Form*, pieces covered with a whitish wrinkled thin epidermis; the inner surface is smooth, of a brownish yellow colour. *Odour*, not strong, but

peculiar. *Taste*, bitter, slightly aromatic, and permanent. CHEMICAL COMPOSITION. Cinchonin, resin, extractive, carbonate of ammonia, and essential oil. SOLUBILITY. Its active matter is taken up by cold and hot water, and is not injured by long decoction, but the addition of alcohol precipitates part of the extractive. Alcohol dissolves its bitter and aromatic parts, but proof spirit appears to be its most complete menstruum. INCOMPATIBLE SUBSTANCES. *Sulphate of Iron; Sulphate of Copper; Oxy-muriate of Mercury; Nitrate of Silver; Tartarized Antimony; Sub-acetate, and Acetate of Lead; Potass;* and perhaps the *Mineral Acids*, for they produce precipitates, as do also the *infusions of Galls*, and *Yellow Cinchona.* MED. USES. Stimulant and tonic, it does not, like cinchona, oppress the stomach, but imparts a degree of warmth, expels flatus, and increases the appetite for food: with respect to its powers in the cure of intermittents, many doubts are entertained. FORMS OF EXHIBITION. In substance, infusion, decoction, tincture, or extract; its nauseous taste is best disguised by cinnamon. DOSE of the powder, grs. v to ℈j; of the infusion or decoction, f℥j; in large doses all the forms are liable to excite nausea. OFFICINAL PREP. *Infusum Cuspariæ.* L. *Tinctura Bonplandiæ Trifoliatæ.* E. *Tinct. Angusturæ.* D. ADULTERATIONS. There is found in the market a particular bark, which has been called FINE ANGUSTURA, but which is of a different species, and is a very energetic poison. This bark is characterised by having its epidermis covered with a matter which has the appearance of rust of iron, and which, moreover, possesses certain chemical properties of this metal, for if water acidulated with muriatic acid be agitated in contact with its powder, it assumes a beautiful green colour,

and affords with an alkaline prussiate, *(Hydrocyanate of Potass)* a Prussian blue precipitate. Late researches have detected the presence of an alkaline element in this bark, to which the name of *Brucine* has been bestowed. When this alkali is dissolved in boiling alcohol, and crystallized by spontaneous evaporation, it yields colourless and transparent crystals in the form of oblique quadrangular prisms.

DATURÆ STRAMONII HERBA. E.D.

The herbaceous part of the Thorn Apple.

This plant contains gum, resin, and carbonate of ammonia, and recent experiments have also discovered an alkaline principle, which has been designated by the name of *Daturia*. Its root, smoked in the manner of tobacco, has been much extolled as a remedy in the paroxysm of spasmodic asthma; it is, however, a dangerous application; the same transient feelings of relief may be procured by smoking a mixture of opium and any aromatic herb. It is said to be sometimes used by the Turks instead of opium, and the Chinese infuse the seeds in beer. An extract from the seeds has been recommended in this country, as being less liable than other narcotics to affect the head. I have repeatedly tried its power in pthisis, but with no advantage.

DECOCTA. L.E.D. *Decoctions.*

These are solutions of the active principles of vegetables, obtained by boiling them in water. To decide upon the expediency of this form of preparation, in each particular case, requires a knowledge of the chemical composition of the substance in question. In conducting the operation, the following rules must be observed.

1. *Those substances only should be decocted, whose medicinal powers reside in principles which are soluble in water.*

2. *If the active principle be volatile, decoction must be an injurious process; and, if it consist of extractive matter, long boiling, by favouring its oxidizement, will render it insipid, insoluble, and inert.*

3. *The substances to be decocted should be previously bruised, or sliced, so as to expose an extended surface to the action of the water.*

4. *The substances should be completely covered with water, and the vessel be slightly closed, in order to prevent, as much as possible, the access of the air: the boiling should be continued without interruption, and gently.*

5. *In compound decoctions, it is sometimes convenient not to put in all the ingredients from the beginning, 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, or oxidizable matter, enter into the composition, the boiling decoction should be simply poured upon them, and covered up until cold.*

6. *The relative proportions of different vegetable substances to the water, must be regulated by their nature; the following general rule may be admitted; of roots, barks, or dried woods from ʒij to ʒvj to every pint of water; of herbs, leaves, or flowers, half that quantity will suffice.*

7. *The decoction ought to be filtered through linen, while hot, as important portions of the dissolved matter are frequently deposited on cooling; care must be also taken that the filtre is not too fine, for it frequently happens, that the virtues of a decoction depend upon the presence of particles which are suspended in a minutely divided state.*

8. *A decoction should be prepared in small quantities only, and never employed, especially in summer, forty-eight hours after it has been made. It should be considered as an extemporaneous preparation, introduced into the pharmacopœia for the purpose of convenience, and for the sake of abridging the labour of the physician.*

It is very important that the water employed for making decoctions, should be free from that quality which is denominated *hardness*.

The official decoctions may be classed into simple and compound preparations.

1. *Simple.*

Decoctum Cinchonæ. See Cinchona. The codex of Paris directs a decoction of bark. "*Decoctum Kinæ Kinæ*," which is only half the strength of ours, but contains an addition of a small quantity of carbonate of potass.

Decoctum Cydoniæ. The inner coats of the seeds of the Quince *(Pyrus Cydonia)* yield a very large proportion of mucilage, but as hot water extracts from them also fecula and other principles, the decoction very soon decomposes. It has been strongly recommended as an application to erysipelatous surfaces. It is coagulated by *alcohol*, *acids*, and *metallic salts*.

Decoctum Digitalis. D. This is a very improper form for the exhibition of digitalis, being variable in strength.

Decoctum Dulcamaræ. D. In making this decoction we must take care that the operation of boiling is not continued too long. See *Dulcamaræ Caules*. Dose from f℥ss to f℥j.

Decoctum Lichenis. L.E.D. In this preparation

we have the bitter principle of the plant united with its fecula. A portion of the former may be removed by macerating the lichen, and rejecting the first water. If ℥j of the mass be boiled for a quarter of an hour in f℥vj of water, we shall obtain mucilage of a consistence similar to that composed of one part of gum arabic and three of water. Its exhibition requires the same precaution as that of *Mucilago Acaciæ*. Dose; a wine glass full occasionally. From the large proportion of fecula which this moss contains, it is perhaps as nutritive as any vegetable substance, the *Cerealia* of course excepted.

Decoctum Papaveris. L. In making this decoction the whole of the capsule should be bruised, in order to obtain its mucilage and anodyne principle; the seeds should be also retained, as they yield a portion of bland oil which increases the emollient quality of the decoction. A large quantity of fixed oil is constantly in the market, which is derived from the seeds of the poppy. This decoction is a useful fomentation in painful swellings, &c.

Decoctum Quercus. L. E. Decoction is the usual form in which *Oak Bark* is exhibited, since all its active principles are soluble in water. Its astringent virtues depend upon gallic acid, tannin, and extractive. The decoction is disturbed by the following substances, *the infusion of yellow cinchona; subacetate* and *acetate of lead; solutions of isinglass;* the *preparations of iron; oxy-muriate of mercury*, and *sulphate of zinc;* all *alkaline substances* destroy its astringency, and are consequently incompatible with it. It is principally useful as a local astringent, in the forms of gargle, injection, or lotion. Its internal exhibition in obstinate diarrahœas, and alvine hemorrhages, has also proved highly beneficial.

Decoctum Sarsaparillæ. L.E.D. See Sarsaparilla. In making this decoction, it is rarely properly digested or boiled for a sufficient length of time to extract its virtues. The only salts which occasion precipitates in this decoction are, *nitrate of mercury* and *acetate of lead; lime water* has the same effect.

Decoctum Veratri. Stimulant and acrid; internally, it is cathartic, but too violent to be safely exhibited; it is useful as a lotion in scabies, and other cutaneous eruptions.

2. Compound Decoctions.

Decoctum Aloes Compositum. It resembles the well known *Beaume de vie*, and is a scientific preparation, constructed upon the true principles of medicinal combination. Aloes is the base, to which are added, 1, sub-carbonate of potass, 2, powdered myrrh, 3, extract of liquorice, 4, saffron, and after the decoction is made, 5, compound tincture of cardamoms. By the 1st ingredient the aloes is rendered more soluble; the 2d and 3d suspend the portion not dissolved, and at the same time disguise its bitterness; the 4th imparts an aromatic flavour, and the 5th not only renders it more grateful to the stomach, but prevents any spontaneous decomposition from taking place. Its taste is improved by keeping. It is a warm, gentle cathartic. Dose, f℥ss to f℥j. Its operation is different from that of simple aloes. See *Aloes*. The following substances are incompatible with it; *strong acids, oxy-muriate of mercury; tartarized antimony; sulphate of zinc;* and *acetate of lead.*

Decoctum Guaiaci Compositum. E. Commonly called *Decoction of woods.* This decoction has fallen into disuse, and deservedly, for it can possess but

little power, except as a diluent, or demulcent; the water takes up from the guaiacum only a small portion of extractive matter, and the virtues of sassafras, if any, must be dissipated by decoction.

Decoctum Hordei Compositum. An elegant and useful demulcent, with an aperient tendency.

Decoctum Sarsaparillæ Compositum. L. D. This decoction, which is an imitation of the once celebrated *Lisbon Diet Drink*, differs materially from the *Decoct: Guaiaci comp:* from the addition of the mezereon root, which renders it diaphoretic and alterative, and useful in the treatment of secondary syphilis, and chronic rheumatism. Dose, from f℥iv to f℥vj three or four times a day.

DIGITALIS FOLIA. L.E.D. (Digitalis Purpurea) *Foxglove.*

Qualities. The leaves, when properly dried, have a slight narcotic *odour*, and a bitter nauseous *taste*, and when reduced to powder, a beautiful green *colour*. Chemical Composition. Extractive matter, and a green resin, in both of which its narcotic properties reside; they appear also to contain ammonia, and some other salts. Solubility. Both water and alcohol extract their virtues, but decoction injures them. Incompatible Substances. See *Infusum Digitalis.* Med. Uses. It is directly sedative, although some maintain the contrary opinion, diminishing the frequency of the pulse, and the general irritability of the system, and increasing the action of the absorbents, and the discharge by urine. The effects appear to be in a great degree connected with its sensible influence upon the body, which is indicated by feelings of slight nausea and languor; accordingly, every attempt to prevent these unpleasant effects, or to *correct* the

operation of digitalis, by combining it with aromatic, or stimulant medicines, seems to be fatal to the diuretic powers of the remedy. Dr. Blackall, in his "Observations upon the cure of Dropsies," has offered some remarks which bear upon this point, and to which I have before referred. *See Part the First, page* 107.

Several of the formulæ introduced under the class of diuretics are combinations supported by high authority, but it is doubtful whether their adoption can be sanctioned upon principle; they are however well calculated to illustrate the nature of diuretic compounds, and this is the only purpose for which they were selected. See *Form.* 31. The French have introduced in their new Codex, an ethereal tincture *Tinctura Ætherea Digitalis purpureæ*, in which the sedative influence of the plant must be entirely overwhelmed by the stimulant properties of the menstruum. The article *Potassæ Acetas* will furnish fresh matter connected with this subject, and enable me to offer some more extended views respecting the popular combinations of diuretic medicines.

Forms of Exhibition. In substance, tincture, or infusion; the latter form is most efficient as a diuretic.

Dose of the powdered leaves gr. j, in a pill, twice a day; the augmentation of the dose should proceed at the rate of one fourth of the original quantity, every second day, until its operation becomes apparent, either on the kidneys, or on the constitution generally. If it produces such a disturbance in the primæ viæ as to occasion vomiting or purging, its diuretic powers will be lost; in such a case the addition of a small portion of opium or opiate confection, may be expedient. The distressing effects of an overdose are best counteracted by tincture of opium in brandy and

water, and by the application of a blister to the pit of the stomach. OFFICINAL PREP: *Infus: Digitalis.* L.E. *Tinct: Digital:* L.E.D. *Decoct: Digitalis.* D. It is very important that the leaves of this plant be properly collected, and accurately preserved; they should be gathered when the plant is beginning to flower, and, as it is biennial, in the second year of its growth; the largest and deepest coloured flowers should be also selected, for they are the most powerful; they should be also carefully dried until they become crisp, or they will lose much of their virtue; the too common method of tying them in bundles, and hanging them up to dry, should be avoided, for a fermentation is produced by such means, and the parts least exposed soon become rotten. The powdered leaves ought to be preserved in opaque bottles, and kept from the action of light as well as of air and moisture; a damp atmosphere has, upon a principle already explained, a very injurious operation, by carrying off those faint poisonous effluvia with which its efficacy seems to be intimately connected.

DULCAMARÆ CAULES. L.D. (Solanum Dulcamara). The Twigs of *Woody Nightshade*, or *Bittersweet.*

The virtues of this plant are extracted by boiling water, but long coction destroys them; the usual and best form in which it can be administered is that of decoction or infusion. It is now rarely used except in cutaneous affections. OFFICINAL PREP: *Decoct: Dulcam:* L.

ELATERII POMA. L.E.D. (Momordica Elaterium.) *Wild*, or *Squirting Cucumber.*

This plant appears from the testimony of Dioscorides and other writers, to have been employed by the ancient physicians with much confidence and success. All the parts of the plants were considered as purgative, although not in an equal degree; thus Geoffroy "*radicum vis catharthica major est quam foliorum, minor vero quam fructuum.*" This quotation has very lately been set at rest by the judicious experiments of Dr. Clutterbuck,* which prove that the active principle of this plant resides more particularly in the juice which is lodged in the centre of the fruit, and which spontaneously subsides from it; when this substance is freed from extraneous matter, it possesses very energetic powers, and appears to me to be entitled to consideration as a distinct proximate principle which I shall venture to call *Elatin.* See *Extractum Elaterii.*

ELEMI. L.D. (Amyris Elemifera. *Resina.*) *Elemi.*

This substance is what is generally termed a *gum-resin*, that is, a compound consisting of gum, resin, and volatile oil; late researches however seem to shew that these bodies are compounds of a peculiar character, consisting of a volatile substance, something between essential oil and resin, and a constituent which posseses the properties of extractive rather than those of gum.

True Elemi has a fragrant aromatic odour, not unlike that of fennel seeds, but more potent. When powdered it mixes with any unguent; it also combines with balsams and oils, and by the aid of heat, with turpentine. Uses. It is only employed for forming the *mild digestive ointment*, which bears its name, viz. *Unguent: Elemi comp:* L.D.

* See London Medical Repository, Vol. xii. No. 67.

EMPLASTRA. L.E.D. *Plasters.*

These are solid and tenacious compounds, adhesive in the ordinary heat of the human body; they owe their consistence to different causes, viz.

1. *To a due admixture of wax or fatty matter, and resin.* e. g. *Emplast: Ceræ*, &c.

They may be said to differ only in *consistence* from liniments, ointments, and cerates; Deyeux* accordingly proposes to distinguish them by the appellation of *Solid Ointments.*

2. *To the chemical combination of the semi-vitreous oxide of lead with oils or fat*, e, g. *Emplast: Plumbi.*
3. *To the chemical action of the component parts of the plaster on each other*, as *Emplast: Ammoniaci*, &c.

Plasters are generally kept in rolls, wrapped in paper, and when to be used they are melted and spread on leather; in performing this operation the practitioner ought not to apply a heat above that of boiling water, for if metallic oxides be present the fatty matter will, at a higher temperature, reduce them, and if aromatic substances enter as ingredients they will thus suffer in their strength, besides which the fat itself will undergo a very injurious change, by a mismanaged application of heat, and the plaster will be less adhesive.

They are employed as remedies to answer two general indications; *mechanically*, to afford support to muscular parts and to prevent the access of air; and *medicinally*, to operate as stimulants, discutients, rubefacients, or anodyne applications. That by affording an artificial support to the various parts of the

* Annales de Chimie, vol. xxxiii. p. 52.

body, by the application of plasters we are capable in certain diseases of effecting much benefit, is a truth to be explained upon the principles of physiology, and is daily confirmed by the results of practice; thus by giving support to the muscles of the back, how frequently the stomach is steadied and strengthened? Diseases of the kidneys are in the same way very frequently relieved by tight bandages around the loins; the existence of an intimate connexion between the external and internal parts is strikingly exemplified by the distressing effects which are often experienced in weak habits, such as sickness, giddiness, and other uneasy sensations, from a want of any usual compression, as that of stays, under-waistcoats, &c.; where our object is simple support, we should of course select a plaster which is the most adhesive and the least irritating. Many plasters which have gained great celebrity for their curative virtues will be found to owe all their powers to their adhesiveness, such is the *Emplastrum Oxidi Ferri Rubri* of the Edinburgh Pharmacopœia, for it is impossible that the iron should communicate any tonic effect. The same observation applies to many of those empirical plasters which have at different times acquired so great a share* of popular applause.

Emplastrum Ammoniaci. L. *Ammoniacum* reduced to a suitable consistence by distilled vinegar. It adheres to the skin without irritating it, and without being attended with any unpleasant smell.

Emplastrum Ammoniaci cum Hydrargyro. L.D. The mercury in this plaster is in the state of

* A Quaker of the name of Sterry, in the Borough, prepares a plaster of this description, which is sought after with great avidity. What a blessing it would be upon the community, if every nostrum were equally innocuous!

oxidation *ad minimum.* It is discutient and resolvent, and is applicable to indurated glands, and venereal nodes, and for removing indurations of the periosteum, remaining after a course of mercury; the addition of the ammoniacum increases the stimulating and discutient powers of the mercury, which gives this plaster a superiority over the *Emplastrum Hydrargyri.* It is also powerfully adhesive.

Emplastrum Assafœtidæ. E. Emplast. Plumbi and Assafœtida, of each *two parts*, galbanum and yellow wax, of each *one part.* I have seen it useful in flatulent cholic, when applied over the umbilical region.

Emplastrum Ceræ. L. *Emplast: Simplex.* E. This is the *Emplast: Ceræ* of P.L. 1787, the *Emplast: Attrahèns* of 1745, so called because it was formerly employed to keep up a discharge from a blistered surface, and the *Emplastrum de melilolo simplex* of 1720.

Emplastrum Cumimi.* L. A valuable combination of warm and stimulant ingredients.

Emplastrum Galbani Compositum. L. D. *Emplast: Gummos.* E. More powerful than the preceding plaster. In indolent glandular enlargements of a strumous character, in fixed and long continued pains in the neighbourhood of the joints, or in anomalous or arthritic pains of the ligaments, this plaster is said to be frequently beneficial.

Emplastrum Hydrargyri. L. E. The mercury in this plaster is in the state of oxidation *ad minimum;* each dram containing about fifteen grains of mercury, *(sixteen grains, Edinb.)* It is alterative, discutient, and sometimes sialogogue; but it is inferior to the *Emplast: Ammoniac: cum Hydrargyro.*

* Cŭminum, makes long the penultima, thus

Rugosum Piper et pallentis grana *Cumini.* *Pers. Sat. 5.*

Emplastrum Lyttæ. L. *Emplast: Cantharidis vesicatoriæ.* E. D. A variety of substances has in different times been employed for producing vesication, but no one has been found to answer with so much certainty and mildness as the *Lyttæ.* All the others are apt to leave ill conditioned ulcers; true it is, that the emplastrum lyttæ will occasionally fail, but this is generally attributable to some inattention, or want of caution on the part of the person who prepares it; in spreading it, the spatula should never be heated beyond the degree of boiling water; the plaster also should be sufficiently secured on the part by slips of adhesive plaster, but it ought not to be bound on too tight; where the cuticle is thick, the application of a poultice for an hour, previous to that of the blister, will be useful, or the part may be washed with vinegar. In consequence of the absorption of the active principle of the *Lyttæ*, blisters are apt to occasion strangury and bloody urine; it has been a problem therefore of some importance to discover a plan by which such an absorption may be obviated; for this purpose, camphor has been recommended to be mixed with the blistering composition, and a piece of thin gauze has been interposed between the plaster and the skin; but it has been lately found, that ebullition in water deprives the *Lyttæ* of all power of thus acting on the kidneys, without in the least diminishing their vesicatory properties; the ordinary time required for the full action of a blister is ten or twelve hours, but if it be applied to the head, double that period will be necessary. Children, owing to delicacy of skin, are more speedily blistered, the epispastic may therefore be removed earlier. In some cases the blistered parts, instead of healing kindly, become a spreading sore; whenever this occurs, poultices are the best appli-

cations; it may arise from a peculiar irritability of the constitution, although I apprehend that it not unfrequently depends upon the sophistication of the plaster with Euphorbium. In cases where it is desirable to keep up the local irritation, it is still a question with some practitioners whether it be more adviseable to encourage a discharge from the vesicated part by some appropriate stimulant, or to renew the vesication at short intervals by repeated blisters; the latter mode is perhaps to be preferred, as being more effectual, and certainly less troublesome to the patient: it has moreover been stated,* that by a repeated application of this nature, the influence excited appears to extend much deeper, so as to derive a greater quantity of blood from the immediate neighbourhood of the vessels, or from the vessels themselves which are in a state of disease, than the influence excited by an application less stimulating upon the surface of a part already abraded. The character of the discharge would likewise appear essentially different; it being in the latter case a purulent secretion from the superficial exhalents of the surface only; in the former, a copious effusion of serum, mixed with a large portion of lymph, produced from a deeper order of vessels.

Emplastrum Opii. L.E. This plaster is supposed to be anodyne, but it is very doubtful whether the opium *can*, in such a state, produce any specific effect.

Emplastrum Picis Compositum. L. *Emplast: Picis burgundicæ*, P. L. 1787. It is stimulant and rubefacient, and is often employed as an application to the chest, in pulmonary complaints; the serous exudation however which it produces, frequently occasions so much irritation that we are compelled to remove it.

* Pharmacopœia Chirurgica, p. 89.

Emplastrum Plumbi. L. *Emplast: Oxydi Plumbi semi-vitrei.* E. *Emplast: Lythargyri.* P. L. 1787. *Emplast: commune,* 1745. *Diachylon* Simplex,* P. L. 1720. This is a very important plaster, since it forms the basis of a great many others; under the name of *Diachylon* it has been long known, and employed as a common application to excoriations, and for retaining the edges of fresh cut wounds in a state of apposition, and at the same time for defending them from the action of the air; when long kept it changes its colour, and loses its adhesive properties, and by high temperature the oxyd of lead is revived. ‖

Emplastrum Resinæ. L. Olim, *Emplast: commune adhæsivum,* P. L. 1745. Emplast: Resinosum. E. Emplast: Lithargyri cum Resina. D. It is defensive, adhesive, and stimulant.‡

Emplastrum Saponis. L.D. *Emplastrum Saponaceum.* E. The Soap Plaster is said to be a mild discutient application.

EUPHORBIÆ GUMMI-RESINA. L.

(Euphorbia Officinarum.) *Euphorbium.*

Qualities. This substance is imported from Barbary, in drops or irregular tears; its fracture is vitreous; it is inodorous, but yields a very acrid

* *Diachylon,* a διὰ et χυλος succus, i, e, *a Plaster prepared from expressed juices.* It has been asserted that all the pharmaceutical names beginning with *Dia,* are of Arabian origin, this however is not the fact; we frequently meet with the expression in Galen, η διὰ δικλάμνε ἡ διὰ δυοῖν ἀριστολοχιοῖν ἢ δί, &c. &c.

‖ At Apothecaries Hall, this plaster, as well as others, is made in a steam apparatus, which is so well regulated, that a uniform temperature of 240° Fah: is insured during the whole process.

‡ Baynton's Adhesive Plaster differs only from this preparation in containing rather less resin, six drachms only being added to one pound of the litharge plaster. This excellent plaster is sold ready spread on calico.

burning impression to the tongue. CHEMICAL COMPOSITION. It is what is termed a *gum resin*, but its acrid constituent is exclusively in that portion which is soluble in alcohol. SOLUBILITY. Water by trituration is rendered milky, but dissolves only one seventh part; and alcohol one fourth of it. USES. Internally administered, it proves very violently drastic, but is never employed except as an errhine, cautiously diluted with starch, or some inert powder. Farriers use it for blistering horses, and there is good reason to believe that it is sometimes fraudulently introduced to quicken the powers of our emplastrum lyttæ. CAUTION, in pulverizing this substance, the dispenser should previously moisten it with vinegar to prevent its rising and excoriating his face.

EXTRACTA. L. E. D. *Extracts.*

These preparations are obtained by evaporating the watery, or spirituous solutions of vegetables, and the native juices obtained from fresh plants by expression, to masses of a tenacious consistence. The London college does not arrange the extracts under the titles of *watery* and *resinous*, which is the arrangement of the Edinburgh pharmacopœia, nor under those of simple and resinous, which is the division observed in that of Dublin, but rejecting all *specific* distinctions, includes, under the *generic* appellation of extract, both the species, as well as all the *inspissated juices*. Since however the former of these arrangements will afford greater facilities for introducing the observations which it is my intention to offer, it is retained in this work.

The chemical nature of extracts must obviously be very complicated and variable, depending in a great degree upon the powers of the *menstruum* employed for their preparation; although Fourcroy and Vau-

quelin considered that *one peculiar* principle was the basis of them all, which they called *Extract*, *Extractive*, or the *Extractive Principle*. It is distinguished by the following characters, *viz.*

It has a strong taste, varying in different plants; it is soluble in water, and in alcohol when it contains water, but is quite insoluble in *absolute* alcohol and ether; its aqueous solution soon runs into a state of putrefaction; by repeated solutions and evaporations, or by long ebullition, it acquires a deeper colour, and in consequence of its combination with oxygen it becomes insoluble and inert, a fact which is of extreme importance as it regards its pharmaceutical relations; it unites with alumine, and if boiled with its salts, precipitates it, hence wool, cotton, or thread, impregnated with alum, may be dyed of a fawn colour by *extractive;* its habitudes with alkalies are very striking, combining most readily and forming with them compounds of a brownish yellow colour, which are very soluble in water; if to a colourless and extremely dilute solution of extractive, an alkali be added, a brown or yellowish tint is immediately produced, so that under certain circumstances I have found an alkali to be a serviceable test in detecting the presence of extractive matter. The usual brown hue of the *liquor ammoniæ acetatis*, is owing to the action of the ammonia upon traces of vegetable extractive contained in the distilled vinegar.

Much confusion has arisen from the word *extract* having been employed in this double meaning,—*chemically* to express a peculiar vegetable proximate principle, and *pharmaceutically* to denote any substance however complicated in its nature, which has been obtained by the evaporation of a vegetable solution or a native vegetable juice. It is in the latter sense that it is to be understood in the present article.

The different proximate principles of vegetable matter undergo various and indefinite changes with such rapidity, when acted upon by heat, that the process of *extraction* must necessarily more or less impair the medicinal efficacy of a plant, and not unfrequently destroy it altogether, and hence, says Dr. Murray, "with the exception of some of the pure bitters, as gentian, or some of the saccharine vegetables, as liquorice, there is no medicine perhaps but what may be given with more advantage under some other form;" this however is not exactly true, for when care is taken in the preparation, we are thus enabled to concentrate *many* very powerful qualities in a small space, and the process lately adopted of evaporating the solutions by the aid of steam, contributes very materially to obviate the failures which so frequently occurred from a too exalted temperature. There is, for instance, great reason to suppose that the black colour which so often characterises the extracts of commerce, is frequently owing to the decomposition and carbonization of the vegetable matter; the colour therefore of an extract becomes in some degree a test of its goodness. I have lately examined the extracts of commerce with some attention, and I find the presence of iron by no means an uncommon circumstance; when thus contaminated they afford a very dirty coloured solution, which rapidly becomes darker on exposure to air. The extracts mentioned in the preface as made by Mr. Barry, by *evaporating in vacuo*, deserve the attention of the profession; the principle is without doubt well calculated to secure the active matter of the plant from those changes to which it is constantly liable during the ordinary operation of inspissation. The extracts thus prepared, are certainly more powerful in their

effects, and some few of them appear also to possess properties which are not to be distinguished in the Extracts of Commerce; those of narcotic plants, as *Hemlock*, *Hyoscyamus*, &c. are decidedly more efficacious.

1. Watery or Simple Extracts.

Mucilaginous Extracts of Rouelle.

These extracts must of course contain all the principles of a plant which are soluble in water, such as gum, extractive matter, tannin, cinchonin, sugar, fecula, &c. together with any soluble salts which the vegetable may contain. I have also found by experiment that an aqueous extract may even contain, in small proportions, certain elements which although quite insoluble in water are nevertheless partially soluble in vegetable infusion. This law of vegetable chemistry has never been expressed, although we have repeated instances of its truth, and a knowledge of it may explain some hitherto unintelligible anomalies. It has been stated that extractive matter is perfectly insoluble in ether, but Mr. A. Thomson found repeatedly, that if a small proportion of resin was present, ether would in that case take up extractive in combination with the resin which it so readily dissolves. As Decoction or Infusion is a process preliminary to that of extraction, the practitioner must refer to those articles for an enumeration of the different sources of error which are attached to them.

Extractum Aloes Purificatum. L. The resinous element of the aloes is got rid of in this preparation, on which account it is supposed, in an equal dose, to be more purgative and less irritating. *Dose*, gr. x to xv.

Extractum Anthemidis. L. E. *Extract. Florum Chamæmeli.* D. This extract furnishes an example of the change effected on some plants by the process of extraction; in this case the volatile oil is dissipated, and a simple bitter remains possessing scarcely any of the characteristic properties of chamomile.

Extractum Cinchonæ. L. D. The properties of the bark in this preparation are much invalidated owing to the oxidizement of its extractive matter, which takes place to such an extent, that not more than one half of the preparation is soluble in water; it is not however altogether devoid of utility, and will often sit lightly on the stomach, when the powder is rejected. Its taste is very bitter, but less austere than the powder. The most beautiful extract of bark, which I have ever seen, was prepared by Mr. Barry of Plough Court, its colour was that of a deep brilliant ruby, and its flavour preserved all the characteristic peculiarity of the recent substance.* *Dose*, grs. x to ʒss. Fourteen ounces of the bark will yield about three ounces and a half of extract.

Extractum Colocynthidis. L. This extract is much milder although less powerful than pulp; *Dose*, grs. v to ʒss. It soon becomes hard and mouldy.†

* Mystery is rarely practised but as the cloak of imposture, it is therefore unnecessary to add that Mr. Barry made no difficulty in stating the following to be the formula by which it was prepared.

A tincture of Bark, made with rectified spirit, was distilled until the whole of the spirit was driven off, the remaining solution was then left to cool, after which the resin that floated on the surface was removed, and the residuum inspissated at a low temperature.

† Barclay's Antibilious Pills. Take of the *Extract of Colocynth* ʒ ij *Resin of Jalap* (extract Jalap) ʒ j, *Almond Soap* ʒ jss, *Guaiacum* ʒ iij, *Tartarized Antimony*, grs. viij, essential oils of *Juniper*, *Carraway* and *Rosemary*, of each gtt: iv, of syrup of *Buckthorn*, as much as will be sufficient to form a mass, which is to be divided into sixty-four pills.

Extractum Gentianæ. L. E. D. The bitter principle suffers no deterioration in the process: it is used principally as a vehicle for metallic preparations.

Extractum Glycyrrhizæ. L. D. It is usually imported from Spain; in the coarser kinds, the pulps of various plumbs and of prunes are added; it should dissolve in water without leaving any feculence.*

Extractum Hæmatoxyli. L.E.D. The astringent properties of the *logwood* are preserved in the extract, but it becomes so extremely hard, that pills made of it very commonly pass through the body without undergoing the least change. *Dose*, grs. x to ʒss dissolved in cinnamon water: it sometimes imparts a bloody hue to the urine of those who have taken it.

Extractum Humuli. L. The bitter taste of the hop characterises this preparation; whether it possesses or not any anodyne properties, seems very doubtful. *Dose*, grs. v. to ℈j.

Extractum Opii. L. D. As it contains less resinous matter than crude opium, it is therefore supposed to produce its effects with less subsequent derangement. See *Opium*. *Dose*, gr. j to v, for an adult.

Extractum Papaveris. L.D. It is a weak opium. *Dose*, grs. ij to ℈j.

Extractum Taraxaci. L. D. The medicinal powers of Dandelion are asserted to exist unimpaired in this preparation, but it becomes inert by keeping.

* Refined Liquorice. This article, which is sold in the form of cylinders, is made by gently evaporating a solution of the pure extract of liquorice with half its weight of gum arabic, rolling the mass, and cutting it into lengths, and then polishing, by rolling them together in a box: many impurities however are fraudulently introduced into this article, such even as *glue*, &c.

See *Taraxacum*. *Dose*, grs. x to ʒj, in combination with sulphate of potass.

2. *Spirituous or Resinous Extracts.*

These may contain, with the exception of gum, all the ingredients contained in watery extracts, besides resin; their composition however will greatly depend upon the strength of the spirit employed as the solvent; but of this I shall speak more fully under the article *Tincture*.

Extractum Cinchonæ Resinosum. L.E.D. The operation of spirit in this preparation is two-fold; it extracts from the bark the element which is insoluble in water, and it diminishes the tendency in the extractive matter to absorb oxygen during the process. *Dose*, grs. x to xxx.

Extractum Colocynthidis compositum. L. D. *Extract. Catharticum*. P.L. 1775. *Pilulæ Rudii*. P.L. 1720. This preparation has been established through successive pharmacopœias, and has undergone some modification in each; in the present edition the soap has been omitted, and its solubility is thereby decreased, and its mildness as a cathartic diminished; The omission of this ingredient was suggested by the consideration of its being incompatible with *Calomel;* this however is *not* the case. It presents a combination of purgative substances which is highly judicious, and will be found to be more powerful than an equivalent dose of any *one* of the ingredients. *Dose*, gr. vj to ʒss.

Extractum Jalapæ. L. E. D. It is purgative, but is liable to gripe, unless it be triturated with sugar and almonds, or mucilage, so as to form an emulsion. *Dose*, *grs.* x to ℈j.

Extractum Rhei. L. The powers of the Rhubarb are considerably impaired in this extract. *Dose*, gr. x to ʒss.

3. *Inspissated Juices.*

These preparations are obtained by expressing the juice of fresh plants, and evaporating them in a water bath; they are generally of a lighter colour than common extracts, and they are certainly much more active, although there is a great difference in the activity of different samples; and perhaps the *medicinal* powers of the juices themselves are very much under the control of soil and season. That they vary *in quantity* from such causes we have ample proof; thus in moist seasons, Baumé obtained five pounds of inspissated juice from thirty pounds of *elder berries*, whereas, in dry seasons, he could rarely get more than two. From *hemlock* he procured in October, 1796, 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, as much as 6.5; but in general, the product in the autumnal months was the most considerable.

The modes of preparing the inspissated juices of the same plant vary in the different pharmacopœias, and in several points that are very *essential;* some direct the expressed juices to be *immediately* inspissated, others allow them to undergo a slight degree of fermentation, and some *defecate* them, before they proceed to their inspissation.

Extractum (*Succus Spissatus.* E.) Aconiti. L.E. The medicinal properties of this preparation are analogous to those of the recent *Wolfsbane*, viz. narcotic, and in some cases diuretic. It is however rarely used. *Dose*, at first, should not exceed gr. ½, but it may be gradually increased.

Extractum Belladonnæ. L.E. See *Belladonnæ Folia. Dose*, gr. j, gradually increased to gr. v, in the form of a pill.

Extractum (*Succus Spissatus.* E. D.) Conii. L. Much of this extract, as it is found in commerce, has not been prepared with equal fidelity, nor with due attention to the season when the plant is in its greatest perfection; Dr. Fothergill says, "I know from repeated experiments, that the extract which has been prepared from *hemlock*, before the plant arrives at maturity, is much inferior to that which is made when the plant has acquired its full vigour, and is rather on the verge of decline: just when the flowers fade, the rudiments of the seeds become observable, and the habit of the plant inclines to yellow, *is the proper time* to collect it;" the plants which grow in places exposed to the sun should be selected, as being more *virose* than those that grow in the shade: still however with every precaution, it will always be uncertain in strength. Orfila found that an extract prepared by boiling the dried powder in water, and evaporating the decoction, was inert; in fact, the whole of the activity of the plant resides in a resinous element *insoluble* in water, and for which I have proposed the name of *Conein.* Extract of hemlock, when judiciously prepared, is a very valuable sedative; I state this from ample experience, and when combined with Hyoscyamus, and adapted by means of mucilage and syrup, to the form of a mixture, it affords a more effectual palliative than any remedy with which I am acquainted, for coughs and pulmonary irritation. *Dose*, grs. v to ℈j or more, twice or thrice a day; in a full dose it produces giddiness, a slight nausea, and a tremor of the body; a peculiar heavy sensation is also experienced about the eyes; and the bowels become gently relaxed: unless some of these sensations are produced, we are never sure that the remedy has had a *fair trial* of its effects. Patients will generally bear a larger

dose at night than at noon, and at noon than in the morning.

Extractum Elaterii. L. This substance spontaneously subsides from the juice of the wild cucumber, in consequence I presume of one of those series of changes which vegetable matter is perpetually undergoing, although we are hitherto unable to express them by any known chemical law. It is therefore not an *extract*, either in the chemical or pharmaceutical acceptation of the term, nor an *inspissated juice*, nor is it a *fecula*,* as it has been termed; the Dublin College has perhaps been most correct in simply calling it *Elaterium*, the name given to it by Dioscorides.

It occurs in commerce in little thin cakes or broken pieces, bearing the impression of the muslin upon which it has been dried; its *colour* is greenish, its *taste* bitter, and somewhat acrid; and when tolerably pure, it is light, pulverulent, and inflammable.

The early history of this medicinal substance is involved in great perplexity, each author speaking of a different preparation by the same name; for instance, the *Elaterium* of Dioscorides must have been a very different substance from that of *Theophrastus*; and, wherever Hippocrates mentions the term, he evidently alludes to *any* violent purgative. "*Hippocrati Elaterium medicamentum est quod per alvum expurgat.*" *(Bod: in Theophrast.)* This will, in some degree, reconcile the discordant testimonies of different authors, with regard to the powers of *elaterium;* for

* The juices of *iris root*, *arum root*, and *bryony root*, and those of many other plants, allow their medicinal elements to separate and subside in a similar manner, leaving the super-natant liquid perfectly inert; if we must have a generic name to express such substances, it should be termed a *feculence*, rather than a *fecula*.

example, Dioscorides states its dose to be from grs. ii to ℈j—in Ætius, Paulus, and Actuarius, it is recommended to the extent of ʒss—in Mesue from ℈ss to ℈j—in Bontius *(Med: Ind:)* from ℈j to ʒss—Massarias exhibits it in doses of grs. vj—Fernelius and Senneretus to ℈j—Herman from grs. v to vij—Quincy to grs. v—and Boerhaave does not venture to give more than grs. iv—and the practitioners of the present day limit their dose from gr. ½ to grs. ij. Dr. Clutterbuck, with a laudable intention to discover some method of procuring this article at a cheaper rate, and at the same time of discovering some process which might ensure a preparation of more uniform strength, has lately performed a series of interesting and instructive experiments,* the results of which prove in a satisfactory manner "that the active principle of this plant is neither lodged in the roots, leaves, flowers, nor stalks, in *any considerable quantity;* nor is it to be found in the body of the fruit itself, or in the seeds, but in *the juice around the seeds;* the substance which spontaneously subsides from this liquor, obtained without pressure, is *genuine* Elaterium, the quantity of which, contained in the fruit, is extremely small, for Dr. Clutterbuck obtained only six grains from *forty* cucumbers. This gentleman communicated the detail of these experiments to the President of the College of Physicians, who requested me, as professor of Materia Medica, to report upon them. I accordingly deemed it to be my duty to enter upon a series of new experiments, which I have lately completed, with the able assistance of Mr. Farraday, in the laboratory of the Royal

* "*Observations on the Nature and Preparation of the Elaterium,*" read at the Medical Society of London, April 24, 1819, and which were published in the Medical Repository, vol. xii. No 67.

Institution. The results of which will shew, that although Dr. Clutterbuck found that an *eighth* part of a grain of elaterium seldom failed to *purge violently*, yet, strange as it may appear, that *not more than one grain in ten* of elaterium, as it occurs in commerce, possesses any active properties, and that this decimal part is a vegetable proximate principle, not hitherto noticed, to which I shall give the name of ELATIN. I shall subjoin the detail of my experiments and I think it will appear, that their results will authorise me to express the chemical composition of Elaterium in the following manner.

	F.	Water	·4
I.	B.	Extractive	2·6
	B.DJ	Fecula	2·8
	C.	Gluten	·5
	K.	Woody matter . . .	2·5
	H.	*Elatin*	1·2
	G.	Bitter Principle . . .	
			10 grains.

Proximate Analysis of Elaterium.

Experiments. Series 1st.

A.

Ten grains of Elaterium, obtained from a respectable Chemist, and having all the sensible properties which indicated it to be genuine, were digested for twenty-four hours with distilled water, at a temperature far below that of boiling; *four grains* only were dissolved.

B

The solution was intensely bitter, of a brownish yellow colour, and was not in the least disturbed by alcohol, although a solution of *Iodine* produced a blue colour; the solution therefore contained no gum, and only *slight traces* of starch.

C.

The solution, after standing twenty-four hours, yielded a *pellicle* of insoluble matter, which when burnt appeared to resemble *Gluten*.

D.

The six grains which were insoluble in water, were treated for forty-eight hours with alcohol of the specific gravity ·817, at 66° of

Fahrenheit; a green solution was obtained, but by slow evaporation *only half a grain* of solid green matter was procured. The insoluble residue obstinately adhered to, and coated the filtre like a varnish, and completely defended the mass from the action of the alcohol, it is probable that it consisted principally of *Fecula.*

Experiments. Series 2nd.

E.

Ten grains of Elaterium, from the same sample, were treated with alcohol of the specific gravity ·817, at 66°. *Fah:* for twenty-four hours; upon being filtered, and the residuum washed with successive portions of alcohol, the Elaterium was found to have lost only 1.6 of a grain. The high specific gravity of the alcohol in this experiment was important, had it been lower, different results would have been produced.

F.

The alcoholic solution obtained in the last experiment, was of a most brilliant and beautiful green colour, resembling that of the oil of cajeput, but brighter; upon slowly evaporating it, 1.2 grains of solid green matter was obtained.

G.

The solid green matter of the last experiment was treated with boiling distilled water, when a minute portion was thus dissolved, and a solution of a most intensely bitter taste, and of a brownish yellow colour, resulted.

H

The residue, insoluble in water, was inflammable, burning with smoke and an aromatic odour, not in the least bitter; it was soluble in alkalies, and was again precipitated from them unchanged in colour; it formed, with pure alcohol, a beautiful tincture, which yielded an odour of a very nauseous kind, but of very little flavour, and which gave a precipitate with water; it was soft, and of considerable specific gravity, sinking rapidly in water; circumstances which distinguish it from common resin; in very minute quantities it purges. It appears to be the element in which the purgative powers of the Elaterium are concentrated, and which I have denominated ELATIN.

I.

The residuum, insoluble in alcohol, weighing 8.4 grs. (*Expt.* E) was boiled in double distilled water, when 5.9 grs. were dissolved.

J.

The above solution was copiously precipitated *blue* by a solution of *Iodine*, and was scarcely disturbed by the *Per-sulphate of Iron.*

K.

The part insoluble, both in alcohol and water, which was left after Experiment I, amounted to 2.5 grains; it burnt like wood, and was insoluble in alkalies.

It appears that the whole of the *Elatin* does not separate itself from its native juice by spontaneous subsidence, and that, on this account, the supernatant liquor possesses some powers as a cathartic. We cannot be surprised therefore that the Elaterium of commerce should be a very variable and uncertain medicine; for, independent of the great temptation which its high price holds out for adulterating it, which is frequently done with starch, it necessarily follows that where the active principle of a compound bears so small a proportion to its bulk, it is liable to be affected by the slightest variation in the process for its preparation, and even by the temperature of the season; where pressure is used for obtaining the juices, a greater or less quantity of the inactive parts of the cucumber will be mixed with the *Elatin*, in proportion to the extent of such pressure, and the *Elaterium* will of course be proportionally weak.* There is one curious result obtained in my experiments which deserves notice, *viz.* that there is a *bitter* principle in the Elaterium, very distinct from its extractive matter, and totally unconnected with its activity, for I diluted the solution obtained in experiment G, and swallowed it, but it produced upon me no effect, except that which I generally experience upon taking a powerful bitter,—an increased appetite;

* When it has a dark green colour, approaching to black, is compact, and very heavy, and breaks with a shining resinous fracture, we may reject it as an inferior article.

Since the publication of my experiments upon the ordinary Elaterium of Commerce, I have been favoured by Mr. Barry, with the results of his trials upon the Elaterium made by W. Allen & Co. according to the improved process of Dr. Clutterbuck; of the first sample, he found that out of ten grains, 5·5 were soluble in spirit of the specific gravity ·809, of the second 6·2, and of the third 6·4; of that prepared by the same process at Apothecaries' Hall, 6 grs. were soluble. The residue, insoluble in the spirit, was administered to a patient, and ascertained to be perfectly inert. This report confirms beyond a doubt the great superiority of the Elaterium when prepared, *without pressure*, according to the suggestion of Dr. Clutterbuck.

and yet notwithstanding this fact, when in combination with *Elatin*, it is far from being inert, since this latter body is considerably quickened by its presence. See part 1, page 112. The solution B was given to a person, but no effect whatever ensued. *Dose* of good Elaterium, as it occurs in commerce, is about two grains, or it is better to give it only to the extent of half a grain at a time, and to repeat that dose every hour until it begins to operate. It is probably, when thus managed, the best hydragogue cathartic which we possess; it differs however from the class of remedies to which it belongs, for it excites the pulse and whole animal system, so as to produce a considerable degree of febrile action. It was strongly recommended by Sydenham, Lister and Hoffman, and all their cotemporaries and immediate successors, as a valuable remedy in dropsy, but in consequence of some fatal results from its improper application, it was driven from practice with a violence that marks prejudice rather than conviction; one author in descanting upon its virulence, exclaims "*Elaterium esse in catalogo diaboli quo necat homines.*" For its restoration to medicine, we are indebted to Dr. Ferriar, of Manchester, who used it with great success in the cure of Hydrothorax.

Extractum (*Succus Spissatus.* E.D.) Hyoscyami, L. This preparation is certainly powerfully narcotic, and tends to relax rather than astringe the bowels; where the constitution is rebellious to opium, it furnishes a more valuable resource to the practitioner, than any other narcotic extract. *Dose* gr. v. to ℈j, in pills.

Succus Spissatus Lactucæ Sativæ. E. This preparation has not yet found its way into the London Pharmacopœia; but as considerable interest has been

excited with regard to its sedative properties, by the testimony of Dr. Duncan and others, I may be allowed to introduce it in the present work. In the memoirs of the Caledonian Horticultural Society, various suggestions are offered as to the best mode of obtaining an extract from the milky juice of the garden Lettuce, to which Dr. Duncan has bestowed the name of "LACTUCARIUM;" it was first recommended to take the milk with cotton, afterwards with a sponge, and more recently with a painter's brush; all these methods however are attended with considerable difficulty, and the juice cannot be collected in any quantity. Mr. Probart, a chemist in Great Portland Street, has lately cultivated large plantations of the lettuce, for the purpose of instituting experiments upon the subject, and I am happy in being enabled through his liberality, to introduce in this place, an account of the process which he pursues, and which he considers the only one by which the article can be brought into the market at any reasonable price.*

* "I have the Cos Lettuce planted about eight inches asunder in rows, between which there is sufficient space to enable persons to pass up and down without injuring the plants. I commence my operations just before the plant is about to flower, by cutting off an inch of the stem; the milky juice immediately exudes, and is collected on pieces of *Wove Cotton*, about half a yard square. As soon as this becomes charged, it is thrown from time to time into a vessel containing a small quantity of water, which when sufficiently impregnated is evaporated at the common temperature of the atmosphere, by exposure in a number of shallow dishes. The LACTUCARIUM, in a few hours, is found adhering to the vessels in the form of an Extract, but differing from every other in all its sensible properties: this method enables me to collect LACTUCARIUM with great facility and dispatch, but it is still attended with considerable expence, as the proportion of milky product is necessarily very small, and the price of the medicine consequently high, and therefore not within the reach of general practice. This consideration led me to make farther experiments, for the purpose of ascertaining whether an EXTRACT might not be obtained from the plant possessing all the properties of Lactucarium, when administered in larger doses, and which could be introduced at a comparatively trifling cost. In prosecuting this inquiry, I found that the plants contain most of the milky juice when they have flowered and the leaves are beginning to assume

In concluding the history of Inspissated juices, it deserves notice that the London College uniformly directs that the *feculence* should be preserved in the compound; there can be no doubt of the propriety of of such advice, but the Colleges of Edinburgh and Dublin reject it. The French Codex gives directions for two extracts from each of these substances, one containing what they please to denominate the *fecula*, the other not, thus there is "*Extractum Cicutæ absque Fecula*," and "*Extract: Cicut: cum Fecula.*" There is one curious fact respecting these *narcotic* preparations, that most, if not all of them, contain *nitre*, *common salt*, and *muriate of potass*.

Manufacturing chemists, in order to give a smooth and glossy appearance to their Extracts, generally add to every lbj, about ʒss of gum, ʒj of olive oil, and ♏xx of rectified spirit: there is no harm in the practice.

a yellow hue, and I observed that when cut down, the milky juice assumes for the most part a concrete form, having subsided in the bark of the stalk and in the old leaves, a circumstance which accounts for the extreme bitterness of these parts. I was naturally led from these circumstances to choose the above period for my operations, and to select those parts only of the plant for my extract, rejecting the substance of the stalk, and the young sprouts. My method of procuring the extract is as follows. I first macerate the parts in water, for twenty-four hours, and then boil them for two, after which I allow the clear decoction to drain through a sieve, without using any pressure; this is then evaporated, as far as it can be done with safety, and the process is finished in shallow dishes, in the manner above described, for obtaining Lactucarium. This extract, which I have called "EXTRACTUM LACTUCÆ CONCENTRATUM," is of course less powerful than *Lactucarium*, but it possesses all the properties in larger doses, and it has been found equally useful in a number and variety of cases, and is not more than a sixth part of the price.

The "*Succus Spissatus Lactucæ sativæ*," of the shops, must of necessity be almost inert, since it is commonly prepared at that period, when the plant contains none, or very little of the milky juice; and even if the Lettuce be employed at a more mature season, it must still fail to afford an extract of any strength, as it is merely the expressed juice, and that too of *the whole plant* indiscriminately, and will be found to contain a very minute proportion of *Lactucarium*, the great bulk being nothing more than inspissated green juice.

FERRI SUB-CARBONAS. L. CARBONAS FERRI PRÆCIPITATUS. E. CARBONAS FERRI. D.

Carbonate of Iron.

In the former Pharmacopœia of London, a sub-carbonate of iron was prepared, under the name of *ferri-rubigo* (rust of iron), by exposing iron filings to the action of air and water; and although the Colleges of Edinburgh and Dublin still retain this mode of preparation, yet they admit at the same time of another which, like the *sub-carbonate* of the present London Pharmacopœia, is produced by precipitation. QUALITIES. *Form*, a chocolate brown powder. *Odour*, none. *Taste*, slightly styptic. CHEMICAL COMPOSITION. Mr. Phillips has shewn that this precipitate is liable to vary, according to the temperature at which it is prepared, as well as from other differences of manipulation; it consists of mixtures of peroxide, protoxide, and sub-carbonate of protoxide of iron, in various proportions. SOLUBILITY. It is insoluble in water, but acids dissolve it with effervescence. FORMS OF EXHIBITION. In powder or pills, combined with aromatics. DOSE, gr. v to xxx. *(Form.* 124.*)*

FERRI RAMENTA ET FILA. L. FILA ET LIMATURA. E. FERRI SCOBS. D.

Iron Filings and Wire.

Iron seems to be a metal that proves active in its *metallic* state; its filings may be given in the form of powder, conjoined to some aromatic, or what is perhaps more eligible, in the form of an electuary. DOSE. Grs. v to ʒss. IMPURITIES. Iron filings should be carefully purified by the application of the magnet, since those obtained from the work-shops are generally mixed with copper and other metals. For pharma-

ceutical purposes, iron wire should be preferred as being the most pure, since the softest iron only can be drawn, and Mr. Phillips has shewn us, in his experiments upon the "*Ferrum Tartarizatum*," that soft iron is more easily acted upon by Tartar.

FERRI SULPHAS. L. SULPHAS FERRI. E.D. Ferrum Vitriolatum. P. L. 1787. Sal Martis. P. L. 1745. Sal, seu Vitriolatum Martis. P. L. 1720. *Sulphate of Iron*, formerly *Green Vitriol.*

QUALITIES. *Form*, crystals, which are rhomboidal prisms, transparent, and of a fine green colour; when exposed to the air they effloresce, and at the same time become covered with a yellow powder, owing to the attraction of oxygen; when exposed to heat, they undergo watery fusion, and at a higher temperature, the acid is driven off and the peroxide of iron alone remains, which in commerce is known by the name of *Colcothar*. CHEMICAL COMPOSITION. According to Dr. Thomson, it consists of 27·7 of sulphuric acid, 28·3 of protoxide of iron, and 45 of water; 8 parts, however, of this water, exist in combination with the oxide of iron. SOLUBILITY. It is soluble in two parts of water at 60°, and three-fourths at 212°. The solution reddens vegetable blues. It is insoluble in alcohol; when however the iron is farther oxidized, it becomes soluble in that menstruum. INCOMPATIBLE SUBSTANCES. Every salt whose base forms an insoluble compound with sulphuric acid; *the earths, the alkalies, and their carbonates; borate of soda; nitrate of potass, muriate of ammonia; tartrate of potass and soda; acetate of ammonia; nitrate of silver; sub-acetate and acetate of lead; and Soaps.* Whether the medicinal virtues of a salt of iron are injured by combination with astringent vegetable matter, seems to admit of doubt. Such substances have been usually ranked

amongst the *incompatibles*, but I am disposed to think without sufficient grounds, for I have frequently witnessed the salutary effects of iron when exhibited in this questionable state of combination—may not the absorbents be more disposed to take up iron, when combined with vegetable matter, than when it is presented in a more purely mineral form? MED. USES. Tonic, astringent,* emmenagogue, and anthelmintic; in large doses, it occasions griping in the bowels. DOSE, gr. j to v, combined with rhubarb, or some bitter extract. *(Form:* 10, 24.*)* If given in solution, the water should be previously boiled, or the oxygen contained in the atmospherical air, which is diffused through it, will partially convert the salt into an *oxy*-sulphat, and render it insoluble. OFF. PREP. *Mist: Ferri comp: (g)* L. *Pil: Ferri comp: (g)* L.

FERRUM AMMONIATUM. L. MURIAS AMMONIÆ ET FERRI. E.D.

Ferrum Ammoniacale, P.L. 1787. *Flores Martiales. P.L.* 1745. *Ens Veneris. P.L.* 1720.

QUALITIES. *Form*, crystalline grains, which deliquesce; *Colour*, orange yellow; *Odour*, resembling that of saffron; *Taste*, styptic. CHEMICAL COMP: This is a very variable composition; depending upon the degree of heat and length of time employed for its preparation. It seems to be a mixed mass, consisting of sub-muriate of ammonia and sub-muriate of iron, the metal being in the state of red oxide; and, Mr. Phillips states that in the London preparation a portion of sub-carbonate of ammonia is necessarily present. SOLUBILITY, f℥j of water dissolves ʒiv of

* EATON'S STYPTIC. Calcined green vitriol ʒ fs, proof spirit, tinged yellow with oak bark, oj.

AROMATIC LOZENGES OF STEEL. These consist of sulphate of iron, with a small proportion of the tincture of *Cantharides*.

it; it is also very soluble in alcohol. MED. USES. It is tonic, emmenagogue, and aperient, but it is so uncertain in its composition and effects that it is rarely used. OFFICINAL PREP: *Tinct: Ferri Ammon:* L. IMPURITIES. These are indicated by the dull and pale yellow colour of the salt; it may be purified by re-subliming it.

FERRUM TARTARIZATUM. L.
TARTRAS POTASSÆ ET FERRI. E.
TARTARUM FERRI. D.

QUALITIES. *Form*, a powder of a brownish green colour; *Odour*, none; *Taste*, slightly styptic; it attracts humidity from the atmosphere, but does not deliquesce. CHEMICAL COMPOSITION. Mr. Phillips has devoted much attention to this subject, and he states that as it is frequently prepared, it is a mere mixture of metallic iron with super-tartrate of potass, coloured by oxide of iron; when however it is made with more care, a chemical compound results which is either a triple salt, or one of those combinations which cream of tartar forms with metals, and of which I have spoken under the article *Antimonium Tartarizatum*. SOLUBILITY. It is very soluble in water, and the solution remains for a great length of time without undergoing any change, except that of depositing *tartrate of lime*, which is an incidendal impurity in the supertartrate of potass. INCOMPATIBLE SUBSTANCES. *All strong acids; lime water; hydro-sulphuret of potass; astringent vegetables? The fixed alkalies and their carbonates* decompose the solution very slowly, unless heated; but *ammonia* and its *sub-carbonate* produce upon it no effect whether it be hot or cold; this fact, observes Mr. Phillips, will enable us to exhibit iron in solution with an alkali, without the occurrence of any preci-

pitate. Forms of Exhibition. The perfect preparation, from its tendency to deliquesce, cannot be well ordered in the form of powder; that of solution is probably the most judicious. It is supposed to add to its chalybeate virtues those of a diuretic nature. Dose, grs. x to ʒss.

FILICIS RADIX. L.E.D. (Asphidium Filix, Mas.)

Root of the *Male Fern.*

Qualities. This root is nearly inodorous; its taste slightly bitter, sweetish, sub-astringent and mucilaginous; as it contains no volatile ingredient, it may be given in decoction, but on account of its astringency, it must not be conjoined with a *chalybeate.* Dose, as an anthelmintic, ʒj to ʒiij, followed by a cathartic; its use however is superseded by more powerful and certain vermifuges. This root is sometimes boiled in ale to flavour it.

GALBANI GUMMI RESINA. L. E. D.

Galbanum.

Qualities. *Form*, variegated masses, of a yellowish brown colour; *Odour*, fetid; *Taste*, bitter and acrid. Chemical Composition. It is one of those vegetable products to which the name of *gum-resin* has been given, *see Elemi.* Solubility. Water, wine, and vinegar, by trituration, take up one fourth of its weight, and form a milky mixture, which is deposited by rest; a permanent suspension, however, may be effected by the intermedium of egg or of gum arabic, for which purpose the galbanum will require half its weight of gum. Alcohol takes up one fifth of its weight, and a golden yellow tincture results, which has the sensible qualities of the galbanum, and becomes milky on the addition of water, but no precipitate

falls. A mixture of two parts of rectified spirit and one of water, will dissolve all but the impurities. By distillation, galbanum yields half its weight of volatile oil, which at first has a blue colour. MED. USES. It is an antispasmodic, expectorant, and deobstruent, and in a medical classification, might be placed between ammonia and assafœtida. FORMS OF EXHIBITION. No form is preferable to that of pill. *(Formula*, 71.*)* OFFICINAL PREP. *Pil. Galbani comp.* L. *Pil. Assafœtid. comp.. (b)* E. *Pil. Myrrh. co.* D. *Tinct. Galb.* D. *Empl. Galb.* D. *Emplast. Galb. co.* L. *Emplast. Assafœtid. (b)* E. *Emplast. Gummos.* E.

GALLÆ L.E.D. (Cynips Quercus folii Nidus.) *Gall Nuts.*

QUALITIES. *Form.* Excrescences, nearly round and of different magnitudes, smooth on the surface, but studded with tuberosities; they are heavy, brittle, and break with a flinty fracture. *Odour*, none; *Taste*, bitter and very astringent. SOLUBILITY. The whole of their soluble matter is taken up by forty times their weight of boiling water. Alcohol, by digestion, dissolves .7, and æther .5 of their substance. The watery infusion possesses all the properties of the gall nut, and reddens vegetable blues. CHEMICAL COMPOSITION. Is at present involved in some obscurity; it contains tannin, gallic acid, a concrete volatile oil, and perhaps extractive and gum. M. Braconnot has also lately discovered in the gall nut a new acid, which he calls *Ellagic acid*, from the word *galle* reversed, a nomenclature which it must be confessed is at least free from the objections urged against that which is founded upon chemical composition. *(See Annales de Chimie. vol. ix. p.* 187,

new series; also Children's Essay on Chemical Analysis, p. 276.) INCOMPATIBLE SUBSTANCES. The infusion and tincture of galls possess habitudes with which it is very important for the medical practitioner to be acquainted, not only for the purposes of directing their exhibition with success, but because the elements which impart to them their characteristic traits, viz. *Gallic acid* and *Tannin*,* are very widely diffused through the products of the vegetable kingdom, and will be found to be constantly active in their chemical, medicinal, and pharmaceutical applications. Metallic salts, especially those of iron, produce precipitates with infusion of galls, composed of tannin, gallic acid, and the metallic oxide; of these compounds the *tanno-gallate of iron* is the most striking, being of a black colour; those of *sub-acetate* and *acetate of lead* are greyish; *tartarized antimony* produces a yellowish; *sulphate of copper* a brown; *sulphate of zinc* reddish black; *nitrate of silver*, a deep olive; and *nitrate of mercury*, a bright yellow precipitate; *the oxy-muriate of mercury* produces only an opacity. *Sulphuric acid* throws down a yellowish curdy precipitate, *muriatic* a flaky and white one, and *nitric acid* merely modifies the colour of the infusion, although it destroys its astringency; the solution of *ammonia* occasions no precipitate but renders the colour deeper, the *carbonate* however throws down a precipitate; the carbonates of the *fixed alkalies* produce a yellowish flaky, and *lime water* a copious deep green precipitate. The *tannin* in the infusion of galls is precipitated by a

* Seguin first proved that gallic acid, and tannin or the astringent principle, are different substances; it is to the former that the property of giving a black colour to the solutions of iron is owing.

* Mr. Hatchett has shewn that *tan* or *tannin* may be artificially produced by the action of nitric acid upon various vegetable substances.

solution of isinglass or of any other animal jelly, by that of starch, and by many metallic oxides. MEDICAL USES. Galls are most powerfully astringent. FORMS OF EXHIBITION. In that of powder, (*Form.* 88,) in combination with other astringents, or with aromatics and bitters; as a local remedy the gall-nut enters into gargles and injections; for *blind* piles, an ointment composed of 2½ parts of finely powdered galls, and a small proportion of opium, with three parts of simple ointment as an excipient, offers a very valuable resource. DOSE, for internal exhibition, grs. x to ℈j, or more. OFFICINAL PREP. *Tinct. Gallarum.* E.D. OBSERV. Those which are small, protuberant, bluish, and heavy, are the best, being those which have been collected before the *larvæ* within them had changed to the state of fly, and eaten their way out; a white, or a red hue indicates an inferior quality, and are those from which the insect has escaped. Aleppo galls are the most valuable, as being the most astringent.

GENTIANÆ RADIX. L.E.D.

(Gentiana Lutea, *Radix.*) *Gentian Root.*

QUALITIES. *Form*, wrinkled pieces of various length and thickness; *Odour*, not particular; *Taste*, intensely bitter, but not nauseous. CHEMICAL COMPOSITION, resin, a small portion of oil, bitter extractive, and a proportion of tannin; it contains also mucilage, in consequence of which the infusion frequently becomes ropy. SOLUBILITY. Its virtues are extracted by water and alcohol; proof spirit is perhaps its most perfect menstruum. See *Infus. Gentian. comp.* MEDICAL USES. It is tonic and stomachic, and its use

for such purposes is of ancient date; * in dyspepsia, hysteria, and in all cases where a vegetable bitter is indicated, it will be found a serviceable remedy. Dose, in substance, from grs. x to ʒj. Officinal Prep: *Extract: Gentian.* L.E.D. *Infusum Gentianæ comp.* L.E.D. *Tinct. Gentian comp.* L.E.D.‡ *Vinum Gentianæ compositum.* E.

GLYCYRRHIZÆ RADIX. L.E.D.

(Glycyrrhiza Glabra).

Liquorice Root. Stick Liquorice.

Qualities. *Taste*, sweet and mucilaginous. Chemical Composition: with a peculiar modification of saccharine matter *(Glycion)*, or sugar in its purest form, for it is not fermentable; on which account it is added to beer for the purpose of imparting a sweet taste, and at the same time enabling it to keep better. Solubility. Water extracts both its principles, but by long coction it becomes bitter; alcohol extracts only its saccharine matter. Medical Uses. It is principally employed as a demulcent in combination with other mucilaginous vegetables; the root will yield nearly half its weight of extract. Liquorice covers the taste of some unpalatable medicines more effectually than any other substance. Officinal Prep: *Decoct: Sarsaparill: comp:* L.D. *Infus: Lini*, L. *Extract: Glycyrrhizæ.* L.E.D. *Confectio*

* It takes its name from Gentius, king of Illyria, its discoverer, who was vanquished by Anicius the Roman Prætor, A.U. 585. i.e. A.C. 167, so that it is neither to be found in Hippocrates nor Theophrastus.

‡ Brodum's Nervous Cordial consists of the tinctures of *Gentian*, *Calumba*, *Cardamom* and *Bark*, with the *Compound Spirit of Lavender*, and *Wine of Iron.*

Stroughton's Elixir. Is a tincture of *Gentian*, with the addition of *Serpentaria*, *Orange Peel*, *Cardamoms*, and some other *aromatics.*

Sennæ. † L.E. ADULTERATIONS. The powdered root is generally sophisticated with flour, and sometimes with powdered guaiacum; the fraud may be detected by its colour being a fine pale, instead of a brownish yellow, and by its reduced or foreign flavour.

GRANATI CORTEX. L.E.D. (Punica Granatum / *Pomorum Cortex*)

Pomegranate Bark.

What has been said respecting the Gall nut, applies with equal truth to this substance.

GUAIACI RESINA ET LIGNUM. L.E.D.

(Guaiacum Officinale).

The Resin Wood of Guaiacum.

A. THE WOOD.

QUALITIES. This wood is heavier than water, and emits when heated an aromatic odour; *Taste*, bitterish and sub-acrid; to extract its virtues long decoction is required. It has enjoyed great reputation as a specific in the venereal disease; it was imported into Europe in 1517, and gained immediate celebrity from curing the celebrated Van Hutten; long before this period, however, it was used by the natives of St. Domingo. Boerhaave, so late as the eighteenth century, maintained its specific powers. It seems probable that the discipline which always accompanied its exhibition, such as sweating, abstinence, and purga-

† PECTORAL BALSAM OF LIQUORICE. The Proprietor of this nostrum gravely affirms that f ℥ iss contains the virtues of a *whole pound* of Liquorice root; but upon investigation it will be found to consist principally of *Paregoric* Elixir, very strongly impregnated with the *Oil of Aniseed.*

tion, might be the means, in the warmer climates, of effecting cures which were attributed to the guaiacum. OFFICINAL PREP: *Decoct: Guaiaci comp:* E. *Decoct: Sarsaparill: comp:* L.D.

B. THE GUAIAC, *or Resin.*

QUALITES. *Form*; it has the aspect of a gum-resin; *Colour*, greenish brown; it is easily pulverized, and the powder, which is at first grey, becomes green on exposure to air and light, which appears to depend upon the absorption of oxygen; when heated, it loses its colour; it melts by heat; and has a *sp: grav:* of 1·2289. SOLUBILITY. *Water* dissolves out of it about 9 per cent. of extractive matter; *alcohol* 95, and *ether* 40 parts in a hundred. The *alkaline* solutions and t heir *carbonates* dissolve it readily; *Sulphuric acid* dissolves it with scarcely any effervescence, and affords a solution of a rich claret colour; *Nitric acid* dissolves it with a copious extrication of nitrous fumes; *Muriatic acid* dissolves a small portion only; but in all these cases the guaiacum is decomposed; the acids are therefore incompatible with it. CHEMICAL COMPOSITION. The experiments of Mr. Hatchett demonstrate that it is a substance *sui generis*, and not a resin, or gum-resin. MED: USES. Stimulant, diaphoretic,* and in large

* THE CHELSEA PENSIONER. An empirical remedy for the rheumatism is well known under this name; it is said to be the prescription of a Chelsea Pensioner, by which Lord Amherst was cured; the following is its composition—*Gum Guaiac:* ʒ j *Powdered Rhubarb:* ʒ ij—*Cream of Tartar:* ℥ j—*Flowers of Sulphur*: ℥ ij—*One Nutmeg*, finely powdered; made into an Electuary with one pound of *Clarified Honey.* Two large spoonfuls to be taken night and morning.

WALKER & WESSEL'S JESUIT DROPS. This is nothing more than the *Elixir Anti-venereum* of Quincey, consisting of *Guaiacum*, *Balsam of Copaiba*, and *Oil of Sassafras*, made into a Tincture by Spirit.

HATFIELD'S TINCTURE. Guaiac and Soap, equal parts, ʒ ij—Rectified Spirit oiss.

HILL'S ESSENCE OF BARDANA. Guaiac ℥ j—Spirit f ℥ iij.

doses, purgative. FORMS OF EXHIBITION, in that of bolus; or diffused in water, by means of one half of its own weight of gum arabic. DOSE, gr. x to ʒss. OFFICINAL PREP: *Mist: Guaiac:* L. *Tinct: Guaiac.* L.E.D. *Tinct: Guaiac: Ammoniat:* L.E.D. *Pulv: Aloes comp: (d)* L.D. ADULTERATIONS. *Common resin* may be detected by the turpentine emitted when the guaiac is thrown upon hot coals; *Manchinal gum*, by adding to the tincture a few drops of sweet spirit of nitre, and diluting with water; the guaiac is thus precipitated, but the adulteration floats in white striæ.

HÆMATOXYLI LIGNUM. L.E.D.

(Hæmatoxylon Campechianum). *Logwood.*

QUALITIES. The wood is hard, compact, and heavy. *Odour*, none; *Taste*, sweet, and astringent; *Colour*, deep red. CHEMICAL COMPOSITION. The colouring matter of this wood has been very recently submitted to a rigid examination; and the name of *Hematin* has been given to it; it affords small brilliant crystals of a reddish white colour, and slightly astringent, bitter, and acrid flavour; sulphuretted hydrogen passed through its solution in water, gives it a yellow colour, which disappears in a few days. Gelatine throws it down in reddish flakes. The habitudes of Logwood are curious with respect to mutability of colour. The recent infusion, made with distilled water, is yellow, but that with common water has a reddish purple colour, which is deepened by the alkalies, and changed to yellow by the acids; various salts precipitate it; *acetate of lead; alum*; the *sulphates of copper and iron; tartarized antimony; and sulphuric, muriatic, nitric, and acetic acids*, are on this account incompatible with it. MED. USES.

It is supposed to be astringent, and is therefore given in protracted diarrhœas, and in the latter stage of dysentery. OFFICINAL PREP. *Extract: Hæmatoxyli.* L.

HELLEBORI FŒTIDI FOLIA. L.

(Helleborus Fœtidus). HELLEBORASTER. D.

The Leaves of Fœtid Hellebore.

As this plant is merely retained in the list of materia medica on account of its anthelmintic properties, it might be well dispensed with, since we possess many others which are much more safe as well as efficacious.

HELLEBORI NIGRI RADIX. L.E.D.

*The Root of Black Hellebore. Melampodium.** *Christmas Rose.*

QUALITIES. The fibres of the root are the parts employed; they are about the thickness of a straw, corrugated, externally of a deep dark colour, hence the epithet *black*; internally white, or of a yellowish hue. *Odour*, unpleasant; *Taste*, bitter and acrid. CHEMICAL COMPOSITION. Its qualities appear to reside in volatile oil, gum, and resin. SOLUBILITY. Both water and alcohol extract its virtues, but the spirituous solution is the most active; long coction diminishes its powers, hence the watery extract acts more mildly than the root. MED. USES. It is a drastic cathartic, and proves therefore an emmenagogue, and hydragogue. FORMS OF EXHIBITION.

* MATTHEW'S PILLS, STARKEY'S PILLS. Of the Roots of *Black Hellebore*, *Liquorice*, and *Turmeric*, equal parts, *purified opium*, *Castille soap*, and *syrup of saffron*, the same quantity, made into pills, with *oil of turpentine*.

It is seldom given in substance, but in the form of tincture or extract; or in that of decoction, made with two drachms of the root to a pint of water. Dose of the powdered root, grs. x to ℈j; of the decoction, f℥j. Officinal Prep. *Tinct: Hellebori Nigri.* L.E.D. *Extractum Hellebori Nigri.* E.D. Adulterations. The roots of the poisonous aconites are often fraudulently substituted; this is easily discovered, for the aconite is lighter coloured than the palest specimens of black hellebore; it is safe therefore to choose the darkest.

HORDEI SEMINA. L.E.D. (Hordeum Distichon. *Semina, tunicis nudata.*)

Hordeum Perlatum. *Pearl Barley.*

Barley is formed into *Pearl Barley*, by the removal of its husk or cuticle, and afterwards by being rounded and polished in a mill. These well known granules consist chiefly of fecula, with portions of mucilage, gluten, and sugar, which water extracts by decoction, but the solution soon passes into the acetous fermentation; the bran of barley contains an acrid resin, and it is to get rid of such an ingredient, that it is deprived of its cuticle. Officinal Prep: *Decoct: Hordei.* L.E.D. *Decoct: Hord: comp:* L.D.

HUMULI STROBILI. L.E. (Humulus Lupulus *Stroboli Siccati.*)

The Strobiles of the Hop.

Chemical Composition. Resin, extractive, gum, volatile oil, tannin, an ammoniacal salt, and a bitter principle. Solubility. Boiling water, alcohol, and ether extract their virtues; but by decoction

their aromatic flavour is lost; like most bitters, the cold is more grateful than the warm infusion; its colour is deepened by alkalies, and rendered turbid by the mineral acids; metallic salts also produce decomposition. MED. USES. Hops have been said to be tonic, narcotic, and diuretic; they have been recommended in the cure of rheumatism; and, like many articles in the materia medica which have received the sanction of respectable practitioners, they have been extolled far beyond their merit. They undoubtedly possess the advantages of a pleasant bitter, combined with a feeble narcotic; the late Mr. Freake was very sanguine as to their powers, and at his request I made a series of experiments at the Westminster Hospital, but I confess that their results have not established my confidence in their efficacy. OFFICINAL PREP. *Extract: Humuli.* L. *Tinct. Humuli.* L. Their use as a preservative of beer is well known, and the philosophy of their agency is fully described in the first part of this work, *(page* 125); it is equally notorious, that various vegetable substances are daily substituted for them, such as *Quassia** and *Wormwood*, both of which are inferior to the *Menyanthes Trifoliata*, or *Marsh Trefoil.* The people of Jersey are said to use the wood sage, *Teucrium Scorodonia*, it imparts however a very high colour to the beer. During the first four years that the Cape of Good Hope was in possession of the British, more than 300,000 pounds of Aloes were imported into England; how could such a quantity be con-

* A Compound consisting of *Extract of Quassia* and *Liquorice*, is used by fraudulent brewers to economise both malt and hops, and is technically called "MULTUM." An Extract of *Cocculus Indicus* is sold under the name of "BLACK EXTRACT," for imparting an intoxicating quality to the Beer.

sumed? except, as Mr. Barrow states, by the London Porter brewers; it must however be allowed that a considerable quantity of this article is used by the Varnish makers.

HYDRARGYRUM.* L.D. HYDRARGYRUS. E. Olim, Argentum vivum. *Mercury*, or *Quicksilver*.

Mercury, in its metallic state, is never applied to any medical use, except in visceral obstruction, in hopes of forcing a passage by its gravity; but under various forms of preparation, it affords a series of very active remedies. ADULTERATIONS. With the exception of Peruvian Bark, there is perhaps no active article in the materia medica more shamefully adulterated; its impurity is at once indicated by its dull aspect; by its tarnishing, and becoming covered with a grey film; by its diminished mobility, in consequence of which its globules are unable to retain the spherical form, and therefore *tail*, as it is technically expressed. *Lead* is discovered by dissolving it in nitric acid, and adding to the solution, water impregnated with sulphuretted hydrogen, when, if lead be present, a dark brown precipitate will ensue. *Bismuth*, by pouring the nitric solution into distilled water, when it will appear as a white precipitate. *Zinc*, by exposing the mercury to heat. *Tin* is detected by a dilute solution of nitro-muriate of gold,

* Ὑδραργυρος of the Greeks, from its fluidity and colour.

Quicksilver. Quick in the old Saxon tongue signifies *living*, an epithet derived from its mobility.

Mercury. Mythologists inform us that he was the winged messenger of the Gods, and the Patron of Thieves,—What name therefore could be more appropriate for the metal in question than that of this Deity? for it is not only distinguished from all other metals by its mobility, but its universal agency has rendered it the resource of those worst of Thieves,—Quacks and Nostrum-mongers.

which throws down a purple precipitate. The presence of lead in mercury is a most dangerous circumstance; I have once witnessed a case of *cholica pictonum* in consequence of it. The usual mode of purifying quicksilver, by pressing it through chamois leather, will not separate the lead, if it be, as is generally the case, in combination with bismuth; for the manner in which the adulteration is effected, is by melting with a gentle heat these two metals, and adding the alloy to the mercury, and although this alloy should exceed one-fourth of the whole bulk, it will pass, together with the mercury, through chamois leather. On standing, the bismuth will be thrown upon the surface, in the form of a dark powder, but the lead will remain in solution. The greatest part of the mercury of commerce comes from Istria and Friuli and from the Palatinate, and as it passes through the hands of the Dutch, we must expect to receive it in a state of alloy. On a superficial examination, it ought not, when shaken with water, to impart to it any colour; when agitated or digested with vinegar, it should not communicate a sweetish taste; and when exposed in an iron spoon to heat, it ought to evaporate entirely. The French are so well aware of the mischievous extent to which this metal is falsified, that in their late Codex they direct the reduction of the *red oxyd* in order to obtain it; the process however is far too expensive for general adoption. The Italian Jews purify quicksilver for their barometers, by digesting it in dilute sulphuric acid, which is by no means an improper process. The mode directed for the purification of mercury by the London College, *(Hydrargyrum Purificatum)* is unable to separate it *completely* from its more deleterious contaminations. It is a general opinion in

Germany, that mercury boiled in water will impart to it an anthelmintic virtue; this, if it happens, can only depend upon the impurities of the mercury; but large draughts of cold water are in themselves anthelmintic.

HYDRARGYRUM PRÆCIPITATUM ALBUM. L. SUBMURIAS HYDRARGYRI AMMONIATUM. D. *White Precipitate.*

QUALITIES. *Form*, an impalpable powder of a snowy whiteness; *Odour* and *Taste*, none. CHEMICAL COMP. It is a triple compound of oxide of mercury 81, muriatic acid 16, ammonia 3 parts. SOLUBILITY. It is insoluble in water, and in alcohol; when triturated with lime water it does not become black. It is only used in combination with lard as an ointment. OFFICINAL PREP. *Unguent: Hydrarg: præcipitati albi.* L.D.

HYDRARGYRUM CUM CRETA. L.D.

Mercury with Chalk.

This is mercury slightly oxydized by trituration, and mixed with chalk. Grs. iij contain about one grain of mercury. DOSE, grs. v. to ʒss. It is a mild and excellent mercurial, and has been known to cure syphilitic affections, when the constitution had proved rebellious to every other form of preparation. Dr. George Fordyce committed a great error, when he denied to this compound any mercurial efficacy.

HYDRARGYRI NITRICO-OXYDUM. L. OXYDUM HYDRARGYRI RUBRUM PER ACIDUM NITRICUM. E. OXYDUM HYDRARGYRI NITRICUM. D. *Nitric Oxyd of Mercury—Red Precipitate.*

QUALITIES. *Form*, small scales of a bright red

colour; *Taste*, acrid and corrosive. CHEMICAL COMPOSITION. It is strictly speaking a *sub-nitrate* of mercury, for if it be boiled for a short time with six times its weight of water, the liquor when filtered yields a precipitate with ammonia. SOLUBILITY. It is quite insoluble in water, but soluble in nitric acid, without any effervescence. USES. It is used only externally, as an escharotic. OFFICINAL PREP. *Unguent: Hydrargyri Nitrico-oxyd:* L. E. D. ADULTERATIONS. *Red Lead* may be detected by digesting it in acetic acid, and adding sulphuret of ammonia, which will produce a dark-coloured precipitate: it should be totally volatilized by heat.

HYDRARGYRI OXYDUM CINEREUM. L.E.

PULVIS HYDARGYRI CINEREUS. D.

Grey Oxyd of Mercury.

QUALITIES. *Form*, an impalpable grey coloured powder, which becomes paler on exposure to air and light. *Odour* and *taste*, none. CHEM. COMPOSITION. When properly prepared it is protoxide of mercury, but as frequently found in the shops, it contains a mixture of the triple salt consisting of oxide of mercury, ammonia and nitric acid. It is rarely used. OFFICINAL PREP. *Unguent. Oxid. Hydrarg. ciner.* E.

HYDRARGYRI OXYDUM RUBRUM. L.

OXYDUM HYDRARGYRI. D.

Red Oxyd of Mercury.

The *Precipitate per se* of the older Chemists.

QUALITIES. *Form*, minute crystalline scales, of a deep red colour, inodorous, but acrid and caustic; it is soluble in several of the acids without decomposition; it is also slightly soluble in water. USES. It is

very active as a mercurial, and has been a favourite remedy with John Hunter and other celebrated practitioners; it is however apt to affect the stomach and bowels, and is therefore now rarely employed except as an external application. Dose. gr. j. combined with opium gss. Adulterations. It is seldom adulterated, as it would be difficult to find a substance suited to this purpose. If well prepared it may be totally volatilized by heat.

HYDRARGYRI OXY-MURIAS. L.

Murias Hydrargyri Corrosivus. E.D.

Oxy-muriate of Mercury.

Corrosive Muriate of Mercury. Corrosive Sublimate.

Qualities. *Form*, a crystalline mass, which is easily pulverized, and undergoes a slight alteration by exposure to air, becoming on its surface opaque and pulverulent. *Odour*, none. *Taste* very acrid, with a metallic astringency. Chemical Composition. According to the latest views, it is a *Bi-chloride* of mercury, consisting of one proportional of mercury, to two proportionals of chlorine. In the French codex, it is termed "*Deuto-Chloruretum Hydrargyri.*" Solubility. It is soluble in eleven parts of cold, and in three of boiling water, and in four parts of alcohol; it is also very soluble in ether; indeed this latter liquid has the curious property of abstracting it from its solution in water, when agitated with it. Its solution in water is greatly expedited by the addition of a few drops of rectified spirit, or of muriatic acid. In a solution of muriate of ammonia it is thirty times more soluble than in water, no decomposition however arises; it is therefore probable that a triple salt is formed; it is also soluble in the sulphuric, nitric, and muriatic acids, and may be obtained again unal-

tered, by simply evaporating the solutions. Its watery solution is said to change to green vegetable blues, but this is an optical fallacy, *see page* 144. INCOMPATIBLE SUBSTANCES. The *carbonates of the fixed* alkalies precipitate it of a yellow hue, but the precipitates are not pure oxides; *ammonia* forms with it a white triple compound. *Lime water* decomposes it more perfectly than any alkaline body, occasioning a precipitate of a deep yellow colour,* which is a per-oxyd of mercury containing a little muriatic acid; this result forms a useful lotion to ill-conditioned ulcers, and has been long known under the title of *Aqua Phagadenica;* f℥j of lime water should be employed for the decomposition of two grains of the salt. *Tartarized antimony*, *nitrate of silver*, *acetate of lead*, *sulphur*, *sulphuret of potass*, and *soaps*, decompose it. *Iron*, *lead*, *copper*, *bismuth*, and *zinc*, in their metallic state, also decompose it, producing precipitates which consist of an amalgam of the metal employed, with calomel; hence mortars of glass or earthenware should be used for dispensing this article; when triturated with olive oil, the oil becomes white, and when boiled with it, *calomel* is precipitated; the same happens if sugar be substituted for the oil; the volatile oils reduce it. The following vegetable infusions produce precipitates, viz. *the infusions and decoctions of chamomile*, *horse-raddish root*, *calumba root*, *catechu*, *cinchona*, *rhubarb*, *senna*, *simarouba*, *oak bark*, *tea* and *almond emulsion*. Swediaur observes, that "many authors have recommended *sublimate* combined with bark, but that a reciprocal decomposition is thus produced, by which the energies of both remedies are alike annulled;" to this ignorance, however, he

* If the quantity of Lime water be small, the precipitate will assume a red colour, and will be found to be a *a Sub-muriate of the peroxyd.*

thinks that many patients have been indebted for their lives; for, says he, "I see every day examples of weak and very delicate persons of both sexes, to whom ignorant practitioners prescribe, and sometimes in very large doses, the *corrosive sublimate*, with a decoction of bark, certainly without curing the syphilis, but at the same time without occasioning those grave and dangerous symptoms, which that acrid medicine would certainly produce, if given alone, or without that decoction." MEDICAL USES. It is one of the most acrid and active of all metallic preparations; in well directed doses however, it is frequently of service in secondary syphilis, and in cases of anomalous disease, when it would be improper to administer the other forms of mercury;* its exhibition should be accom-

* As this salt has been supposed to arrest the progress of syphilis more rapidly, and at the same time, to excite the salivary glands less than any other preparation of mercury, it generally forms the basis of those dangerous nostrums, which are advertised for the *cure of Syphilis, without Mercury*. The contrivers hope also to elude detection by the density and colour of the preparation.

GOWLAND'S LOTION. Is a solution of *sublimate* in an emulsion formed of bitter almonds, in the proportion of about gr. jss to f ℥ j. A solution of this mercurial salt in Spirit of Rosemary, is also sold as an empirical cosmetic.

NORTON'S DROPS. A disguised solution of corrosive sublimate.

WARD'S WHITE DROPS. This once esteemed Anti-Scorbutic was prepared by dissolving mercury in nitric acid, and adding a solution of carbonate of ammonia, or frequently they consisted of a solution of *sublimate* with carbonate of ammonia.

SPILSBURY'S ANTISCORBUTIC DROPS. Of *Corrosive Sublimate* ʒ ij. *Prepared Sulphuret of Antimony* ʒ j. *Gentian root* and Orange *peel*, equal parts ʒ ij. *Shavings of Red Saunders*, ʒ j, made with a pint of proof spirit into a tincture, which is to be digested and strained.

"THE ANTIVENEREAL DROPS," so famous at Amsterdam, were analysed by Scheele, who found that they were composed of muriate of iron, with a small proportion of *corrosive sublimate*.

MARSDEN'S ANTISCORBUTIC DROPS. A solution of *sublimate* in an infusion of Gentian.

panied with mucilaginous drinks; when an overdose has been taken the *white* of egg, diluted with water, is the best antidote, for Orfila has found that albumen decomposes it, reducing it to the state of mild muriate, whilst the compound which it forms with it is inert. More recently vegetable gluten, as existing in wheat-flour, is said to answer as well as Albumen; for the administration of which all that is required is to give wheat-flour and water. Dose, gr. $\frac{1}{8}$ to $\frac{1}{2}$, *see*

Green's Drops. The basis of these also is *sublimate*.

Solomon's Anti-Impetigines. A solution of *sublimate*.

Rob Anti-syphilitique, *par M. Laffecteur, Medicin Chemiste*. This popular nostrum of the French contains as a principal ingredient, *corrosive sublimate*. A strong decoction of the *Arundo Phragmitis*, (the *bullrush*) is made, with the addition of *sarsaparilla* and *anniseeds* towards the end, which is evaporated and made into a rob, or syrup, to which the *sublimate* is added.

Sirop de Cuisiniere. This consists of decoctions of *sarsaparilla burrage flowers, white roses, senna*, and *anniseed*, to which *sublimate* is added, and the whole is then made into a syrup with sugar and honey.

Terre Feuilletee Mercurielle *of Pressavin*. This is *Tartarized Mercury*, for it is made by boiling the oxyd of mercury (obtained by precipitating it from a nitric solution, by potass) with *cream of tartar*.

Velno's Vegetable Syrup. There is great obscurity with respect to the genuine composition of this nostrum; it is supposed to consist of sublimate rubbed up with honey and mucilage. I have reason however to believe that it contains *antimony*, and the syrup of marsh mallows. Swediaur says that volatile alkali enters into it as an ingredient; this alkali was proposed by Dr. Peyrile, as a substitute for mercury, and it constitutes the active ingredient of the following composition, which was proposed by Mr. Besnard, Physician to the King of Bavaria.

Tinctura Antisyphillitica. *Sub-carb. potass*, lbj. dissolved in *Aq. Cinnam*, oj. *Opii puri*, ℥ ij, dissolved in *Spir cinnamom.* f ℥ iv. mix these separate solutions, and put them on a water bath for three weeks, taking care to shake the vessel frequently; to this add *Gum arabic* ℥ ij, *Carb. Ammoniæ* ℥ j, dissolve in *Aq. Cinnamomi;* mix, filter, and keep for use. Dose, twenty-four drops three times a day, in a glass of the cold decoction of Marsh Mallow root.

The external use of these drops is also advised for local syphilitic complaints!

Liquor Hydrargyri Oxy-muriatis. CAUTION. The salt, as it is partially decomposed by light, should be kept in opaque bottles. ADULTERATIONS. It ought to be volatilized by heat; it is frequently met with in commerce, contaminated with muriate of iron, sometimes with arsenic; the presence of calomel is at once discovered from its insolubility. TESTS OF ITS PRESENCE. If any powder be suspected to contain this salt, expose it to heat in a coated tube, as directed in the treatment of arsenic, but without any carbonaceous admixture, when corrosive sublimate, if present, will rise and line the interior surface with a shining white crust. This crust is then to be dissolved in distilled water, and assayed by the following tests; 1st, *lime water* will produce, if the suspected solution contains this salt, a precipitate of an orange yellow colour. 2nd, a single drop of a dilute solution of *sub-carbonate of potass* will at first produce a white precipitate, but on a still farther addition of the test, an orange coloured sediment will be formed. 3rd, *sulphuretted water* will throw down a dark coloured precipitate, which when dried and strongly heated may be volatilized without any alliaceous odour. A very ingenious application of galvanic electricity has been also proposed by Mr. Silvester, for the detection of *corrosive sublimate*, which will exhibit the mercury in a metallic state. A piece of zinc or iron wire about three inches in length, is to be twice bent at right angles, so as to resemble the greek letter Π, the two legs of this figure should be distant about the diameter of a common gold wedding ring from each other, and the two ends of the bent wire must afterwards be tied to a ring of this description. Let a plate of glass, not less than three inches square, be laid as nearly horizontal as possible, and on one side

drop some sulphuric acid, diluted with about six times its weight of water, till it spreads to the size of a halfpenny. At a little distance from this, towards the other side, next drop some of the solution supposed to contain corrosive sublimate, till the edges of the two liquids join together; and let the wire and ring, prepared as above, be laid in such a way that the wire may touch the acid, while the gold ring is in contact with the suspected liquid. If the minutest quantity of corrosive sublimate be present, the ring in a few minutes will be covered with mercury on the part which touched the fluid.

Brugnatelli* has proposed the following method of detecting *corrosive sublimate* and *arsenic*—Take a quantity of fresh wheat starch, mix with water, and add a sufficient quantity of *iodine* to give the liquid a blue colour; if *corrosive sublimate* or *arsenic* be added to this liquor, the colour is alike destroyed and it becomes reddish, but if the change has been effected by the latter substance, a few drops of sulphuric acid will restore the blue colour, but if by the former it is not recoverable by such means.

HYDRARGYRI SUB-MURIAS. L.

Sub-murias Hydrargyri Mitis. E.

Sub-murias Hydrargyri sublimatum. D.

vulgo. *Calomel.*

This preparation has been known in pharmacy for upwards of two centuries, under a variety of fanciful names, such as *Draco mitigatus; Aquila alba; Aquila mitigata; Manna metallorum; Panchymagogum minerale; Panchymagogus quercetanus; Sublimatum dulce;*

* *Ann: de Chimie et Phys:* iv. 334.

Mercurius dulcis sublimatus; Calomelas; and yet there is not a name in this list that is so objectionable as the one at present adopted by our colleges: for whether we adhere to the theory of muriatic acid being the *simple* body, or accede to the new views of *chlorine*, the name is equally inappropriate; if we regard it as a compound of muriatic acid and oxyd of mercury, it is not a *sub*-muriate, but as much a *muriate* as the corrosive sublimate; the only difference depending upon the degree of oxidizement of the mercury, which is at a *minimum* in calomel, and at a *maximum* in sublimate. According to the new views respecting chlorine, calomel must consist of one proportional of chlorine with one proportional of metal, and is therefore a *chloride of mercury*. ("*Proto-chloruretum Hydrargyri.* Codex Med. Paris.)

Qualities. *Form.* A semi-transparent mass, consisting of short prismatic crystals; * inodorous, insipid, and of an ivory colour, which deepens by exposure to light. Solubility. It is considered as being insoluble, since according to Rouelle, one part requires 1152 of water, at 212° for its solution. Incompatible Substances. *Alkalies* and *lime water* decompose it and turn it black, in consequence of precipitating the black oxyd of the metal; it is also decomposed by *soaps*, *sulphurets of potass and antimony*; and by *iron*, *lead*, and *copper*; hence it is improper to employ any metallic mortar for dispensing medicines which contain it. There seems to be reason for supposing that this preparation may undergo decomposition *in transitu*, and that therefore some substances

* Mr. William Phillips has just favoured me with a model of this crystal cut in wood; it is a rectangular prism whose solid angles are deeply replaced by planes.

may be *chemically*, and yet not be *medicinally* incompatible with it. If calomel be boiled for a few minutes in distilled water to which alcoholized potass has been added, it is completely decomposed, a *muriate of potass* and *black oxyd of mercury* being the new products.* MEDICAL USES. This mercurial preparation is more extensively and more usefully employed than almost any other article in the whole range of the materia medica. It is capable of curing syphilis in every form, provided it does not run off by the bowels; and in obstructions and hepatic affections, it is in well-regulated doses a most valuable remedy; in combination, it probably merits the appellation of *Dirigens*, more decidedly than any other remedy with which we are acquainted, for when combined with certain diuretics, it is diuretic, (*Form.* 31, 32,) and

* Many of the nostrums advertised for the cure of worms, contain *Calomel* as their principal ingredient, combined with *scammony*, *jalap*, *gamboge*, or some other purgative; they are uncertain and dangerous medicines; the method of exhibiting them in the form of lozenges (*worm cakes*,) is also attended with inconvenience, for the sugar and the gum generating an acid, by being kept in damp places, may considerably increase the acrimony of the mercury; besides which, the calomel is frequently diffused very unequally through the mass, one lozenge may therefore contain a poisonous dose, whilst others may scarcely possess any active matter.

CHING'S WORM LOZENGES. These consist of *yellow* and *brown* lozenges, the former are taken in the evening, the latter the succeeding morning.

THE YELLOW LOZENGES. Saffron ℥ss, of water oj, boil, and strain; add of *White Panacea of Mercury* (Calomel washed in spirit of wine) lbj, white sugar, 28 lb, mucilage of *Tragacanth* as much as may be sufficient to make a mass, which roll out of an exact thickness, so that each lozenge may contain one grain of panacea.

THE BROWN LOZENGES. *Panacea* ℥vij, *resin of jalap* lb iijss, white sugar lb ix, *mucilage of tragacanth* q. s, each lozenge should contain gr. ½ of *panacea*.

STORY'S WORM CAKES. Calomel and jalap made into cakes and coloured by cinnabar.

in diaphoretic arrangements, it is diaphoretic: it moreover imparts force to many of the mild, and moderates the severity of drastic medicines: whenever we wish a strong and permanent impression to be made on the alimentary canal, and through it on the neighbouring viscera or the system generally, Calomel by universal consent is adopted for such a purpose. In larger doses it is one of the most efficient purgatives which we possess, especially in combination with other cathartics; it appears to be particularly eligible in the diseases of children; and it is singular that infants can generally bear larger doses of it than adults. Dose, as an alterative, from gr. j to ij, night and morning; as a purgative from gr. iv to grs. x, or in some cases even to grs xv, or ℈j. Forms of Exhibition. That of pill; its insolubility and specific gravity render any other form ineligible. Officinal Prep. *Pil. Hydrargyri sub-muriatis.* L. Impurities. *Corrosive sublimate* may be detected by precipitation being produced, by the carbonate of potass, in a solution made by boiling the suspected sample with a small portion of muriate of ammonia, in distilled water; calomel ought also, when rubbed with pure ammonia, to become intensely black, and not to exhibit any trace of an orange hue.

Howard's or Jewel's *Hydro-sublimate.* Instead of subliming so as to obtain the calomel in a concrete state, as directed by the Pharmacopœia, the salt in the act of sublimation is exposed to aqueous vapour, and received in water. Being in a state of very minute division, it is lighter than common calomel in the proportion of three to five, and it cannot contain any corrosive sublimate. The French in their late *codex* have introduced a similar formula, under

the title of "Murias Mercurii dulcis mediante aqua subtilissime divisus, *juxta Methodum Josiæ Jewel.*"

Sub-murias Hydrargyri Præcipitatus. E.D. This is produced by precipitating a nitrate of mercury by muriate of soda; the preparation will generally contain a small portion of *sub-nitrate*, and it is on that account more liable to run off by the bowels in small doses: in other respects it is essentially the same as that procured by sublimation.

HYDRARGYRI SULPHURETUM RUBRUM. L.

Sulphuretum Hydrargyri rubrum. D. Olim, *Hydrargyrus Sulphuretus ruber. P.L.* 1817—*Cinnabaris factitia*, 1745.

Qualities. *Form*, a red crystalline cake, inodorous, insipid, and insoluble in water, alcohol, acids, and alkalies, although these last bodies decompose it when melted with it; it is also decomposed by nitro-muriatic acid, which unites with the metal, and disengages the sulphur. Chemical Composition. It is a *bi-sulphuret of Mercury*, i. e. it consists of two proportionals of sulphur and one of mercury. Uses. It is now only used for the purpose of mercurial fumigation, which is done by inhaling the fumes, produced by throwing ʒss of it on red hot iron; the effect which it generally produces is violent salivation; this however does not depend upon the action of the substance as a *sulphuret*, but upon its decomposition, and the volatilization of the metallic mercury with sulphureous vapour. Mr. Pearson observes that it is useful in those cases of venereal ulcers in the mouth, throat, and nose, where it is an object to put a *sudden* stop to the progress of the disease, but that mercury must at the same time be introduced into

the constitution, by inunction, just as much as if no fumigations had been made use of. ADULTERATIONS. *Red Lead** may be discovered by digesting it in acetic acid, and by adding sulphuret of ammonia, which will produce a black precipitate; *Dragon's Blood*, by its giving a colour to alcohol when digested with it; *Chalk*, by its effervescence, on the addition of an acid. It is known in the arts under the name of *Vermillion*.

HYDRARGYRI SULPHURETUM NIGRUM. L.E. Hydrargyrus cum Sulphure. P.L. 1787. Olim. *Ethiops Mineral.*

QUALITIES. *Form*, a very black, impalpable, insipid, and inodorous powder. CHEMICAL COMPOSITION. It is a *Sulphuret of Mercury*, i. e. it consists of one proportional of sulphur, and one proportional of mercury; when heated in contact with the air, it is converted into a *bi-sulphuret*. SOLUBILITY. It is entirely soluble in a solution of pure potass, from which the acids precipitate it, unchanged; it is insoluble in nitric acid. MED: USES. It is supposed to be alterative, and has been given for such a purpose, in doses from gr. v. to ʒss, but its medicinal virtues are very questionable. ADULTERATIONS. Is is frequently imperfect, globules of mercury being still discoverable in it by a magnifying glass, or by its communicating a whiteness to a portion of gold upon which it is rubbed; *ivory black* may be discovered by the residue after throwing a suspected sample on a

* The anatomist employs it for giving colour to his injections, and for this purpose it is very essential that it should be quite free from *red lead*, or his prepartions will in a short time lose their splendour, and ultimately become black. This has unfortunately happened with some of the preparations which Dr. Baillie has lately presented to the College of Physicians.

red hot iron; it is also sometimes mixed with equal parts of crude antimony.

HYOSCYAMI FOLIA ET SEMINA. L.E.D.

(Hyoscyamus Niger) *Henbane.*

QUALITIES. This plant, when recent, has a strong, fetid, and narcotic odour; properties which are nearly lost by exsiccation. CHEMICAL COMPOSITION. Resin, mucilage, extractive matter, gallic acid, and some salts; an alkaline element (*Hyoscyama*) is said to constitute its active principle. SOLUBILITY. Water feebly extracts its narcotic powers, and decoction destroys them; diluted alcohol is its best menstruum. INCOMPATIBLES. Precipitates are produced by *acetate of lead*, *nitrate of silver*, and *sulphate of iron*; vegetable acids weaken its narcotic powers. The extract or inspissated juice is the best form in which it can be exhibited; see also the *Tincture*; its leaves form an anodyne cataplasm, and the smoke from its seeds, when applied by a funnel to a carious tooth, is recommended in severe fits of odontalgia. The root of this plant is also poisonous.* In Dr. Molyneux's appendix to Threlkeld's "SYNOPSIS STIRPIUM HIBERNICARUM," are related several cases of its effects on persons who had eaten them instead of *Skirrets*. OFFICINAL PREP: *Extract: Hyoscyam: Tinct: Hyoscyam:* L. E. D.

ICHTHYOCOLLA. (Acipenser *Huso & Ruthenus.* *The great & small Sturgeon.*)

Isinglass. Fish Glue.

The following kinds, imported from St. Petersburg,

* ANODYNE NECKLACES. The roots of *Hyoscyamus* are commonly strung in the form of beads, and sold under this name, to tie round the necks of children, to facilitate the growth of their teeth, and allay the irritation of teething. The application of medicated necklaces is a very ancient superstition.

are found in the market. *Short Staple; Long Staple; Book;* and *Leaf. Picking the Staple*, as it is calle d is a peculiar art practised by persons in this town, who gain a very good livelihood by it; they engage to return the same weight of isinglass in shreds, as they receive in *Staple;* this in itself secures very fair profit, for by damping the isinglass in order to pick it, it gains considerable weight; these persons moreover are in the habit of adulterating it with pieces of bladder, and the dried skin of soles; such frauds however are easily detected by its insolubility, for pure isinglass will dissolve entirely, and yield a clear and transparent jelly; a single grain will produce, with an ounce of water, a solution of considerable thickness; it is also soluble in acids and alkalies; and although insoluble in alcohol, yet it is not precipitated by it from its watery solutions, unless when added in a very considerable quantity; it is coagulated by the infusions and decoctions of vegetable astringents; *carbonate of potass* likewise throws down a precipitate. 100 parts of good isinglass consist of 98 of gelatine, and 2 of the phosphates of soda and lime. Its solutions soon putrefy. Uses. It is now rarely used except as a nutrient; its application in fining wines and turbid liquors, is well known, and its mode of operation is equally obvious, for by forming a skin, or fine network, which gradually precipitates, it acts just like a filtre, with this difference, that in this case the filtre passes through the liquor, instead of the liquor through the filtre.

INFUSA. L.E.D. *Infusions.*

These are *watery* solutions of vegetable matter, obtained by maceration, either in cold or hot water

without the assistance of ebullition. In selecting and conducting the operation, the following general rules should be observed.

I. *Infusion should always be preferred to decoction, where the medicinal virtues of the vegetable substance reside in volatile oil, or in principles which are easily soluble; whereas, if they depend upon resino-mucilaginous particles, decoction is an indispensable operation.*

II. *The temperature employed must be varied according to the circumstances of each case; an infusion made in the cold, is in general more grateful, but less active, than one made with heat.*

III. *The duration of the process must likewise be regulated by the nature of the substances, or the intention of the prescriber, for the infusion will differ according to the time in which the water has been digested on the materials; thus, the aroma of the plant is first taken up, then, in succession, the colouring, astringent, and gummy parts.*

Infusions are liable to undergo decompositions by being kept, and therefore, like decoctions, they must be regarded as *extemporaneous* preparations. Unless the dose of them be otherwise stated, it is generally from f℥j to f℥ij.

I. *Simple Infusions.*

Infusum Anthemidis. L. E. It is a good stomachic; and when exhibited warm, is well calculated to assist the operation of emetics: the cold infusion, i. e. made with cold water, is more grateful. *Incompatibles.* All *soluble preparations of iron; nitrate of silver; oxy-muriate of mercury; acetate,* and *sub-*

acetate of lead; solutions of isinglass; infusion of yellow chichona bark.

Infusum Calumbæ. L.E. See Calumbæ Radix. This infusion is more perishable than that of other bitters; in twenty-four hours a copious precipitation takes place in it; and in two days it becomes ropy, and even musty.

Infusum Caryophyllorum. L. f℥j of this infusion holds in solution the active matter of grs. vj of cloves. *Incompatibles.* Precipitates are produced by *sulphate of iron; sulphate of zinc; acetate of lead; nitrate of silver; tartarized antimony; lime water,* and *yellow cinchona.*

Infusum Cascarillæ. L. It is incompatible with the substances mentioned under *Infus: Caryophyll:*

Infusum Cinchonæ. L.E.D. We obtain in this preparation a feeble solution of the active constituents of bark, which will agree with many stomachs that are rebellious to the stronger preparations.

Infusum Cuspariæ. L. This is a judicious form of the bark, possessing its stimulant and tonic properties.

Infusum Digitalis. L.E. This is the best form in which we can administer the *fox-glove,* where our wish is to obtain its diuretic effects as speedily as possible. *Dose,* f℥ss to f℥j twice a day, *see Digitalis. Incompatibles.* We shall counteract its effects by endeavouring to obviate its nauseating tendency by *brandy and water,* &c. Precipitates are produced by *sulphate of iron,* and the *infusion of yellow cinchona,* &c.

Infusum Lini. L. E. A cheap and useful demulcent; *alcohol* and preparations of *lead,* are of course

incompatible with it; the *tinctura ferri muriatis* produces a flocculent precipitate.

Infusum Quassiæ. L. E. The proportion of Quassia directed for half a pint of water, is that of ℈j by the London, and ʒss by the Edinburgh College; the former is much too small, for in order to obtain a saturated infusion, ʒij are required for that quantity of water. *Incompatibles. The salts of iron* produce no change in it; nor is it affected by any of those substances with which it is likely to come in contact, in a medical prescription. It is highly useful in debilities of the stomach and intestinal canal, and in irregular and atonic gout. To this, as well as the other stomachic infusions, it is usual to add at the time of prescribing them a small quantity of aromatic tincture or spirit.

Infusum Rhei. L.E. The Edinburgh infusion is stronger than that of London, and is rendered more grateful by the addition of spirit of cinnamon; these infusions, however, when given without any *adjuvants*, produce but a feeble effect. This is obvious, since ℈j of rhubarb in substance, is at least equivalent to ʒiss in infusion. *Incompatibles.* The *stronger acids; the sulphates of iron and zinc; nitrate of silver; tartarized antimony; acetate of lead; oxy-muriate of mercury*, and the infusions of *cusparia, cinchona, catechu, galls*, and of some other *astringent* vegetables; the *alkalies* deepen the colour, but produce no decomposition.

Infusum Sennæ. L.E.D. A pint of water will take up the active matter of ℥j of senna, but nothing beyond that proportion; hence, there is an unnecessary waste in the London process. The quantity of infusion directed to be made at one time, is also injudicious, since by simple exposure to the air for

only a few hours, in consequence of the powerful affinity of its extractive matter for oxygen, a yellow precipitate takes place, and the infusion loses its purgative quality, and excites *tormina* in the bowels; in preparing it therefore, we see the necessity of conducting the process in *covered* vessels, and of making only such a portion as may be required for immediate use; indeed, notwithstanding every precaution, the extractive will to a certain extent become oxidized, and the infusion have a tendency to gripe. Dr. Cullen used to say that Senna was one of the best purgatives, if it could only be divested of its griping quality; this however he was unable to obviate, because he was not aware of its cause, and therefore conjoined it with various aromatics, instead of those salts * which might be capable of increasing the solubility of its oxidized extractive. *Soluble tartar* and *alkaline salts* are its most useful adjuncts; it is however rarely prescribed in practice without the addition of other cathartics. (Form: 9, 14, 15, 27). Sydenham's favourite "*potio cathartica lenitiva.*" consisted of an infusion of tamarinds, senna leaves, and rhubarb, with the addition of manna and syrup of roses. The addition of tamarinds renders the infusion more grateful but less active; when made with *bohea tea*, it is in a great degree deprived of its nauseous taste; a decoction of guaiacum increases its powers, and is said at the same time to render it milder. Bitters also very considerably exalt its efficacy, see *Part I.* p. 113. A pint of the infusion with a dram of jalap forms an excellent combination for a purgative enema.

* Selway's Prepared Essence of Senna. This is a concentrated infusion of Senna, in combination with an alkali. It is admirably adapted for domestic use. It is sold at Selway's, New Cavendish-street, Portland-place, or at Johnson's, 147 Oxford-street.

Incompatibles. The infusion is disturbed by *strong acids; lime water; nitrate of silver; oxy-muriate of mercury; acetate of lead; tartarized antimony;* and by an *infusion of yellow cinchona.*

Infusum Simaroubæ. L. This infusion is inodorous, of a clear straw colour, with a slightly bitter taste. It presents the best mode of exhibiting *Simarouba bark.* Dose, f℥ij, beyond this it will prove emetic. *Incompatibles. Alkaline carbonates* and *lime water* render it milky; and it is precipitated by the following substances; *infusions of catechu; galls,* and *yellow cinchona; oxy-muriate of mercury; nitrate of silver,* and *acetate of lead.*

Infusum Tabaci. L. It is never used but as an enema, in incarcerated hernia, and in ileus.

2. *Compound Infusions.*

Infusum Armoraciæ Compositum. L. In this preparation the stimulant property of the horse-radish is materially aided by the mustard; pure alkalies, but not their carbonates, may form extemporaneous additions.

Infusum Aurantii Compositum. L. A grateful stomachic, having the agreeable compound taste of its several ingredients; it has the merit of sitting easily on the stomach.

Infusum Catechu Compositum. L.E. This infusion is a powerful astringent, rendered grateful by the addition of cinnamon; it will keep for several months, provided the directions of the Edinburgh College be not followed in adding the syrup. In prescribing it, we must remember that it contains a large proportion of *tannin.* See *Catechu.*

Infusum Gentianæ Compositum. L. An elegant tonic and stomachic infusion. It affords a good ex-

ample of the virtues of a natural substance being enhanced by the additions of art, as discussed at p. 100; for the bitterness of the gentian is here subdued by the aromatic quality of the lemon and orange peel. *Incompatibles.* *Acetate of lead* throws down a copious precipitate from the infusion, and *sulphate of iron* strikes a brown colour, but no precipitate takes place for several hours.

Infusum Rosæ. L.E.D. This is an infusion of the petals of the red rose, rendered astringent and refrigerant,* by the addition of dilute sulphuric acid. *Incompatibles.* All those bodies which are decomposed by the sulphuric acid; the *sulphates of iron* and *zinc* do not immediately alter the infusion, but they *slowly* decompose it, producing precipitates of a dark colour. Dr. Clarke of Cambridge has lately detected *iron* in the petals; may not the presence of this metal enhance the tonic powers of the infusion? It affords a most elegant vehicle for the exhibition of cathartic salts. (*Form.* 8.)

IPECACUANHÆ RADIX. L. E. D.

(Callicocca Ipecacuanha.) *Ipecacuanha.*

Qualities. This root, when powdered, has a faint disagreeable *odour*, and a bitter sub-acrid *taste*. Chemical Composition. The late researches of M. Majendie and Pelletier have detected the existence of a new vegetable proximate principle in this root, to which ipecacuan is indebted for its emetic properties; they have, accordingly, denominated it *Emetin.*‡ When pure, it assumes the form of trans-

* Madden's Vegetable Essence. Is little else than the *Infusum Rosæ.*

‡ A Formula for its preparation is introduced in the new Codex of Paris, being the one used by M. Pelletier; it is as follows. Let ℥ i of the

parent brownish red scales, which are nearly inodorous, but have a slightly bitter acrid but not nauseous taste. *Emetin* is decomposed by a heat higher than that of boiling water; it is soluble in water, in every proportion, without undergoing the least change; and in a moist atmosphere it deliquesces; it is also soluble in alcohol, but not in ether; *nitric acid* dissolves it, but at the same time decomposes it; *dilute sulphuric acid* has no action on it; *muriatic acid* and *phosphoric acid* dissolve it, without altering its nature; *acetic acid* dissolves it with great facility; *corrosive sublimate* precipitates it from its solutions, but *tartarized antimony* has no effect upon them; *gallic acid*, the *infusion of galls*, and *acetate of lead*, precipitate it. Half a grain excites violent vomiting, followed by sleep, and the patient awakes in perfect health! It exerts also a specific action on the lungs and mucous membrane of the intestinal canal; when taken in an overdose, its action can be instantly paralysed by a decoction of galls. *Emetin* appears to exist in Ipecacuanha, combined in the following manner, *emetine* 16, oils 2, wax 6, gum 10, starch 40, woody fibre 20. SOLUBILITY. Alcohol takes up four parts in twenty of Ipecacuan; proof spirit, six and a half; and boiling water rather more than eight

powder of Ipecacuan be macerated in ℥ ij of Ether with a gentle heat for some hours, in a distilling apparatus; let the portion which remains be triturated and boiled with ℥ iv of alcohol, it having been previously macerated in it; filter, and let the remainder be treated with fresh portions of alcohol, as long as any thing is taken up from the root; mix these alcoholic solutions and evaporate to dryness; let this alcoholic extract be macerated in cold distilled water, in order that every thing soluble in that menstruum may be dissolved; filter, and evaporate to dryness; this extract is EMETINE. In this state however it contains a small quantity of *gallic acid*, but which is too inconsiderable to effect its medicinal qualities.

parts; one pint of good sherry wine will dissolve about 100 grains; the alcoholic is more emetic than the aqueous solution; decoction destroys the emetic property of the root. INCOMPATIBLE SUBSTANCES. All vegetable astringents, as *infusion of galls*, &c. *vegetable acids*, especially the *acetic*, weaken its power; Dr. Irvine found that grs. xxx, administered in f℥ij of vinegar produced only some loose stools. FORMS OF EXHIBITION: the form of powder is most energetic, although the vinous solution is both active and convenient. DOSE. The medicinal operation of this substance varies with its dose, thus grs. x to ʒss act as an emetic; grs. i to ij, as an expectorant, and in still smaller doses it proves stomachic and diaphoretic; by combination with opium, this latter quality becomes more powerful. The primary effect of this medicine is that of stimulating the stomach, and it is equally obvious that its secondary ones depend on the numerous sympathies of other parts with the organs of digestion. The action of this remedy upon the pulmonary organs is extremely interesting, it would seem that in certain conditions of these organs, attended with a dry, hard cough, it promotes expectoration, while in affections attended with an inordinate secretion of mucus, it as certainly represses it, and acts the part of an astringent. OFFICINAL PREP. *Pulvis Ipecacuanhæ comp.* L. E. D. *Vinum Ipecac.* L. E. D. The powder is liable to become inert, by exposure to air and light. The root is refractory, and is reduced to powder with difficulty, unless a few drops of oil, or an almond or two, be previously added. It is a curious fact that the effluvia of this root occasion in some persons the most distressing sensations of suffocation. I am acquainted with a lady, who is constantly seized with a violent dyspnæa,

whenever the powder of Ipecacuan is brought into her presence. ADULTERATIONS. There are several varieties of Ipecacuan to be found in the market, which it is important to distinguish; *viz:* 1, *The brown variety*, which is the best, containing sixteen per cent. of emetin; 2, the *grey variety*, with fourteen per cent. of emetin; 3, the *white variety* with only five of emetin. The two former varieties are those usually met with, being imported into this country in bales from Rio Janeiro; the brown is distinguished from the grey, in being more wrinkled; the white variety has no wrinkles whatever.

JALAPÆ RADIX. L. E. D. (Convolvulus Jalapa.) *Jalap.*

QUALITIES. This root is pulverulent; *Odour*, peculiar; *Taste*, sweetish and slightly pungent. CHEMICAL COMPOSITION. Resin, gum, extractive, fecula, and some salts. The combination of the three first principles appears requisite for the production of its *full* cathartic effect. SOLUBILITY. Proof spirit is its appropriate menstruum. FORMS OF EXHIBITION. That of powder is the most eligible, especially when combined with some other powdered substance; pulverization increases its activity, *see Pulveres.* DOSE, gr. x to ʒss. It seems to act principally on the colon. OFFICINAL PREPARATIONS. *Pulv. Jalap. comp.* E. *Extract. Jalap* L. E. D. *Tinct. Jalap.* L. E. D. *Tinct. Sennæ comp.* (*b*) E. ADULTERATIONS. *Briony root* is sometimes mixed with that of jalap, but it may be easily distinguished by its paler colour and less compact texture; and by not easily burning at the flame of a candle. When the *teredo* has attacked it, it should be rejected.

JUNIPERI BACCÆ ET CACUMINA. L. E. D.

(Juniperus Communis.)

Juniper Berries and Tops.

The principal constituents of these berries are mucilage, sugar, and volatile oil; in the latter of which their diuretic virtues reside. FORMS OF EXHIBITION. That of an infusion, made with ℥ij of the berries, to oj of hot water. Unless pains however are taken by strong contusion to bruise and break the seeds, the preparation will contain but little of the juniper flavour. The bruised berries may be also triturated with sugar or some neutral salt, and be thus exhibited in substance. Dose ℈j to ℈ij. OFFICINAL PREP. *Oleum. Junip.* L. E. D. *Spirit. Junip. co.* L. E. D. The taste and diuretic properties of Hollands depend upon this oil; English gin is flavoured by oil of turpentine.

KINO. L. E. D. *Kino.*

(Arboris nondum descriptæ. *Gummi Resina.* L. Eucalypti Resiniferi. *Succus Concretus.* E. Butea Frondosa. D.)

There is very considerable obscurity with regard both to the botanical history and chemical constitution of this substance; three varieties of it are met with in the shops, viz. 1, *African Kino*, which bears the highest price, and has all the appearance of a natural production, slender twigs being often intermixed in its substance; it is of a reddish brown colour and has a bitterish astringent taste. 2. *Botany Bay Kino*, has also the aspect of a natural production, it is in more solid masses than the former species, is less brittle (for it contains a very small proportion of resin) and with its astringency, has a disagreeable

sweetish taste. 3. *Jamaica Kino*, this is the one most commonly met with; it has the appearance of a dry extract, is in small fragments, of a colour more nearly approaching to black than others, and has an astringent and slightly bitter taste. There is also a fourth variety mentioned, viz. the *East India* or *Amboyna*, but this does not appear to differ from the African variety. CHEMICAL COMPOSITION. In all the varieties the predominant principles are tannin and extractive. SOLUBILITY. The best menstruum is diluted alcohol. *Incompatible Substances*, vid. *Gallæ*. FORMS OF EXHIBITION. Either in substance or in the form of watery infusion, or in that of tincture. DOSE, grs. x to ʒss. OFFICINAL PREP. *Tinct. Kino*. L. E. D. *Elect. Catechu*, E. D. *Pulvis Sulphatis Alum. co.* E.

LIMONES. L. E. D. (Citrus Medica. *Baccæ.*) *Lemons.*

SUCCUS—THE JUICE consists of *Citric acid*, mucilage, extractive matter, and small portions of sugar and water. It may be preserved for a considerable length of time, by covering its surface with fixed oil.

CORTEX—THE RIND OR PEEL is composed of two distinct parts; the exterior, which contains glands, filled with a fragrant volatile oil, upon which all its properties depend, and the *interior coat*, which is tasteless and indigestible. The flavour may be obtained by rubbing lump sugar upon it, which will imbibe the oil, and if it be then dried by a very gentle heat, may be preserved unimpaired for any length of time, and will be preferable to the volatile oil obtained by distillation, for the fire generally imparts an unpleasant or empyreumatic flavour.*

* ESSENTIAL SALT OF LEMONS. See *Potassæ Super-tartras.*

It has been stated at page 57, that "the different parts of the same plant have frequently very different properties." The Lemon offers a good example of this fact, for its juice is *acid*, its seeds *bitter*, and its peel *aromatic*.

LINIMENTA. L. E. D. *Liniments.*

These are external applications, having the consistence of oil or balsam. If we [except the *Liniment Æruginis*, all the officinal linaments are decomposed by the substances which are incompatible with soaps.

LINIMENTUM ÆRUGINIS. L. *Oxymel Æruginis.* P. L. 1787. *Mel. Ægyptiacum.* P. L. 1745. *Unguentum Ægyptiacum.* P. L. 1720. Diluted with water, it has been recommended as a gargle in venereal ulcerations, but its use is hazardous; it is a detergent escharotic preparation.

LINIMENTUM AMMONIÆ FORTIUS. L. *Oleum Ammoniatum.* E. *Linimentum Ammoniæ.* D. It consists of *liquor ammoniæ one part, olive oil two parts,* (oil eight parts, E. D.) The alkali forms with the oil a soap, which is held dissolved by the water in the *liquor ammoniæ.* It is an excellent rubefacient, aud penetrating liniment.

LINIMENTUM AMMONIÆ SUB-CARBONATIS. L. *Linimentum Ammoniæ.* P. L. 1787. *Linimentum volatile.* P. L. 1745. The carbonic acid prevents the perfect formation of soap in this liniment; unlike the former one therefore, it deposits the soapy matter, on standing. It is much less stimulating than the preceding one.

LINIMENTUM CALCIS. E. D. *Oil and lime water, equal parts.* This is an *earthy* soap, formed by the combination of lime and oil; the soapy matter separates

on standing, it should therefore be *extemporaneous*. In cases of burns and scalds where the cuticle has been destroyed, it is an advantageous application.

Linimentum Camphoræ L. *Oleum Camphoratum*. E. D. Camphor one, olive oil four parts. It is a simple solution of camphor in fixed oil, and forms a very useful embrocation to sprains, bruises, glandular swellings, and in rheumatic affections.

Linimentum Camphoræ compositum. L. *Camphor two, liquor ammonia six, spirit of lavender sixteen parts*. It is highly stimulating.

Linimentum Hydrargyri. L. A pound of this liniment contains nearly ℥iv of mercury; it affects the mouth more rapidly than mercurial ointment, and hence its application requires caution.

Linimentum Saponis compositum. L. *Hard soap*, iij, *camphor* j, *spirit of rosemary* xvj parts. It is a stimulant and anodyne application, and in local pains opium may be advantageously added to it. It is commonly used under the name of *Opodeldoc*.*

Linimentum Terebinthinæ. This liniment was introduced by Mr. Kentish of Newcastle, as a dressing to recent burns, which he continued until the eschars became loose.

LINUM CATHARTICUM. L. D. *Purging Flax*.

The qualities of this plant reside in extractive matter, hence water extracts, but long decoction injures them. Medical Uses. It is strongly purgative. Forms of Exhibition. ʒij of the dried herb infused in oj of boiling water. Dose, f℥ij.

* Steers's Opodeldoc. Castille soap ℥j. Rectified Spirit f℥viij. Camphor ℥iiiss Oil of Rosemary f ʒ ss. Oil of Origanum f ʒ j. Solution of Ammonia f ʒ vj,

Lynch's Embrocation. Olive oil impregnated with Bergamot, and some other essences, and coloured with Alkanet root.

LINI USITATISSIMI SEMINA. L. E. D.

Linseed, or Common Flax Seed.

These seeds contain a large proportion of mucilage, and one sixth of their weight of fixed oil; by infusion in water, a clear colourless inodorous and nearly insipid mucilage is obtained; ℥ss of the unbruised seeds is sufficient for oj of water; the farina of the seed is well adapted for cataplasms. OFFICINAL PREP. *Infus. Lini.* L. *Oleum Lini.* L. E. D.

LIQUOR ALUMINIS COMPOSITUS. L.

Aqua Aluminosa Bateana. P. L. 1745.

This is a compound solution of *alum* and *sulphate of zinc.* It is powerfully astringent, and is successfully used as a detergent lotion to old ulcers; as a collyrium, or as an injection in gleet, and fluor albus; it will also often answer in removing chilblains, and in curing slight excoriations.

LIQUOR AMMONIÆ. L. AQUA AMMONIÆ. E. AQUA AMMONIÆ CAUSTICÆ. D.

Solution of Ammonia.

QUALITIES. *Form*, a limpid, colourless fluid; *specific gravity*, ·960, or, f℥j weighs about 438 grs. *Odour*, strong and pungent; *Taste*, extremely caustic. CHEMICAL COMPOSITION. A solution of ammoniacal gas in water, which varies considerably in strength in the different pharmacopœias. When prepared according to the London and Edinburgh Colleges, it contains nearly 25 per cent. of ammonia, whereas the Dublin preparation does not contain more than 16. SOLVENT POWERS. It is an active solvent of many vegetable principles, e. g. *oils*, *resins*, &c.

With alcohol it unites in every proportion; it assists the oxidizement of copper and zinc, and dissolves many of the metallic oxides. MED. USES. Stimulant, rubefacient, and antacid. FORMS OF EXHIBITION. In milk, or any liquid vehicle; if in decoctions, or infusions, they must be previously cooled, for at 130° the ammonia will escape in the form of gas. DOSE, ♏x to xxx. OFFICINAL PREP. *Linimentum Ammoniæ*, L. D. *Oleum Ammon:* E. *Spir: Ammon:* L. *Spir: Ammon: comp:* L. *Spir: Ammon: succinat:* L. *Liniment: Camphor: comp:* L. ADULTERATIONS. The presence of other salts in the solution may be discovered by saturating a portion with pure nitric acid, and applying the test for sulphuric acid *(Barytes)* and that for muriatic acid, *(Nitrate of Silver.)* Carbonic acid is detected by its effervescing with acids; it ought to be free from all fetor; its strength can only be determined by taking its specific gravity. It should be preserved in well closed bottles, and their dimensions should be small, for when in large vessels it often becomes carbonated before it is half used.

LIQUOR AMMONIÆ ACETATIS. L. AQUA ACETATIS AMMONIÆ. E. D.

Solution of Acetate of Ammonia.

olim, *Spirit of Mindererus.*

This preparation is a solution of the neutral *acetate of ammonia*, with a proportion of carbonic acid diffused through it; it is made by saturating the subcarbonate of ammonia with distilled vinegar, for which purpose it will generally be found that ℥j of the alkali will saturate oiss of the vinegar; since, however, the quantity of acid in distilled vinegar is

liable to a constant variation, the exact point of neutralization should be ascertained by the alternate application of litmus and turmeric papers; for if the proportions be not accurately adjusted, some of the metallic salts, especially those of *antimony*, which are often prescribed in conjunction with it, are decomposed, and thus rendered inefficacious; and on this account an excess of alkali is to be feared more than that of acid. It has been already stated that a very minute proportion of extractive matter is rendered sensible on the addition of an alkali, hence this preparation frequently derives from the vinegar, a brown hue, which may be removed by filtering the solution through a little well burnt charcoal. It also deserves notice that the presence of a trace of copper, derived from the copper cocks through which the vinegar has passed, will impart a *brown* tinge, whilst in larger quantities this metal yields a *blue* colour with ammonia. Incompatible Substances. *Acids; fixed alkalies; alum; lime water; sulphate of magnesia; corrosive sublimate; nitrate of silver;* and the *sulphates of zinc, copper, and iron. Acetate of lead* produces also a copious precipitation, but this depends upon the presence of the carbonic acid diffused through the solution, which decomposes the salt and forms an insoluble carbonate of lead. *Magnesia* likewise, contrary to what might be supposed, decomposes the solution and renders it pungent, from the extrication of ammoniacal gas; this phenomenon depends upon the magnesia forming a triple acetate with one part of the ammonia, and setting the remainder at liberty. Med. Uses. When assisted by warmth and plentiful dilution, it is an excellent diaphoretic, and it produces its effects without quickening the circulation: (*Form:* 53, 62,) by keeping

the surface of the body cool, its action is determined to the kidneys, and it proves diuretic, especially when combined with remedies of a similar tendency. (*Form:* 31.) Dose, f℥iv to f℥xij.

LIQUOR AMMONIÆ SUB-CARBONATIS. L. Solutio Sub-Carbonatis Ammoniæ. E. Aqua Carbonatis Ammoniæ. D.

This is merely a solution of the *solid* sub-carbonate in distilled water, see *Ammoniæ Sub-carbonas*. Dose, f℥ss to f℥j in any bland liquid. Adulterations. There is frequently a deficient quantity of the sub-carbonate in solution, its pungency being kept up by the addition of *liquor ammoniæ;* this may be discovered by shaking it with twice its bulk of alcohol, when a coagulum of considerable density should occur, the absence of which will denote the sophistication of the article. Its *specific gravity* should be 1.150.

LIQUOR ANTIMONII TARTARIZATI. L. *Vinum Antimonii Tartarizati* P.L. 1787. Vinum Tartritis Antimonii, olim *Vinum Antimoniale.* E. vulgo Antimonial Wine.

During the period that I was Censor of the College, I took considerable trouble, in conjunction with my colleagues, to ascertain the state in which this preparation was to be generally met with in the wholesale and retail shops of the metropolis; we were satisfied, during our official visitations, that where *sound* Sherry wine had been employed as a solvent, an efficient and permanent solution was obtained, and that no precipitation of the antimony took place, the sediment which occurred being merely *tartrate of lime*, an incidental impurity, derived from the *cream of*

tartar, of the tartarized antimony; but in a majority of instances an inferior wine was substituted, in which case the antimonial oxyd was found in a copious precipitate, in combination with vegetable extractive matter; and I have since seen this decomposition so complete, that the super-natant liquor would not yield any trace of the antimonial salt, when assayed with sulphuret of potass. Under such circumstances it might be more judicious to remove *antimonial wine* from the list of *officinal* preparations. Dose ♏x to f℥j, in any suitable vehicle, repeated every three or four hours, in which case it acts as a diaphoretic. As an emetic, it may be given to infants in the dose of a tea-spoonfull every ten minutes, until the desired effect is produced. See *Antimonium Tartarizatum.*

LIQUOR ARSENICALIS. L.

Solutio Arsenicalis. E.

This is a solution of the *Arsenite of Potass*, f℥j of which contains gr. ½ of *arsenious acid.* It was introduced into practice by Dr. Fowler, of Stafford, as a substitute for the empirical remedy known by the name of "*The Tasteless Ague Drop.*" Incompatible Substances. *Lime water; nitrate of silver; the salts of copper; hydro-sulphuret of potass*, and *the infusions and decoctions of bark.* Dose, ♏ iv, gradually increased to ♏xxx, twice a day. See *Arsenici Oxidum.*

LIQUOR CALCIS L. Aqua Calcis. E. D.

Lime Water.

It is a saturated solution of lime in water; f℥j of which contains ¾ of a grain. Incompatible Substances. *All alkaline and metallic salts; borates;*

tartrates; citrates; acids; sulphur; spirituous preparations, and *the infusions of all astringent vegetables.* It should be kept in close vessels, for if exposed to the air, the lime will attract carbonic acid, and become an insoluble carbonate, the addition of an *alkaline carbonate* produces the same effect instantaneously. MED. USES. It is an antacid, and is therefore useful in dyspepsia attended with acidity; mixed with an equal quantity of milk, it furnishes an excellent remedy in infantile complaints connected with bowel affections; it is also astringent in leucorrhæa, in the last stages of dysentery, and in protracted diarrhœa. It dissolves also the slimy mucus with which disordered bowels are so generally infested; on account of this latter property, it has been exhibited in calculous affections,* with a view

* MRS. STEPHENS'S REMEDY FOR THE STONE consisted of lime, which was produced by calcining the shells of eggs and snails, and which was made into pills with Soap. A decoction was also administered, consisting of *Chamomile*, *Fennel*, *Parsley*, and *Burdock*, together with a portion of *Alicant Soap*. This is very rational practice, and is very much what the practitioners of the present day depend upon: the observations of Mrs. Stephens respecting their administration, is equally judicious. "If," says she, "these medicines produce pain, *it will be necessary to give an opiate with them*, and it must be at all times a principal care *to prevent a looseness*, for if this should happen it would carry off the medicines: under such circumstances the quantity of the *Decoction*, since it is laxative, must be diminished, and other suitable means must be taken by the advice of a Physician." The credit of introducing alkaline medicines for the cure of calculous disorders, does not however rest with MRS. STEPHENS. It has been before stated in this work, that Basil Valentine employed a fixed alkaline salt in such cases, and I may here add, that SENNERTUS, in his *Praxis Medica*, mentions a lithontriptic that was in great esteem and in general use in his time, which consisted of one ounce of *Salt of Tartar* dissolved in a pint of Parsley Water, and afterwards tinged yellow with orange peel.

of dissolving the cementing ingredient of the concretion, and thereby of destroying its cohesion; being without taste, it is easily given under any circumstances, and it is not liable to produce that irritability of stomach which frequently attends the long continued use of the fixed alkalies. FORMS OF EXHIBITION. Milk disguises its nauseous flavour, without impairing its virtues. DOSE, f℥j to f℥vj.

LIQUOR FERRI ALKALINI. L.

Solution of Alkaline Iron.

This preparation is nearly the same as Stahl's *Tinctura Martis Alkalina.* CHEMICAL COMPOSITION. It is by no means ascertained. INCOMPATIBLE SUBSTANCES. It is a very injudicious preparation, for it cannot be exhibited in any form without decomposition; *water*, especially if not distilled, and *vegetable infusions* and *decoctions*, produce dense precipitates; *pure acids*, *alkalies*, and *spirit*, also decompose it. When we have so many valuable preparations of iron, why is this retained?

LIQUOR HYDRARGYRI OXY-MURIATIS. L.

This solution of corrosive sublimate is intended to facilitate the exhibition of minute doses of the salt; f℥j contains gr. ½; when long kept, or exposed to light, the oxy-muriate is decomposed, and *calomel* is precipitated; or, what is more dangerous, it is sometimes deposited in crystals, without decomposition; a small portion of muriate of ammonia in the solution, prevents this precipitation. DOSE, f℥ss to f℥ij, in an infusion of linseed. See *Hydrarg: Oxy-murias.*

LIQUOR PLUMBI SUB-ACETATIS. L.

LIQUOR SUB-ACETATIS LITHARGYRI. D.

Aqua Lithargyri Acetati, P. L. 1767.

Solution of Sub-acetate of Lead: *olim*, *Extract of Saturn.*

This preparation was introduced by M. Goulard of Montpellier, hence it has been commonly known by the name of *Goulard's Extract.* QUALITIES. It is of a greenish straw colour, and has an austere, sweetish taste; when kept it deposits a quantity of oxide, and becomes lighter coloured. CHEMICAL COMPOSITION. It is a saturated solution of the sub-acetate of lead, consisting, according to Berzelius, of one proportional of acid, and three proportionals of oxide of lead; hence its name is correct. INCOMPATIBLE SUBSTANCES. *Alkalies* and *their carbonates* precipitate a white subsalt; *alkaline sulphates* and *sulphurets; mucilage. Spring Water*, from the salts which it contains, produces with it a very milky and turbid appearance; and even when *distilled*, in consequence of the carbonic acid diffused through it, it occasions precipitation. MEDICAL USES. It is only used externally, in superficial and phlegmonic inflammations of the skin, and in herpetic affections. It has been a question whether *Lead*, in any form, should ever be applied to an open wound, or to an abraded surface.*

* VIRGIN'S MILK. A preparation is sold under this name, which is a *sulphate of lead*, and is prepared as follows. To a saturated solution of *Alum*, add of *Goulard's extract* one third part. Shake them together;—see *Benzoinum* for a very different cosmetic, bearing the same name.

LIQUOR POTASSÆ. L. Aqua Potassæ. E. Aqua Kali Caustica. D.

Aqua kali puri. P.L. 1787. *Lixivium Saponarium,* 1745.

Qualities. A limpid, dense, colourless solution; a pint should weigh ℥xvj; when rubbed between the fingers it feels soapy, in consequence of a partial solution of the cuticle. The solution, as usually prepared, contains small portions of muriate and sulphate of potass, silica and lime; but these incidental impurities do not invalidate its virtues; it ought not to effervesce with acids. Med. Uses. Antacid, diuretic, alterative, and lithontriptic; and externally, when diluted, it acts as a stimulating lotion, and if concentrated, as a caustic; see *Potassa Fusa.* The operation of this and other alkaline remedies, have at different periods been celebrated as powerful lithontriptics, and whilst experience has in some cases confirmed the value of the practice, it has in others proved no less decidedly its mischievous agency; these contradictory results are at length capable of explanation, for Chemistry has drawn aside the veil that has so long obscured the history, origin, and cure of calculous diseases, and has demonstrated that these extraneous bodies vary in composition, and are consequently very differently affected by the same chemical solvents. Scheele,* with whom the inquiry originated, conceived that every calculus consisted of a peculiar concrete acid, soluble in alkaline lixivia, which Morveau denominated the Lithic acid; the subsequent researches however of Fourcroy, Vauquelin, Wollaston, Pearson, Henry, Marcet, and Brande, have demonstrated the existence of *several* distinct

* *Transactions of Stockholm.*

bodies in the composition of urinary calculi, producing varieties in their external characters, as well as in their chemical relations; viz. *Lithic*, or *Uric Acid*;* *Phosphate of lime; Ammoniaco-magnesian phosphate; oxalate of lime*, and *Cystic oxyd*;† to which may be added an *animal cementing ingredient*. The varieties of calculi, produced by the combination or intermixture of these ingredients, are represented in the following tabular arrangement.‡

* The name of *uric acid* was suggested by Dr. Pearson; it is however as Dr. Marcet observes, objectionable on account of the close resemblance which the term bears to that of *Urea*, another and most characteristic constituent of urine, totally distinct from lithic acid.

† *Cystic acid*, discovered by Dr. Wollaston in the year 1805; it does not affect vegetable colours, and has all the chemical habitudes of an oxyd.

‡ Dr. Marcet has discovered two Calculi, which cannot be referred to any of the species hitherto noticed, but they are not introduced into the table, as they may never again occur. To one of these he has given the name of *Xanthic Oxyd*, because it forms a lemon coloured compound, when acted upon by Nitric acid. To the other nondescript calculus, he has bestowed the name of *Fibrinous*, from its resemblance to fibrine.

To offer more than an outline of this subject, would be altogether incompatible with the object of this work, the student must refer to a paper by Mr. Brande, in the sixth volume of the Journal of the Royal Institution; a more perspicuous and practically useful paper never appeared. I am anxious also to recommend in the strongest terms, the careful perusal of Dr. Marcet's work, "On the Chemical history and Medical treatment of Calculous disorders." It merits a place in every medical and scientific library.

The public are also to expect a valuable work from the pen of Dr. Prout, whose able researches upon subjects connected with this inquiry, are already well known to the chemist and physician.

A Tabular View of the Different Species of Urinary Calculi.

SPECIES OF CALCULI.	EXTERNAL CHARACTERS.	CHEMICAL COMPOSITION.	REMARKS.
1. LITHIC OR URIC.	*Form*, a flattened oval; *Specific gravity*, generally exceeds 1·500; *Colour*, brownish or fawn-like; *surface* smooth; texture laminated.	It consists, principally, of *Lithic acid;* when treated with nitric acid, a beautiful pink substance results. This calculus is slightly soluble in water, abundantly in the pure alkalies.	It is the prevailing species; but the surface sometimes occurs finely tuberculated. It frequently constitutes the *Nuclei* of the other species.
2. MULBERRY.	*Colour*, dark brown; *texture*, harder than that of the other species; *Sp. grav.* from 1·428 to 1·976. *Surface*, studded with tubercles.	It is *Oxalate of Lime*, is decomposed in the flame of a spirit lamp, swelling out into a white efflorescence, which is *Quicklime.*	This species includes some varieties, which are remarkably smooth and pale coloured, resembling a *hemp seed.*
3. BONE EARTH.	*Colour*, pale brown or grey; *surface* smooth and polished; *structure*, regularly laminated; the laminæ easily separating into concrete crusts.	Principally *Phosphate of Lime.* It is soluble in muriatic acid.	
4. TRIPLE.	*Colour*, generally brilliant white; *surface* uneven, studded with shining crystals; less compact than the preceding species; between its laminæ, small cells occur, filled with sparkling particles.	It is an *Ammoniaco-magnesian phosphate*, generally mixed with phosphate of lime; pure alkalies decompose it, extricating its ammonia.	This species attains a larger size than any of the others.
5. FUSIBLE.	*Colour*, greyish white.	A compound of the two foregoing species.	It is very fusible, melting into a vitreous globule.
6. CYSTIC.	Very like the Triple Calculus, but it is unstratified and more compact, and homogeneous.	It consists of *Cystic Oxide;* under the blow pipe, it yields a peculiarly fetid odour. It is soluble in acids, and in alkalies, even if they are fully saturated with carbonic acid.	It is a rare species.
7. ALTERNATING.	Its section exhibits different concentric laminæ.	Composed of several species, alternating with each other.	
8. COMPOUND.	No characteristic form.	The ingredients are separable only by chemical analysis.	

It will appear evident from this view of the subject, that some varieties will be influenced by acids and others by alkalies, and that the exhibition of such remedies will be liable to aggravate or palliate the symptoms, according to the character and composition of the offending calculus, and according to the prevailing diathesis of the patient. As a general rule, Dr. Marcet states, that "*whenever the lithic acid predominates, the alkalies are the appropriate remedies, but that when the calcareous or magnesian salts prevail, the acids are to be resorted to;*" but it will be asked, how are we to discover the nature of the calculous affection, so as to direct the suitable remedy?—by an examination of the sediment, deposited by the recent urine, or by an analysis of the small fragments, which are frequently voided with it. The phosphates subside from the urine as a *white*, lithic acid as a *red deposit;* and since the phosphates are held in solution in the urine by an excess of acid, it is evident that whenever such acidity is diminished by the hand of nature or art, a *white* sabulous deposit will ensue;* hence says Mr. Brande, it occurs in the urine of persons who drink soda water, or take magnesia; the remedy for such a deposit, when it takes place habitually, is a course of acidulous medicines; on the contrary, since *lithic acid* is precipitated by the acids, alkalies are naturally suggested for the prevention of that deposit. In the *compound* calculi, acids and

* The addition of ammonia will throw down an *ammoniaco-magnesian phosphate;* hence we perceive that it is liable to occur whenever the urine undergoes an incipient process of decomposition. I have in my possession a splendid specimen of this triple salt, in large and well defined octohedrons, covering a portion of a decayed beam; it was sent to me by my friend Mr. Marshall of Half Moon Street, from whom I learnt that it had been taken from a privy, belonging to a Public House in the Borough.

alkalies may be equally injurious or beneficial, for since these bodies are composed of a variety of ingredients the action of any solvent will be partial, and may convert the smooth calculus into a rough and highly irritating body, or vice versa. In the *alternating calculi* it may be judicious to exhibit these remedies alternately, as the symptoms of the case and the deposit of the urine may indicate. After all, however, the solvent powers of lithontriptic remedies must be very limited, and in advanced cases we can never expect to procure more than palliation. Remedies for the cure of calculi may therefore be properly classed under two divisions, viz. ANTI-LITHICS, or those that correct the morbid diathesis, and LITHONTRIPTICS, or those that exert a solvent action on the calculi.

Independent of any chemical effect, alkaline substances are found, by daily experience, to allay the morbid irritability of the urinary organs in a manner not yet explained; alkalies may also prove *generally* serviceable in these disorders, by acting immediately upon the digestive organs, for the disposition of forming calculi is always accompanied with the indications of deranged digestion; and it is probable that the first link of the series of actions which cause this disposition, has its origin in the stomach.

The alkaline carbonates are found to answer as effectually as the pure alkalies, and they have the advantage of being less liable to disagree with the stomach. Where an acid is indicated, the *Muriatic* will, in my judgment, be found as convenient and

* HANNAY'S LOTION. This famous nostrum for the prevention of venereal infection, was nothing more than a solution of caustic potass.

effectual as any that can be administered. Mr. Brande proposes *Cream of Tartar* for this purpose; upon this point I differ with him, for this salt, to say the least, is questionable in its mode of operation; for although its first impression upon the stomach is that of an acid, the subsequent processes of digestion decompose it and eliminate its base, which is absorbed and acts upon the urinary organs as an alkali. I have seen a white sabulous deposite in the urine of persons after the constant use of *Imperial* as a beverage, which I can explain upon no other principle. Sir Gilbert Blane has also shewn, that if a fixed alkali be saturated with citric acid, it still acts as an alkaline remedy on the urinary organs: for some farther remarks on this subject, *see Potassæ Acetas.* During an alterative course of lithontriptic remedies, it will be beneficial to interpose occasionally a purgative medicine, but we must not combine it with the lithontriptic, for it is a law that will be hereafter expounded, *that catharsis suspends the process of absorption.* Dose of the solution of potass, ♏x to ℥ss, in veal broth* or table beer; this latter vehicle disguises its nauseous flavour completely. In many cases, the infusion of some bitter tonic will be the most eligible liquid in which it can be exhibited, especially where our object is to promote its absorption: the theory of such a combination has been already explained in the first part of this work, *page* 111. Officinal. Prep. *Potassa fusa*, L. E. D. *Potassa cum calce*, L. E. D. *Liquor Sulphureti Kali*, D. *Antimonii Sulphuretum præcipitatum*, L. E.

* Dr. Chittick's Remedy for the Stone. This once celebrated *nostrum* consisted of a fixed alkali in veal broth; the broth was usually made by his patients, and sent to him fresh every day, in order to be medicated. A. D. 1766.

LIQUOR POTASSÆ SUB-CARBONATIS. L.

AQUA SUB-CARBONATIS KALI. D.

Aqua Kali præparati, P. L. 1787.

Lixivium Tartari, 1745.

Oleum Tartari per deliquium, P. L. 1720.

QUALITIES. It is a clear, colourless, and inodorous solution; *Spec. grav.* 1·446. DOSE, ♏x to ℥j. See *Potassæ Sub-carbonas.*

LYTTA. L. (Lytta Vesicatoria.) Cantharis Vesicatoria. E. Cantharis. D.

Blistering or Spanish Fly. Cantharides.

The chemical history of cantharides is still involved in much obscurity; the blistering principle has been obtained by Robiquet in a separate state, when it assumes the form of small crystalline plates, having a micaceous lustre; Dr. Thomson has given to it the name of *Cantharadin.* When pure, it is insoluble in water, but it is rendered soluble by the presence of a yellow matter which exists in native combination with it; it is very soluble in oils. MEDICAL USES. Powerfully stimulant and diuretic, *(Form. 44.)* In consulting the works of Dioscorides, Galen, and Pliny, we shall find that they entertained a notion that the *virus* was in the bodies only of the fly, and that the head, feet and wings, contained its antidote; Hippocrates prescribed them internally in dropsy, jaundice, and amenorrhæa; and yet in the end of the sixteenth century, Dr. Groenvelt was charged and sued * for giving them inwardly in substance; he published his vindication in a small tract, entitled

* He was cited before the censors of the College of Physicians in 1698, and committed to Newgate by a warrant from the President, but he was acquitted upon the plea that *bad practice must be accompanied with a bad intention to render it criminal.*

"*De tuto Cantharidum usu interno*;" the issue, says Quincy, (*Pharm. p.* 152,) ruined the unhappy doctor, but taught his envious prosecutors the safety and value of his practice. Dose, in substance, not exceeding gr. j, with opium or hyoscyamus. A strong decoction of the Lyttæ in Oil of Turpentine furnishes a most powerful Epispastic, and may be easily applied by means of dossils of lint. Officinal Prep. *Tinct. Lyttæ.* L. *Emplast. Lyttæ.* L. *Cerat. Lytt.* L. *Unguent. infusi. Cantharid. vesicat.* E. *Unguent. Cantharid.* D. The flies do not lose their virtues by being kept; it is however curious that even these acrid insects are soon reduced to dust by others feeding upon them, since however, the inert parenchymatous portion is alone selected by them, the residue is extremely active.

MAGNESIA. L. Magnesia Usta. D.

Calcined Magnesia.

Qualities. *Form*, a white, very light, soft powder; *Specific gravity*, 2.3; it turns to green the more delicate vegetable blues. Solubility. Although it requires 2000 times its weight of water to hold it in solution, yet it has the property of considerably increasing the solubility of camphor, opium, and resins in the same fluid; it is soluble in solutions of the alkaline carbonates, but not in those of caustic alkalies. Chemical Composition. It is an oxyd of a peculiar metal. Medical Uses. Antacid, and when acidity prevails, purgative; it is preferable to the carbonate whenever the bowels are distended with flatus; in other respects, its virtues are the same. See *Magnes. Carb.* Incidental Impurities. It ought not to effervesce with acids, and if magnesia and muriatic acid be placed at one time, in separate

cups, in a scale of a balance, no diminution of weight should take place on mixing them. Lime is detected by its solution in dilute sulphuric acid affording a precipitate with oxalate of ammonia; the *sulphuret of lime* betrays itself by yielding, when moistened, the smell of sulphuretted hydrogen.*

MAGNESIÆ CARBONAS. L.

Carbonas Magnesiæ. E. Magnesia. D.

Olim, Magnesia Alba.

Carbonate of Magnesia. vulgo, *Common Magnesia.*

This preparation was formerly considered by Mr. Phillips to be a mixture of carbonate, and sub-carbonate of magnesia, an opinion which he has lately retracted; it is, says he, evidently a *carbonate*, i. e. magnesia combined with one proportion of carbonic acid, or forty-eight of carbonic acid to forty-three of magnesia. Dr. Thomson entertains a different opinion, he observes that it seems to be a mechanical mixture of carbonate of magnesia, caustic magnesia, and perhaps of hydrated magnesia; he found too great a diversity in its composition to permit the conclusion that it was a definite chemical compound; in a specimen purchased at Glasgow, he also found six per cent of *sulphate of lime.* I take this opportunity of stating that in some specimens which I have examined, I have also detected portions of *gypsum;* and from the experiments of Dr. Percival, it appears that if *hard water* be employed for its preparation, it will be

* *Magnesia* was originally a *general* term, expressive of *any* substance which had the power of attracting some principle from the air, from *Magnes*, the Loadstone. The peculiar body which we now denominate *Magnesia*, was first sold as a *panacea*, by a canon at Rome, in the beginning of the seventeenth century, under the title of Magnesia alba, or Count Palma's Powder.

less light, and will contain a portion of lime. Magnesia will be also liable to contain traces of siliceous earth derived from the alkali used in producing it. INCOMPATIBLE SUBSTANCES. *Acids, and acidulous salts; alkalies, and neutral salts; alum; cream of tartar; nitrate of silver; acetate of mercury; oxymuriate of mercury; super-acetate of lead; sulphates of zinc, copper and iron.* MEDICAL USES. Antacid. In cases of lithic calculi, carbonate of magnesia, in doses of ℈j to ʒj, has been proposed by Mr. Hatchett, as a valuable substitute for alkaline remedies. Its insolubility must render its absorption equivocal; its beneficial operation must therefore principally depend upon its neutralizing any excess of acid in the primæ viæ, and in this way there can be no doubt of its lithontriptic agency; "but," says Dr. Marcet, "such isthe tendency which the public has to overrate the utility of a new practice, or to take a mistaken view of its proper application, that there is every reason to believe that the use of magnesia has of late years become a frequent source of evil in calculous complaints." OFFICINAL PREP. *Hydrarg. cum Magnesia.* D. *Magnesia.* L. E. D. ADULTERATIONS. *Chalk* may be detected by adding dilute sulphuric acid to a suspected portion, when, should any be present, the solution will be loaded with a white and insoluble precipitate; *gypsum*, by boiling a sample in distilled water, and assaying the solution by a barytic and oxalic test.*

* DALBY'S CARMINATIVE. This consists of carbonate of magnesia ℈ij, oils of Peppermint ♏j, of Nutmeg ♏ij, of Anniseed ♏iij, of the tinctures of Castor ♏xxx, of Assafœtida ♏xv, Tincture of Opium ♏ v, Spirit of Pennyroyal ♏xv, of the compound tincture of Cardamoms ♏xxx; Peppermint water f℥ ij. There are cheaper compositions sold under the same name. In examining the pretensions of this combination, it

MAGNESIÆ SULPHAS. L. Sulphas Magnesiæ. E.D.

Magnesia Vitriolata. Sal catharticum amarum. *Bitter purging salt. Epsom salt.*

Qualities. *Form*, small needle-like crystals. *Taste*, bitter and nauseous; when pure, it effloresces. Chemical Composition. In its crystallized state, it may be considered as composed of 1 proportional of dry sulphate (Magnesia 18·5, and Sulphuric acid 37·5) and 7 proportionals of water. Solubility. f℥j of water dissolves ℥j, and the solution measures f℥xj¼; it is insoluble in alcohol. Incompatible Substances. *Muriates of ammonia, baryta*, and *lime; nitrate of silver; sub-acetate*, and *acetate of lead. The fixed alkalies* and *their carbonates*, precipitate from it magnesia and its carbonate. *Phosphate of soda* occasions no immediate precipitate, unless ammonia be present, in which case the triple *ammoniaco-magnesian phosphate* will be produced. The addition of ammonia, which in the form of *Spiritus ammoniæ aromat.* is not unfrequently prescribed in conjunction with a solution of this sulphate, forms also a triple salt, and a portion of magnesia is precipitated: whenever therefore this ammoniacal stimulant is ordered with a purgative salt, the scientific physician will prefer a

must be allowed that it is constructed upon philosophical principles; this however is no reason why the physician should recommend it; the mischievous tendency of a quack medicine, does not depend upon its composition, but upon its application; we ought to remember, says an eminent physician, that in recommending this nostrum we foster the dangerous prejudices of mothers and nurses, who are unable to ascertain the circumstances under which it should be given, or even the proper doses; if its composition is judicious, why do not physicians order the same in a regular prescription, rather than in a form, in which the most valuable remedy will be abused?

solution of the sulphate of soda. FORMS OF EXHIBITION. Dissolved in the *Infusum Rosæ*, or in a suitable quantity of beef tea, gruel, or any aqueous vehicle; its cathartic powers are increased by dilution, as well as by the addition of a little common salt; *magnesia* renders the taste of its solution less nauseous; and tartarized antimony quickens its operation. DOSE, ℥ss to ℥ij, taken either at once, or in divided doses. OFFICINAL PREP. *Enema Catharticum. Enema Fœtid.* D. ADULTERATIONS. *Sulphate of Soda* is often substituted for this salt, which it may be made to resemble by stirring it briskly at the moment when it is about to crystallize; the fraud may be detected by a precipitation not ensuing on adding carbonate of potass; if only a part of the salt be sulphate of soda, the degree of sophistication can be learnt by the quantity of the precipitate formed; 100 parts of sulphate of magnesia, if pure, will yield between 30 and 40 of the dry carbonate. Epsom salt, as it commonly occurs, contains *muriate of magnesia*, which disposes it to deliquesce, but lately this salt has appeared in the market in a state of great purity and beauty; the mode of purification is founded upon the well known chemical law, that *a saturated solution of one salt is still capable of dissolving another;* in the present instance, therefore, the impure crystals are washed in a saturated solution of the same sulphate, which, although unable to act upon its kindred salt, can dissolve with facility the muriate, and any other saline contamination. I confess, however, that I am rather induced to regard this process as chemically ingenious than as medicinally useful, for the usual saline impurities of Epsom salt are not only harmless, but capable of increasing its purgative powers; the *double refined* sulphate is

certainly less efficient as a cathartic. The presence of the *muriate* may be at once detected by dropping upon the suspected sample some sulphuric acid, by which the disengagement of muriatic acid vapour will be produced.

MANNA. L.E.D. (Fraxinus Ornus. *Succus Concretus.*) *Manna.*

QUALITIES. *Form*, flakes of a granular texture; *Colour*, whitish, or pale yellow; *Odour*, slight, but peculiar; *Taste*, nauseous sweet, with some degree of bitterness. CHEMICAL COMPOSITION. This concrete vegetable juice, besides sugar, appears to contain mucilage and extractive, to which its taste and other peculiar properties are owing. SOLUBILITY. It is entirely soluble in water and alcohol. MED. USES. It is now merely regarded as a laxative for children, or for weak persons. It generally requires some laxative adjunct, as castor oil, with which it may be combined by the medium of mucilage. DOSE, for children, from ʒj to ʒiij, in warm milk. OFFICINAL PREP. *Confectio Cassiæ*. L.E.D. *Enema Cathart*. D. *Enema Fœtid*. D. *Syrup. Sennæ*. D. ADULTERATIONS. There are several varieties in the market, the best of which is flake manna, *manna cannulata*, in a stalactitic form; an article, entirely factitious, consisting of honey or sugar, mixed with scammony, is sometimes sold for genuine manna, but its colour, weight, transparency, and taste, must instantly lead to its detection.

MASTICHE. L. (Pistachia Lentiscus. *Resina.*) *Mastic.*

The use of this resinous substance is to fill the cavities of carious teeth; a solution of it in oil of tur-

pentine is sold is an odontalgic. The Turkish and Armenian women use it as a masticatory for cleaning the teeth, emulging the salivary glands, and imparting an agreeable odour to the breath. It forms a constituent of the *Dinner Pills*. See Aloes.

MEL. L.E.D. Honey.

This well known substance appears to be merely collected from the flowers, and not elaborated by the internal economy of the insect, for when properly diluted it undergoes vinous fermentation, the product of which is the beverage well known by the name of *Mead;* such a change does not occur in any *animal* substance. The English honey is more waxy than that from the south of Europe. *Virgin honey* is that wrought by young bees which have never swarmed, and permitted to run from the comb without heat or pressure. Chemical Composition. Sugar, mucilage, wax, an acid, and occasionally some essential oil. *Clarified Honey, (Mel Despumatum.* L.D.*)* has not the agreeable smell of crude honey; it does not however ferment so readily, nor is it so apt to gripe. Uses. It is principally employed for forming several officinal preparations, i. e. *Mellita.* viz. *Mel Boracis.* L. *Mel Ros.* L. D. *Oxymel.* L. D. *Oxymel Colchici.* E. *Oxymel Scillæ.* L.D.* Adulterations. *Flour* may be detected by diffusing the honey in tepid water, by which it will be separated, and, by subsequent boiling, converted into a thick paste.

* Honey Water.—The article usually sold under this name is a mixture of Essences coloured with Saffron; some add a small quantity of Honey, the effect of which is to communicate a clamminess which retains the scent longer.

MENTHA PIPERITA. L.E.D.

MENTHA PIPERITIS. D. *Peppermint.**

All the qualities of this plant depend upon an essential oil and camphor; it readily and strongly impregnates either water or spirit, by infusion; its infusion, and the water distilled from the plant, are carminative and antispasmodic; they also serve as vehicles for other medicines, to correct their operation, or to disguise their flavour. OFFICINAL PREP. *Aq. Menth. Piperit.* L.E.D. *Spir. Menth. Pip.* L.D. *Ol. Menth. Pip.* L.D. If this plant be cut in wet weather, it turns black, and is worthless.

MENTHA VIRIDIS. L. MENTHA SATIVA. D.

Spearmint.

Cold water extracts the more agreeable and active parts of mint in a few hours; a longer maceration extracts the grosser and less agreeable portions; hot water more quickly extracts its virtues, but if it be boiling it dissipates the aroma. OFFICINAL PREP. *Aq. Menth. virid.* L. D. *Infus. Menth. comp.* D. *Ol. Menth. virid.* L.D. *Spir. Menth. virid.* L.

MEZEREI CORTEX. L.E.D. (Daphne Mezereum *Radicis Cortex.*)

Mezereon.

The inner bark of this plant, when fresh, is corrosive and even vesicatory; the fruit is equally so; its virulence is counteracted by camphor. It is now seldom used except as an antivenereal remedy. From its pungency it is one of the substances used by frau-

* ESSENCE OF PEPPERMINT.—A spirituous solution of the Essential Oil, coloured green by Spinach leaves.

dulent brewers to communicate a strong flavour to their beer. Officinal Prep. *Decoct. Sarsaparill. comp.* L. *Decoct. Daphnes. Mezerei.* E. The *Daphne Laureola* is sometimes sold for Mezereon.

MISTURÆ. L.E.D. *Mixtures.*

The principles upon which this form of preparation is to be constructed, are fully detailed in the *First Part* of this work, see page 176.

Mistura Ammoniaci. L. This mixture is expectorant, and may be exhibited with tincture of squills, &c. (*Form.* 50). It is slightly curdled by *vinegar*, *oxymel*, *æther*, and *oxy-muriate of mercury*.

Mistura Amygdalarum. L. *Emulsio Amygdali communis.* E. *Lac Amygdalæ.* D. It is a useful demulcent and diluent, and forms an elegant vehicle for more active medicines. *Incompatibles*—*Acids*, *Oxymel*, *Syrup of Squill*, *Spirit*, *and Tinctures*, unless added in very small quantities, decompose this mixture; *tartaric acid*, *super-tartrate of potass*; *super-sulphate of potass*, and *oxy-muriate of mercury*, also disturb it.

Mistura Assafœtidæ. L. A nauseous preparation; and where its use is indicated, it will be more judicious to prescribe it as an extemporaneous mixture. See *Assafœtida.*

Mistura Camphoræ. L. This solution of camphor forms an elegant vehicle for more active stimulants. The camphor is separated from the water by a solution of pure potass, by sulphate of magnesia, and by several saline bodies.

Mistura Cretæ. L.D. A common and useful remedy in diarrhœa, and may be combined with opium, catechu, or any other astringent.

Mistura Ferri Composita. L. This is nearly the same as the celebrated anti-hectic mixture of Dr. Griffith; to the result of the decompositions which take place from the mixture of its ingredients, it is wholly indebted for its medicinal energies; thus, a *proto-carbonate of iron* is formed, i. e. the iron combined with carbonic acid is at its *minimum* of oxidation, which renders it more active than the common carbonate, and probably less stimulant than the sulphate; this product, by means of the saponaceous compound formed by the union of the myrrh with the excess of alkali, is *partly* diffused and suspended in the mixture, and *partly* dissolved, whilst at the same time a *sulphate of potass* is formed, which serves to correct the astringent influence which iron is apt to exert upon the bowels. The iron in this preparation is disposed to combine with an additional proportion of oxygen, hence its ingredients should be quickly mixed together, and it ought to be considered as an extemporaneous preparation; it should be preserved in a closely-stopt vessel. Its change of colour will generally indicate its loss of efficacy.

The Dose of the above mixtures is f℥j to f℥ij twice or thrice a day.

MOSCHUS. L. E. D. *Musk.*

Qualities. *Form*, grains concreted together, dry, yet slightly unctuous. *Colour*, deep brown with a shade of red; *Odour*, aromatic, peculiar, diffusive, and durable; and it has the curious property, when added in a minute quantity, to augment the odour of other perfumes without imparting its own; this renders it a valuable article in perfumery, on which account it is a usual ingredient in lavender water.

Taste, bitterish and heavy. CHEMICAL COMPOSITION. Resin combined with volatile oil, and a mucilaginous extractive matter, with small portions of albumen, gelatine, muriate of ammonia, and phosphate of soda. SOLUBILITY. Boiling water dissolves it perfectly; rectified spirit takes up most of its active parts, although the odour is only discovered upon dilution; sulphuric ether is its most complete menstruum. INCOMPATIBLE SUBSTANCES. The solutions are decomposed by *Oxy-muriate of Mercury; Sulphate of Iron; Nitrate of Silver;* and the *Infnsion of Yellow Bark.* MED: USES. Stimulant and antispasmodic. As early as the time of Meade it was employed in typhus fever; Pringle administered it in gout of the stomach, a practice which received the concurrence of Cullen; conjoined with ammonia it has been celebrated for its powers in arresting the progress of gangrene. FORMS OF EXHIBITION. The best form is that of bolus, combined with ammonia or camphor or some other similar remedy (*Form.* 109); it may be also administered in a mixture, for which purpose it requires five times its weight of mucilage, consequently the London College has not directed a sufficient quantity to retain the musk in suspension: by previously triturating it with sugar, its minute division is much facilitated. DOSE, grs. x to xxx. OFFICINAL PREP. *Mist. Mosch:* L. *Tinct: Mosch:* D. ADULTERATIONS. The bag containing the musk should have no appearance of having been opened: the presence of *dried blood* may be suspected, by its emitting, as it inflames, a fetid smoke; *Asphaltum* is discovered by its melting and running before it inflames: the artificial bags are known from the deficiency of the membrane which lines the real musk bags. To increase the weight of the musk, fine par-

ticles of lead are very frequently added; this is easily detected, for by rubbing it with water the metallic particles will subside.

Moschus Factitius. *Artificial Musk*, strongly resembling the real, may be formed by digesting f℥ss of *Nitric Acid*, for ten days, upon ℥j of fetid animal oil, obtained by distillation; to this is to be next gradually added oj of *rectified spirit*, and the whole is then to be left to digest for one month: or—

2. Drop f℥iiiss of nitric acid upon f℥j of rectified oil of amber; after standing twenty-four hours, a black, resinous pellicle, exhaling the odour of musk, will be formed.

MUCILAGO ACACIÆ. L. E.

Mucilago Gummi Arabici. D.

This preparation consists of one part of gum and two of water; in preparing it, the dispenser is particularly recommended to pulverize the gum, and never to employ that which is purchased in the state of powder, as it is always impure and incapable of forming a pellucid and elegant solution.* Incompatible Substances. Neither the *strong acids* nor *alcohol*, when considerably diluted, occasion any disturbance in it; but *sulphuric ether* and its *compound spirit*, *the tincture of muriated iron*, and *sub-acetate of lead*, produce very dense precipitates: the *acetate of lead* only occasions decomposition, when an alkaline salt is present in the formula: the *volatile alkali* curdles the mucilage, and *hard*, *calcareous waters* render the mixture difficult and often impracticable.

* If the Gum arabic be adulterated with that of the Cherry tree, the solution will be ropy, in consequence of the presence of Cerasin. See *Mucilago Tragacanthæ*. (Note.)

In the pharmaceutical application of this mucilage, it should be remembered that it contains in its composition an astringent principle, which is perhaps of but trifling consequence except in the exhibition of some very few active metallic salts, which are certainly decomposed by it (e.g. grs. x of *nitrate of mercury* are decomposed by ʒij of gum arabic.) It contains also lime in combination with some vegetable acid. Uses: diluted with four times its bulk of water, this mucilage forms a demulcent mixture of appropriate tenacity, which affords a convenient vehicle for several efficient remedies; the pharmaceutical use of this mucilage depends upon the fact of its rendering expressed and essential oils, balsams, resins, gum-resins, resinous tinctures, and fatty bodies, miscible with water, but if a syrup be added, the union will be more perfect; the proportions necessary for this purpose, vary according to the nature of the substances; thus, *oils* will require about three-fourths their weight, *Balsams* and *Spermaceti* an equal part, *Resins* a double quantity, and *Musk* five times its weight.

MUCILAGO ASTRAGALI TRAGACANTHÆ, L.D. *Tragacanth Mucilage.*

Tragacanth is, strictly speaking, not soluble in water, but imbibes a large portion of it and swells into a considerable bulk, forming a soft but not a liquid mucilage; on the farther addition of water, a fluid solution may be obtained by agitation, and the liquor is turbid; but on standing, the mucilage subsides, the limpid water on the surface retaining little of the gum;* it differs from all gums in giving a thick con-

* This variety of gum, which is characterised by its gelatinizing, but not dissolving, in water, occurs in several vegetable substances; and as

sistence to a larger quantity of water, its power in this respect being to that of gum arabic as twenty to one; one part converts twenty of hot water into a stiff mucilage. Tragacanth is not increased, but actually diminished in solubility by the addition of any other gum, accordingly it separates from water with much greater facility when gum arabic is present. This preparation, according to the Edinburgh college, consists of one part of gum and eight of water, the resulting mucilage is stiff, and is principally employed for making *troches*. The Dublin preparation contains four times that quantity of water.

MYRISTICÆ NUCLEI. L. E.

Nux Moschata. D. *Nutmeg.*

All the properties of this well-known substance depend upon an essential oil, filling the dark coloured veins which run through its substance, and which is dissipated by decoction; the other components are starch, gum, wax, and a fixed oil. The oil obtained by expression is improperly called *oil of mace*, for it would appear to be a triple compound of fixed oil, volatile oil, and wax. *Mace* is the involucrum of the nut. Medical Uses. Stimulant, and in large doses, as from ʒij to ʒiij, narcotic, frequently producing delirium. *See Cullen Mat. Med. ii.* 204. Frauds. Nutmegs are frequently despoiled of their essential oil, by being punctured and submitted to the operation of decoction, the orifices being subsequently

it predominates in the Cherry tree, Dr. John has distinguished it by the name of Cerasin; but as Tragacanth consists almost entirely of this substance, the term Tragacanthin would be much more appropriate. Although *Cerasin* will not dissolve in pure water, it undergoes solution in that menstruum, at the temperature of ebullition, provided a portion of a mineral acid be added.

closed by powdered sassafras; the imposition is detected by the comparative lightness of the nutmeg, and by its extreme fragility; the holes may also be discovered by carefully examining the surface of the nut, after having steeped it in hot water.

MYRRHA. L.E.D. (Arboris nondum descriptæ. *Gummi-resina.*)

Myrrh.

Qualities. *Form*, irregularly shaped pieces, translucent, of a reddish yellow colour; *Odour*, peculiar and fragrant; *Taste*, bitter and aromatic. Chemical Composition. Resin, gum, essential oil, and some extractive. Solubility. When triturated with soft, or distilled water, nearly the whole appears to be dissolved, forming an opaque, yellowish solution, but by rest the greater part is deposited, and not more than one-third is actually dissolved; its solubility, however, in water, may be increased by trituration with camphor or an alkali; rectified spirit dissolves it, and the resulting tincture, when diluted, becomes turbid, although no precipitate occurs. Med. Uses. Stimulant, as in *Form.* 31, 105; Expectorant, 46, 47, 52. Emmenagogue, 68. Forms of Exhibition. No form is so eligible as that of substance. Dose, grs. x to ʒj. The alkalies, in their crystalline state, when triturated with myrrh, reduce it to the form of a tenacious fluid. Officinal Preparations. *Tinct. Myrrh.* L.E.D. *Tinct. Aloes et Myrrh.* E. *Tinct. Alöes Ætherea.* E. *Mist. Ferri comp.* L. *Pil. Aloes cum Myrrha.* L. E. D. *Pil. Ferri cum Myrrha.* L. *Pil. Galb. comp.* L. D. *Pil. Assafœtid. comp.* E. *Pil. Rhei comp.* E. Adulterations. It is subject to a variety of frauds, being frequently

mixed with adventitious gums, which are to be detected by their foreign odour, their white or dark colour, and by their opacity.

NUX VOMICA. (Strychnus Nux Vomica.) *Nux Vomica.*

This seed has not at present a place in the British pharmacopœias; it presents however several points of interest to the physiologist, the physician, and the chemist. Its virulent action upon animals has been long known, and it has been administered in combination with gentian in intermittents,* (*Ludovic. Phar.* p. 113,) and as a narcotic in mania; it also constituted an ingredient in the famous *Electuarium de ovo*, (*Ph. Angl. p.* 263.) Nux vomica has been said to produce benefit in the plague; the German writers have strongly commended it in mania, epilepsy, and hydrophobia; as well as in chronic rheumatism, gout, scrophula, lues venera, and cutaneous eruptions; in Sweden it is stated to have displayed very beneficial effects in Dysentery. Dr. Fourquier has lately introduced its use in the Hopital de la Charité, in cases of partial paralysis, and it is said, with very great success. The value of the practice has been since confirmed by the experiments of Dumeril, Majendie, Hebreard, Husson, and Asselin. The dose is four or five grains of the powder in pills, during the day. The French codex contains two alcoholic extracts of this substance, the one prepared with a strong spirit (22, 32, Beaumé, i, e, from sp. gr. ·915

* Sir Hans Sloane published a Paper in the Philosophical Transactions, No. 249, Vol. xxi, p. 44, entitled "An Account of the Nux Pepita, or Saint Ignatius's Bean (*Ignatia Amara, Lin.*) A Simple in common use in the Philippine Island, as a Tonic medicine."

to ·856,) is much more active and powerful than that made with a weak spirit, (12, 22, Beaumé, i, e, from sp. gr. ·985 to ·915.) M. M. Pelletier and Caventou have discovered in this substance, a peculiar proximate principle, to which its virulence is owing; it was named *Vauqueline*, in honour of the celebrated French philosopher, but in deference to the opinion of the French Academy of Sciences, the discoverers have substituted the name *Strychnine*, because "a name dearly loved, ought not to be applied to a noxious principle." (*Annales de Chimie, vol.* 8 to 10.) Strychnine is highly alkaline, and crystallizes in very small four-sided prisms, terminated by four-sided pyramids; its taste is insupportably bitter, leaving a slight metallic flavour; it has no smell; it is so extremely active and violent, that in doses of half a grain it occasions serious effects, and in larger ones convulsions and death; notwithstanding its strong taste, it is very sparingly soluble in water, requiring 6667 parts of that fluid for its solution at 50, and 2500 at 212°. It is very soluble in alcohol; with its acids it forms neutral and crystallizable salts; these salts as well as their base, have the singular property of becoming blood-red by the action of concentrated nitric acid. Strychnine exists in native combination in the Strychnus, with an acid which has some analogy with the malic, and which Pelletier and Cavendou propose to call the *Igasuric acid*, from the Malay name for the bean of St. Ignatius,* (Strychnus Igna-

* *Strychnine* was obtained from the beans of St. Ignatius by the following process: a portion of the beans being grated was heated in a close vessel, under pressure, with sulphuric ether, by which an oily matter was dissolved; the residuum then yielded by the action of alcohol, a yellowish brown, very bitter substance, which being boiled with pure magnesia and filtered, the colouring matter was washed out, and the *Strychnine* and magnesia, in a state of mixture, remained on the filtre. This strychnine was then separated by alcohol, and thus obtained in a state of great purity.

tius,) in which its properties were first examined. In conformity with such views, the active principle of the tribe of the Strychni is an *Igasurate of Strychnine*. A fact which suggests the existence of a most singular and striking analogy between the chemical constitution of these narcotico-acrid bodies * and that of opium.

OLEA DISTILLATA. L. Ol. Volatilia. E. Ol. Essentialia. D.

Distilled, Volatile, or Essential Oils.

The British pharmacopœiæ direct them to be obtained by distillation only; the French codex orders several of them to be prepared by expression. Qualities. *Form*, liquid, sometimes viscid; *specific grav.* various, oil of turpentine, which is the lightest, being only 0.792, whilst the oils of cloves, cinnamon, and allspice, exceed 1·030, and that of sassafras, which is the heaviest, amounts to 1.094; these latter oils hold resin in solution, they of course sink in water. *Odour*, penetrating and fragrant; *Taste*, acrid; they are volatilized at a temperature somewhat below that of boiling water; they are very inflammable. Solubility. Very soluble in alcohol, forming what are termed in perfumery *Essences;* in water they are very sparingly soluble; the solutions are known in pharmacy under the title of *distilled waters:* they are also dissolved by ether, and the *fixed* oils; when digested with ammonia, some of the less odorous acquire a

* Since the last edition of this work the researches of the French and German chemists have considerably multiplied the number of these bodies, to an extent indeed that requires corroboration by farther experiments; thus in Stramonium, we have *Daturia*,—in Belladonna, *Atropia;*—in Veratrum *Veratria;*—in Angustura Pseudo-ferugi-nea, *Brucina*,—in Hyoscyamus, *Hyoscyama*, &c.

considerable degree of fragrance, whilst on the contrary, fixed alkalies universally impair their odour; they are rapidly decomposed by nitric and sulphuric acids, and their action is sometimes attended with instant inflammation. Volatile oils, from continued exposure to the air, absorb oxygen, and become resinous, by which they lose their volatility, fragrance and pungency, hence they should be preserved in small opaque phials, completely full and well stopped. MEDICAL USES. They act as powerful stimulants and aromatics; they remove nausea and flatulence, correct the griping of certain purgatives, and cover the offensive taste of various remedies. See *Aquæ distillatæ*. The following is a list of the species admitted into our British pharmacopœiæ; those designated in *italics* are principally for internal use. OLEA *Anisi*, *Anthemidis*, *Carui*, *Juniperi*, Lavandulæ, *Menthæ Piperitæ*, *Menthæ viridis*, Origani, *Pimentæ*, *Pulegii*, *Rosmarini*, *L.* OLEA VOLATILIA, *Juniperi communis*, Juniperi Sabinæ, Lavandulæ Spicæ, Lauri Sassafras, *Menthæ Piperitæ*, *Myrtæ Pimentæ*, *Pimpinellæ Anisi*, Rorismarini Officinalis, E. OLEA *Juniperi*, *Pimento*, Corticis, et Ligni Sassafras, *e Seminibus Anisi*, *Carui*, et *Fœniculi dulcis*, Florum Lavandulæ, Foliorum Sabinæ, *Herbæ florescentis Menthæ Piperitidis*, *Herbæ florescentis Menthæ Sativæ*, Origani, *Pulegii*, *Rorismarini*, *Rutæ*, D. ADULTERATIONS. *Fixed Oils* may be detected by moistening writing paper with the suspected article and holding it before the fire: if the oil be entirely essential, no stain of grease will remain; as castor oil is more soluble in spirit than the others, it is the one generally selected for this fraudulent purpose, and the addition of alcohol restores the sophisticated oil to its proper degree of consistency. *Alcohol* is dis-

covered by adding water, which, if it be present, occasions a milkiness, and at the same time, an increase of temperature. *Cheaper oils*, as that of turpentine, are recognised by their peculiar odour, which may be developed by rubbing a drop upon the hand and holding it to the fire, or, by the dense black smoke with which they burn. The oil of aniseed, as it crystallizes at 50°, is frequently sophisticated with wax, spermaceti or camphor; the fraud is detected by warming the oil, when the crystals, if genuine, will dissolve.*

OLEA EXPRESSA. L.D.

Olea Fixa, sive Expressa. E.

Expressed or Fixed Oils.

These are obtained from animal matter by fusion, and from vegetables by expression, or decoction with water. Qualities. *Odour*, none; *Taste*, mild; they boil at 600, but undergo decomposition, becoming acrid and empyreumatic; the oil, in this state, was formerly used in medicine under the name of *philosopher's oil.* † By exposure to air they absorb oxygen and become rancid; they congeal at a temperature of 32°, and some even above that. When the oil is expressed by heating the plates of the press, or by previously roasting the seeds, it is more disposed to become rancid; *cold drawn* oils are on this account to

* Huiles Antiques. The basis of the best of these oils, is the oil of Ben, from the nuts of the *Guilangia Moringa;* or oil of hazel, which is a very good substitute, since it is inodorous, colourless, and may be kept for a considerable period without becoming rancid: it is therefore well adapted to receive and retain the odour of those vegetables that yield but a small proportion of essential oil.

† Oil of Bricks. So called because this empyreumatic oil was sometimes obtained by steeping hot brick in oil, and submitting it to distillation.

be preferred for the purposes of pharmacy. SOLUBILITY. They are insoluble in water, and, except castor oil, nearly so in alcohol and ether; with caustic alkalies they combine and form soaps; when aided by heat they readily unite with oxide of lead, forming the solid compound well known by the term *plaister*. They unite also very readily with each other, and with volatile oils. SOLVENT POWERS. They dissolve sulphur, and form a kind of balsam with it; they also possess the power of extracting and dissolving the narcotic and acrid principles of several vegetable and animal substances, in consequence of which, the French pharmacopœia directs a series of preparations under the term "*Olea Medicata*;" thus there are olea Cicutæ, Hyoscyami, Solani, Stramonii, Nicotianæ;* which are made by digesting with a gentle heat, one part of the subject in two parts of olive oil.†

OLEUM AMYGDALARUM. L. E. D.

Oil of Almond.

This oil, whether procured from the *sweet* or *bitter* almond, has the same properties, for the bitter principle resides exclusively in combination with the mucilage; that from the latter keeps longer without rancidity. It is sometimes made from old Jordan almonds, *by heat*, in which case it very soon grows fetid. Nut Oil, *Oleum nucum Coryli*, has been proposed as a substitute for that of almonds; in China it is drank with tea, instead of cream. MEDICAL

* ROCHE'S EMBROCATION FOR THE HOOPING COUGH. Olive oil mixed with about half its quantity of the oils of cloves and amber.

STRUVE'S LOTION FOR THE HOOPING COUGH. This once famous nostrum consisted of ʒ j of *Tartarized Antimony*, dissolved in f ℥ ij of water, to which was added f ℥ j of *Tincture of Cantharides*.

† The editors have also unaccountably retained the *Oleum de Lumbricis*!

Uses. For forming emulsions, in coughs, and other pulmonary complaints. Forms of Exhibition. It may be formed into an *emulsion* by the intermedium of *mucilage*, the *yelk of an egg*, or by that of an *alkali*.

1. By Mucilage. This is in general a more convenient medium than the yelk of an egg; one part of gum, made into mucilage, will be sufficient for the diffusion of four parts of oil, (see *Mucilago Acaciæ*,) the oil and mucilage must be carefully triturated together, and the water then gradually added; the emulsion thus formed is permanent, and the addition of a moderate quantity of acid, spirit, or tincture, will not produce decomposition. *See Form.* 73.

2. By Alkalies. This oil, by uniting with alkalies and water, forms an elegant and grateful mixture, for which purpose the following proportions are to be observed, every f℥j of oil requires ♏ viij of liquor potassæ, and f℥iss of distilled water. Incompatible Substances. *Acids; oxymel; syrups of poppies and squills; tartrate and super-tartrate of potass; super-sulphate of potass; oxy-muriate of mercury; resins; hard water. See Form.* 74.

OLEUM OLIVÆ. L.E.D. *Olive Oil.*

Qualities. *Colour*, pale yellow, somewhat inclining to green; *Taste* bland; *Odour* none; it ought to congeal at 38° *Fah.* According to the recent observations of Dr. Clarke of Cambridge, this oil crystallizes in rectangular four-sided prisms with square bases. Adulterations. It is not unfrequently mixed with the oil of poppy seeds, a fraud which may be easily discovered by exposing a sample to the freezing temperature; when the olive oil will congeal, while that of poppies will remain fluid; and since those oils which freeze with most difficulty are

most susceptible of rancidity, the admixture of poppy oil must be regarded as injurious: it also deserves notice that the peculiar habitudes of *Oil of Olives*, with the *Per-nitrate of Mercury*, offer a distinguishing character, by which the adulteration of the oil may be satisfactorily detected; for if the *per-nitrate* (made by dissolving 6 parts of the metal in 7·5 of nitric acid, of sp. grav. 1·36, at a common temperature,) be mixed with olive oil, the mixture, if kept cold, will in the course of a few hours become solid, whereas if it has any admixture of the oil of grains, it will not undergo such a change. The contamination derived from lead, which is frequently immersed in the oil for the purpose of removing its rancidity, may be detected by shaking one part of the suspected sample with three parts of water, impregnated with sulphuretted hydrogen, in a stopped phial.

OPIUM. L.E.D. (Papaver Somniferum. *Capsularum immaturarum Succus concretus.* (Turcicus.)
Turkey Opium.

Two kinds are found in commerce, distinguished by the names of *Turkey* and *East India* Opium.

Qualities. *Form.* Turkey opium occurs in flat pieces, of a solid compact texture, and possessing considerable tenacity; by long exposure to the air it becomes hard, breaks with a shining fracture, and affords a yellowish powder. *Colour*, reddish-brown or fawn-like. *Odour*, peculiar, heavy, and narcotic. *Taste*, at first a nauseous bitter, which soon becomes acrid with some degree of warmth. It is inflammable.

* The Greeks and Romans attached a very different meaning to the terms Opium and Meconium. The former signified the pure juice (οπος succus) that flowed from the scarified poppies; the latter the juice obtained by bruising and pressing the poppy heads.

Solubility. It is partially soluble in water, alcohol, ether, wine, vinegar, and lemon juice; when triturated with hot water, five parts in twelve are dissolved, six suspended, and one part remains perfectly insoluble and resembles *gluten*. By long boiling, its soporific powers are impaired and ultimately destroyed: the alcoholic is more highly charged with its narcotic principle than the aqueous solution, but spirit, rather below proof, is its best menstruum. The watery solution when filtered is transparent, and reddens the colour of litmus; it undergoes no change on the addition of alcohol, but precipitates occur from *pure ammonia*, and from the *carbonates of fixed alkalies;* from the solutions of *oxy-muriate of mercury*, *nitrate of silver*, *sub-acetate and acetate of lead*, the *sulphates of copper*, *zinc and iron*, and from an *infusion of galls*. Chemical Composition. Resin, gum, bitter extractive, sulphate of lime, gluten, and a peculiar alkaline body, to which the narcotic virtues of opium are owing, and to which the appropriate name of *Morphia* has been assigned; and it appears moreover that this new alkaline body exists in combination with an unknown acid, which has therefore been denominated the *Meconic Acid;* so that the narcotic principle of opium is *Morphia* in the state of a *meconiate*, or perhaps of a *super-meconiate*.

For these important facts we are indebted to the successive labours of Derosne,* Sertuerner, and Robiquet. And the French codex contains in its appendix,

* *Annales de Chimie*, *vol.* 45. The Salt of Derosne, however, as the experiments of Robiquet seem to shew, is not, as Sertuerner supposed, a *meconiate of morphia*, but another acid, characterized by a different train of properties, and which may be separated from opium by a somewhat circuitous process. Farther experiments are required upon this subject.

formulæ for the preparation of morphia according to the directions of these two latter chemists.*

Characters of Morphia. When pure, it crystallizes in very fine, transparent, truncated pyramids, the bases of which are either squares or rectangles, occasionally united base to base, and thereby forming octohedra. It is sparingly soluble in boiling water, but dissolves abundantly in heated alcohol and ether, and the solutions are intensely bitter. It has all the characters of an alkali; affecting test papers, uniting with acids, and forming neutral salts, and decomposing the compounds of acids with metallic oxides. It unites with sulphur by means of heat, but the combination is

* Robiquet's Process. Three hundred parts of pure opium are to be macerated during five days, in one thousand parts of common water; to the filtered solution, fifteen parts of perfectly pure magnesia (carefully avoiding the *carbonate*,) are to be added; boil this mixtute for ten minutes, and separate the sediment by a filter, washing it with cold water until the water passes off clear; after which, treat it alternately with hot and cold alcohol, (12, 22, Bé.) as long as the menstruum takes up any colouring matter; the residue is then to be treated with boiling alcohol (22, 32, Bé.) for a few minutes. The solution, on cooling, will deposit crystals of *Morphia*.

Rationale of the Process. A soluble *Meconiate of Magnesia* is thus formed, whilst the sediment consists of *Morphia* in the state of mixture, with the excess of magnesia; the boiling alcohol with which this residuum is treated, exerts no action upon the magnesia, but dissolves the *Morphia*, and on cooling surrenders it in a crystalline form. A repetition of the treatment with boiling alcohol will procure a fresh crop of crystals, and the process should be continued until they cease to appear.

Sertuerner's Method. It differs from the preceding, in substituting ammonia for magnesia, and in adding to the sediment, separated as before mentioned, as much sulphuric acid as is sufficient to convert the *Morphia* into a sulphate, which is subsequently decomposed by a farther addition of ammonia; the precipitate thus produced is then dissolved in boiling alcohol, which on cooling surrenders the *Morphia* in a state of crystalline purity. It appears however that the *Morphia* produced by this latter method, is less abundant and more impure and coloured, than that which is furnished by the process of Robiquet.

decomposed at the same instant; it is incapable of forming soap with an oxidized oil. It fuses at a moderate temperature, when it resembles melted sulphur, and like that substance, crystallizes on cooling; it is decomposed by distillation, yielding carbonate of ammonia, oil, and a black resinous residue, with a peculiar smell; when heated in contact with air, it inflames rapidly; the voltaic pile exerts but little action upon it, yet, when mixed with a globule of mercury, the latter appears to become increased in bulk, and to change consistence. Its habitudes with different bodies have not hitherto been sufficiently investigated, but they are highly important, in as much as they will explain the operation of those various medicinal compounds, into which opium enters as a principal ingredient. Morphia acts on the animal body as a most powerful agent, three half grains taken in succession, with intervals of half an hour, by the same person, produced violent vomiting and alarming faintings, and yet its comparative insolubility must materially diminish its potency; hence, under certain circumstances, vegetable acids render narcotic extracts more efficient. The following history of its saline compounds may be useful.

The *Carbonate* crystallizes in short prisms.

The *Acetate* in soft prisms, very soluble, and extremely active.

The *Sulphate*, in arborescent crystals, very soluble.

The *Muriate*, in plumose crystals, much less soluble; when evaporated, it concretes into a shining white plumose mass on cooling.

The *Nitrates*, in prisms grouped together.

The *Meconiate*, in oblique prisms, sparingly soluble.

The *Tartrate* in prisms.

Morphia is separated from the above combinations by ammonia.

Morphia is very soluble in olive oil, and according to the experiments of M. Majendie, the compound acts with great intensity; with extractive matter, morphia forms a compound which is almost insoluble in water, but very soluble in acids.

The *Meconic acid*, when separated from the residuum of the magnesian salt, as described above, does not appear to possess any medicinal activity. Its distinguishing *chemical* character is, that it produces an intensely red colour in solutions of iron oxidized *ad maximum*.

East India Opium is an inferior species; it differs from *Turkey Opium*, in its *texture* being less compact, and much softer; its *colour* darker; its narcotic *odour* fainter, but combined with a strong empyreuma, and in its *taste* being more bitter, but less acrimonious. According to the experiments of Mr. A. T. Thomson, *Turkey Opium* contains three times more morphia than the *East India* variety. This latter, when triturated with water, is taken up without any residuum, hence it contains no gluten, but the sulphate of lime is more abundant, as appears from the relative proportion of precipitate produced by oxalic acid. The solution of the acetate of barytes, whilst it occasions no disturbance in the solutions of the Turkey variety, produces a copious precipitate with the East Indian. Med. Uses. Are so well known that a few practical remarks will suffice.

Chemistry, it appears, has developed the principle of its activity, and accumulated experience has established the value and importance of its medicinal applications, but Physiology is still unable to demonstrate the manner in which it produces its effects. It must be admitted that its primary operation is that of a powerful and diffusible stimulant, but it is immediately followed by narcotic and sedative effects,

which are far greater than could have been inferred from the degree of previous excitement, and hence much keen controversy has arisen in the schools concerning its *modus operandi*. In large doses, the primary excitement is scarcely apparent, but the powers of life are instantly depressed, drowsiness and stupor succeed, and when the dose is excessive, these are followed by delirium, stertorous breathing, cold sweats, convulsions, and apoplectic death. Its stimulant effects are apparent only in small doses, by which the energy of the mind, the strength of the pulse, and the heat of the body, are considerably increased, but all the secretions and excretions, except the cuticular* discharge, are diminished; for example, the fæces of persons, after the use of opium, are not unfrequently clay-coloured, from the suspension of the biliary secretion; this circumstance suggests some important precautions with respect to its exhibition. Opium, when properly directed, is capable of fulfilling two great indications; 1st, of supporting the powers of life, and 2nd, of allaying spasm, pain, and irritation, and of blunting that morbid susceptibility of impression, which so frequently attends fever. Its use is contra-indicated in all cases where inflammatory action prevails, as in pulmonary affections, attended with an accelerated circulation, and a dry hard cough.*

* The operation of Opium is not unfrequently attended with an itching, or sense of pricking of the skin, which is sometimes terminated by a species of miliary eruption.

* Opium is the Quack's sheet anchor. The various nostrums advertised as "*Cough Drops*, for the cure of colds, asthmas, catarrhs, &c." are preparations of Opium very similar to paregoric elixir. PECTORAL BALSAM OF LIQUORICE, and ESSENCE OF COLTSFOOT, are combinations of this kind. GRINDLE'S COUGH DROPS, are a preparation of this kind, made with Rectified, instead of Proof Spirit, and consequently more highly charged with stimulant materials. "The mischief," observes

It is employed by some of the oriental nations for the same purposes that we take spirituous potations; by the Turks especially, to whom our more generous beverages are prohibited by religious prejudice. Opium is solicited to inspire courage, or to invigorate fortitude;—to soothe sorrow, or to dissipate the remembrance of misfortune;—to awaken the fancy to more brilliant exertions, or to create that mild composure and serenity of feeling, which is so desirable after the cares and solicitudes of an active, perplexing, and arduous scene. Like spirituous liquors, among other people, it is in short the support of the coward,—the solace of the wretched,—and the daily source of intoxication to the debauchee.* In combination, the medical powers of opium are wonderfully extended, so that there is scarcely a disease in which it may not, during some of its stages, be rendered useful. By diminishing the sensibility of the stomach and bowels, it becomes a valuable and efficacious *corrigent* to many important medicines, and thus frequently favours their absorption and introduction into the system, as for instance, in the exhibition of mercurial alteratives, *(Form: 34)*, and in certain diuretic combinations, *(Form: 28, 35, 38)*, in combination with antimonials,

Dr. Fothergill, "that has proceeded from the *healing* anodynes of quacks can be scarcely imagined, for in coughs, arising from suppressed perspiration, or an inflammatory diathesis, Opiates generally do harm.

Squire's Elixir. Opium, camphor, serpentaria, sub-carbonate of potass, anise and fennel seeds, made into a tincture, and coloured with cochineal.

* Notwithstanding all this, Spirit and Opium, are by no means parallel medicines; on the contrary, the latter substance offers the best remedy for the *Mania a Potu*, and in cases of habitual drunkenness from alcohol, where our wish is to abstract the spirit, but are for obvious reasons unable so to do, we may frequently alternate its use with that of Opium, with considerable advantage.

and with ipecacuan, its narcotic powers are obviated, and sudorific results are obtained. See *Pulv. Ipecac co.* and Form. 53, 55, 60, 61, 66. FORMS OF EXHIBITION. In substance, or under the form of tincture: when we wish to continue the operation of opium, and not to obtain its full effects at once, it may be advantageously combined with some substance capable of retarding its solution in the stomach, as *gum resins.* See *Pilulæ.* A watery infusion, made by infusing powdered opium in boiling water, will often operate, without producing that distressing nausea and head-ache which so frequently follow the use of this substance. Dr. Porter of Bristol has introduced to our notice a solution of opium in citric acid; his formula* for its preparation is subjoined, because I am of opinion that it merits the attention of the practitioner; I have lately submitted it to the test of experience, and it certainly possesses the merit of a powerful anodyne, operating with less disturbance than the more ordinary forms of this substance. I also take this opportunity of stating, that the *pyro-ligneous acid* manufactured by Beaufoy was used as a menstruum, and the effect of the solution was similar to that of Dr. Porter. When the stomach rejects altogether the internal exhibition of opium it may be successfully applied along the spine, by friction, with the camphor liniment, or what is more efficacious, in combination with olive oil; a piece of solid opium introduced into the rectum, or dissolved in some appropriate solvent, and injected as an enema, affords also considerable relief in spasmodic affections of the bowels, and in painful

* LIQUOR MORPHII CITRATIS. ℞ Opii Crudi Optimi ℥ iv; Acidi Citrici (Cryst:) ℥ ij; semel in mortario lapideo contunde, dein aquæ distillatæ bullientis oj affunde; et intime misceantur; macera per horas viginti quatuor; per chartam bibulosam cola.

diseases of the prostate gland, or bladder. INCOMPATIBLE SUBSTANCES. *Oxy-muriate of mercury; acetate of lead; alkalies; infusions of galls*, and *of yellow cinchona*. Orfila states that the decoction of *Coffee* is less energetic as an antidote, than the infusion. When we intend the opium to act as a sedative, we should not combine it with stimulants. The Edinburgh College certainly erred in this respect, when they made pepper an ingredient in their *Pilulæ Opiatæ*. In combination with vegetable acids, its narcotic powers are increased, in consequence of the formation of soluble salts with *morphia*.* When

* THE BLACK DROP, or *The Lancaster*, or *Quaker's Black Drop*. This preparation, which has been long known and esteemed, as being more powerful in its operation and less distressing in its effects than any tincture of opium, has until lately been involved in much obscurity: the papers however of the late Edward Walton, of Sunderland, one of the near relations of the original proprietor, having fallen into the hands of Dr. Armstrong, that gentleman has obliged the profession by publishing the manner in which it is prepared, and is as follows:—"Take half a pound of Opium sliced; three pints of good Verjuice, (juice of the wild crab,) and one and a half ounce of nutmegs, and half an ounce of Saffron. Boil them to a proper thickness, then add a quarter of a pound of sugar, and two spoonsful of yeast. Set the whole in a warm place near the fire, for six or eight weeks, then place it in the open air until it becomes a syrup; lastly, decant, filter, and bottle it up, adding a little sugar to each bottle." One drop of this preparation is considered equal to about three of the Tincture of Opium P. L. It would appear that an *Acetate of Morphia* is formed, which is more active, and less distressing in its effects, than any other narcotic combination.

The *French Codex* contains directions for preparing a compound very similar to the *Black Drop*; viz.

VINUM OPIATUM FERMENTATIONE PARATUM, or, *Guttæ, seu Laudanum Abbatis Rousseau*. Take of white honey twelve ounces; warm water, three pounds; dissolve the honey in the water, pour it into a matrass, and set it aside in a warm place: as soon as fermentation has commenced, add four ounces of good opium, having previously dissolved, or rather diffused it in twelve ounces of water; allow them to ferment together for a month, then evaporate until ten ounces only remain, filter, and add four ounces and a half of alcohol.

the opium however has passed out of the primæ viæ, vinegar and acids are then the best remedies for counteracting its effects; (see *Introductory Essay*, page 25.) Dose, must be varied according to the intention of the prescriber, the constitution of the patient, and the nature of the disease. A quarter of a grain, frequently repeated, will keep up its exhilarating influence; from gr. j to ij act as a narcotic; its power on the system soon becomes weaker; and from habitual use it is so much impaired that very large doses are required to produce its usual effects. Russel

Liquor Opii Sedativus. Under this name, Mr. Battley, of Fore-street, London, has introduced a narcotic preparation, which it is generally supposed owes its efficacy to the *acetate of morphia;* on being kept, however, I found that it underwent some important change, during which so much air was disengaged as to blow out the cork from the bottle with violence. This is an insuperable objection to its admission into practice.

In publishing the above statement, I have unfortunately been the cause of much unnecessary Ink-shed. A letter, by Mr. Battley, has been industriously circulated through the different ranks of the profession, purporting to be an apology for his preparation, but after a careful perusal of it, instead of being able to discover any argument in its favour, we receive a full acknowledgment of the validity of the objection above stated. "I explained to Dr. Paris, that the liability of the solution to undergo changes, was a defect in the preparation, but that the addition of a little spirit would prevent decomposition," and yet in the next sentence he tells us that in those cases in which it is most beneficial, "the addition of spirit would be highly improper." *See Medical Repository, vol. xiii. p.* 273.

But the circumstance which has excited the greatest indignation in the mind of Mr. Battley, is my having applied the term nostrum to this preparation. Every medicine that is prepared by a secret process, and sold for the private advantage of an individual, is properly designated a nostrum. And I am at a loss to discover any feature in the present case that can entitle it to be considered as an exception to this general rule, but perhaps Mr. Battley is inclined to be hypercritical, and as the preparation is not indebted to him, but to Wedelius or Le Mort, for its origin, is prepared to exclaim with the Roman Poet,

"Quæ non fecimus ipsi vix ea nostra voco."

observes that the effects of opium on those addicted to its use, are at first obstinate costiveness, succeeded by diarrhea and flatulence, with loss of appetite and a sottish appearance; the teeth decay, the memory fails, and the unhappy sufferer prematurely sinks into the grave. OFFICINAL PREP. Gr. j of opium is contained in *Confect. Opii.* L. grs. 36. *Elect. Opii.* E. grs. 43. *Elect. Catechu.* E. grs. 193. *Elect. Catechu comp.* D. grs. 199. *Pil. Saponis cum opio.* L. grs. 5. *Pil. Opiat.* E. grs. 10. *Pil. e Styrace.* D. grs. 5. *Pulv. Corn. ust. cum Opio.* L. grs. 10. *Pulv. Cret. comp. cum Opio.* L. grs. 40. *Pulv. Ipecac. comp.* L. E. grs. 10. *Pulv. Kino comp.* L. grs. 20. *Tinct. Opii.* L. ♏ 19. *Tinct. Camphor. comp.* L. f℥ss. *Tinct. Opii ammon.* E. f℥j. *Troch. Glycyrr. cum. Opio.* E. ʒj. *Vinum Opii.* L. ♏ 17. ADULTERATIONS. The *Turkey Opium*, when good, is covered with leaves, and the reddish capsules of some species of *rumex;* the inferior kinds have none of these capsules adhering to them. It is frequently adulterated with the extract of liquorice; it should be regarded as bad when it is very soft or friable, of an intensely black colour, or mixed with many impurities, or when it has a sweetish taste, or marks paper with a brown continuous streak when drawn across it. It frequently happens that in cutting a mass of opium, bullets and stones have been found imbedded in it, a fraud which is committed by the Turks, from which the retailer alone suffers.

OVUM. L. (Phasianus Gallus. *Ovum.*) *The Egg of the Domestic Fowl.*

VITELLUS, The *Yolk* or *Yelk*, is principally employed in pharmaceutical operations, for rendering oils and balsams miscible with water. It is gently laxative.

Oleum e vitellis, Oil of Eggs. Obtained by boiling the yelks, and then submitting them to pressure; fifty eggs yield about 5 oz. of oil. It is introduced into the Paris Pharmacopœia, being much employed on the Continent for *killing* mercury.

Albumen. Used principally for clarifying turbid liquors.

Testa. Similar to other absorbents.

PILULÆ. L.E.D. *Pills.*

For general instructions respecting the formation and administration of pills, the practitioner must refer to the *first part* of this work, *page* 165.

Pilulæ Aloes Compositæ. L. Extract of Aloes, *two parts*, extract of gentian, *(e) one part*, with oil of carraway; *(d)* to which syrup is unnecessarily added. It is a useful pill in habitual costiveness. *Dose*, grs. x to ℈j.

Pilulæ Aloes et Assafœtidæ. E. Powdered aloes, assafœtida *(e.)* and soap, *(i.) equal parts.* Anodyne and cathartic; a very useful combination in dyspepsia attended with flatulence. *Dose*, grs. x.

Pilulæ Aloes cum Myrrha. L. *Pilulæ Rufi*, P. L. 1745. Extract of aloë, *two parts*, saffron and myrrh, (*e*) *one part*, syrup, q.s. This is a very ancient form of preparation, and is described by Rhazes. It is stimulant and cathartic. *Dose*, grs. x to ℈j.

Pilulæ Aloes cum Colocynthide. E. This pill is known by the popular name of *Pil. Cocciæ.* κοκκίον, signifies a seed, and the term was first applied to this preparation by Rhazes. It consists of *eight parts* of aloes and scammony; *four* of colocynth; and *one part* of oil of cloves, (*d.*) and of sulphate of potass with sulphur, olim *Sal Polycrest.* It is more powerful in its operation than the simple aloetic pills.

Pilulæ Cambogiæ Compositæ. L. Gamboge, extract of aloe, and compound powder of cinnamon *one part;* soap *two parts;* see *Part I. p.* 133.

Pilulæ Ferri Compositæ. L. This combination is analogous to that of Griffith's mixture. *Dose*, gr. x to ℈j.

Pilulæ Galbani Compositæ. L. *Pil. Gummosæ, P. L.* 1745. We are here presented with a combination of fœtid gums, in which Assafœtida is the most potent article. Antispasmodic, and Emmenagogue. *Dose*, grs. x to ℈j.

Pilulæ Hydrargyri. L.E.D. *Pil. Mercuriales.* P. L. 1745. vulgo, The *Blue Pill.* The mercury in this preparation, is not, as it was formerly considered, in a state of mere mechanical division, but in that of a black oxide, upon which its activity as a remedy undoubtedly depends; for mercury in its metallic state is entirely inert with regard to the living system. Various substances have at different times been triturated with the mercury, for the purpose of *extinguishing* or *killing* it, by effecting the mechanical division and subsequent oxidation of its particles, as Manna, Melasses, &c. *Conserve of Roses* is now generally preferred for this purpose, although Swediaur suspects that the astringent principle of this conserve invalidates the effects of the mercury, "I have," says he, "given these pills to several patients for a long time, without any symptom of salivation." Mr. Abernethy observes in his surgical works, that the *Pilulæ Hydrargyri* are uncertain in their effects; and that some of the students at the hospital on examining them and different parcels of the Conserve of Roses, say, that the sulphuric acid may be discovered in each. Nor is it improbable that in making the conserve for sale, some of this acid may be added t

brighten the colour; and if so, the mercurial pill which is made from it may contain in varying proportions, some of that highly deleterious compound, the *sub-sulphate of mercury*. When any of the gums are employed for *killing* the metal, the pills soon become hard and brittle, and after some time the mercury is liable to run into its metallic state. The pill mass, when rendered thinner by the addition of a little water, and extended on a piece of paper, ought not to exhibit any metallic globules; in this examination however, we must be careful not to be betrayed by the fallacious appearance which is frequently presented by small crystals of saccharine matter. The relative proportion of mercury contained in the mass can be ascertained only by its weight. The *blue pill* is made at Apothecaries' Hall by a very ingenious machine actuated by steam, and which rubs as well as rolls the materials, and it is said that the pill thus made is more active than that produced in the ordinary way. Medical Uses. It is by far the best form for the internal exhibition of mercury; where it is intended to act upon the system as an alterative, it should be administered in doses of from grs. iv to vj; if it occasion any action on the bowels, it may be conjoined with opium; sometimes a few grains of rhubarb, exhibited every morning, will impart such a tone to the intestines, as to enable them to resist the mercurial irritation. In cases where the form of pill is objectionable, it may be readily suspended by the aid of mucilage, in some aqueous vehicle; when exhibited in doses of grs. x to ℈j, it acts as a mild but efficient purgative. One grain of mercury is contained in *four* grains of the mass, made according to the London and Dublin formulæ, and in three grains according to that of Edinburgh. For the specific effects of mercury, see *Ung. Hydrarg.*

Pilulæ Hydrargyri Sub-muriatis Compositæ. L. E. Olim *Plummer's Pills.* They consist of *one part* of calomel and precipitated sulphuret of antimony (*f.*) and *two parts* of guaiac (*d*) made into form with mucilage. It is a very useful alterative, especially in cutaneous eruptions and in secondary syphilitic symptoms, particularly when affecting the skin. *Dose*, grs. v to x.

Pilulæ Opiatæ E. Opium *one part;* extract of liquorice *seven parts:* Jamaica pepper *two parts.* It is a compound of questionable propriety.

Pilulæ Rhei Compositæ. E. Rhubarb, aloes, and myrrh, with oil of peppermint. When such a combination is indicated, it is better to prescribe it extemporaneously; for the mass, by being kept, will become less efficacious.

Pilulæ Saponis cum Opio. L. *Pil. Opii.* P. L. 1787. By substituting soap for extract of liquorice, these pills are now rendered more soluble in the stomach, and are consequently more efficient. Five grains contain one of opium.

Pilulæ Scillæ Compositæ. L. A stimulating expectorant; but as squill is always impaired by keeping, it ought to be an extemporaneous combination. It is surely injudicious thus to multiply our officinal formulæ.

PIMENTÆ BACCÆ. L. E. (Myrtus Pimenta. *Baccæ.*)
Pimento. D.

Pimenta Berries. Jamaica Pepper. All-spice.

Qualities. *Odour*, aromatic and agreeable, combining that of cinnamon, cloves, and nutmegs; hence the term *all*-spice. *Taste*, warm and pungent, resembling that of cloves. These qualities reside principally in the cortical part of the berry. Chem: Comp:

It contains a volatile oil, very like that of cloves, resin, extractive, tannin, and gallic acid. SOLUBILITY. Water, alcohol, and æther, extract its virtues. MEDICAL USES. Principally to cover the disagreeable taste of other remedies; it is also a very useful adjunct to dyspeptic medicines.* OFFICINAL PREP. *Aq. Piment.* L.E.D. *Ol. Piment.* L.E.D. *Pil. Opiat.* E. *Syrup. Rhamni.* L.

PIPERIS LONGI BACCÆ. L.E.D.

Long Pepper.

The chemical and medicinal properties of this substance are similar to those of black pepper; *which see.* The varieties in the market are distinguished by the names *short* long pepper, and *long* long pepper.

PIPERIS NIGRI BACCÆ. L.E.D.

Black Pepper.

CHEMICAL COMPOSITION. An oily matter, fecula, and extractive; the acrid principle of Pepper has been obtained by Oersted in an alkaline form. SOLUBILITY. Its virtues are entirely extracted by æther and alcohol; and partially by water, 550 pints being required to extract all the sapidity of lbj of pepper. MEDICAL USES. It appears to be a more general and permanent stimulus than other species of equal pungency on the palate; it may be combined with bitters, and exhibited in nausea, dyspepsia,* retrocedent

* WARD'S PASTE for fistula, piles, &c.—The following is the receipt for preparing this celebrated composition. Take of Black Pepper and Elecampane, powdered, equal parts ℔ss, of the seeds of Fennel ℔iss, of Honey and Sugar, equal parts, ℔j; beat, and well mix together all the ingredients, in a mortar. *Dose*, the size of a nutmeg three times a day.

gout, or as a stimulant in paralysis; it is also a valuable coadjutor to bark in obstinate intermittents. DOSE, grs. v to ℈j, or more. OFFICINAL PREPARATIONS. *Emplast. Meloes vesicat. comp.* E. *Unguent. piper. nig.* D. *White* pepper is made by separating the first skin of the berry, by soaking it in salt and water. ADULTERATIONS. The powdered husk of the mustard seed is universally mixed with powdered pepper, and is regularly sold for this purpose by the mustard manufacturer, under the technical title of P. D. *(Pepper Dust;)* there are besides other admixtures less innocent. *Whole Pepper* is also frequently factitious; artificial pepper-corns, composed of peas-meal, both white and black, are mixed with real pepper-corns, and sold as genuine pepper; the method of detecting the fraud is very simple; throw a suspected sample into water; those that are artificial will fall to powder, or be partially dissolved, while the true pepper-corns will remain whole.

PIX ARIDA. L. (Pinus Abies. *Resina Concreta.*)

PIX BURGUNDICA. E.D. *Burgundy Pitch.*

This substance is procured by making incisions through the bark of the Norway Spruce fir, whereas *frankincence* (Abietis resina) is a spontaneous exudation from it. It is now entirely confined to external use, as a rubefacient spread on leather; it is very adhesive. OFFICINAL PREP. *Emplast. Picis Burgund.* D. ADULTERATIONS. A factitious sort, manufactured in England, is often met with; it is to be distinguished by its friability, and its want of viscidity and unctuosity, and by the absence of that peculiar odour which characterises the genuine specimens.

PIX LIQUIDA. L.E.D. (Pinus Sylvestris.) *Tar.*

This fluid is formed from the decomposition of the resinous juice of the Pine, during the slow and smothered combustion of its branches. CHEMICAL COMPOSITION. It is found to consist of empyreumatic oil, resin, and pyro-acetic acid. SOLUBILITY. Water readily dissolves a portion of Tar, and forms a solution of the colour of Madeira wine, with a sharp empyreumatic taste. MED. USES. Tar water, under the auspices of Bishop Berkley, was formerly considered a remedy of extraordinary powers; this opinion however has at length passed away, (see Note at page 30) and Tar is now particularly indebted for a place in the Materia Medica, to an essay by Sir Alexander Crichton, entitled, "*An Account of some Experiments made with the Vapour of boiling Tar,** *in the cure of Pulmonary Consumption.*" During Sir Alexander's late visit to this country, I was induced by him to make a trial of its effects, and I do not feel any hesitation in stating that the result has led me to believe that it may, in some cases, be attended with benefit. In the application of the remedy several precautions are necessary for its success. The Tar employed should be that used in the cordage of ships; to every pound of which half an ounce of sub-

* Dr. Mudge in the year 1782 had recommended the fumigation of balsams, in a pamphlet on the subject of his Inhaler; little or no notice however was taken of this recommendation, a circumstance which cannot excite our surprise when we consider the extravagant terms in which the pretensions of the remedy were supported. "I believe," says he, "that much of the benefit which consumptive persons experience from sea voyages, is derived from the tar vapour constantly present on board a ship!"

A Radical and Expeditious Cure fou a recent Cutarrhous Cough. By J. Mudge, *Plymouth*, 1783.

carbonate of potass must be added, in order to neutralize the pyroligneous acid generally found mixed with the tar, the presence of which will necessarily excite coughing; the tar thus prepared is to be placed in a suitable vessel over a lamp, and to be kept *slowly* boiling in the chamber during the night as well as the day; the vessel however ought to be cleaned and replenished every twenty-four hours, otherwise the residuum may be burnt and decomposed, a circumstance which will occasion in the patient, increased cough and oppression on the chest. OFFICINAL PREP. *Unguent. Picis Liquidæ.* L.

PLUMBI SUB-CARBONAS. L.

CARBONAS PLUMBI, vulgo *Cerussa.* E.

CERUSSA, *Sub-acetas Plumbi.* D.

Cerusse, or *White Lead.*

CHEMICAL COMPOSITION. The composition of this substance has not until lately been well understood, and hence the different appellations bestowed upon it by the different colleges. SOLUBILITY. It is insoluble in water, but soluble in pure potass. USES. It is only employed externally, by sprinkling on excoriated parts; the safety of such a practice however is questionable. OFFICINAL PREP. *Unguent. Ceruss.* D. *Plumbi Super-acetas* (*g*). L.E.D. ADULTERATIONS. *Chalk* may be detected, by assaying its solution in cold acetic acid with oxalate of ammonia; *Carbonate of barytes*, by adding to a portion of the same solution, sulphate of soda very largely diluted with distilled water; and *Sulphate of barytes* or *Sulphate of lead*, by the insolubility of the white lead in boiling distilled vinegar.

PLUMBI OXYDUM SEMI-VITREUM. L.E.

LITHARGYRUM. D. *Litharge.*

It is a yellow protoxide of lead, which has been melted and left to crystallize by cooling. It is only employed in pharmacy for forming other preparations of lead, and the following officinal plasters, *Emplast. Plumbi.* L.E.D. *Ceratum Saponis.* L. It is added to wines to remove their acidity; for the detection of which, evaporate the suspected liquor to a thick fluid, add charcoal, and calcine in a crucible; in the space of an hour metallic points will be obtained, consisting of lead surrounded by a quantity of yellow protoxide. *See Orfila.*

PLUMBI SUPER-ACETAS. L.

Cerussa Acetata. P.L. 1787. *Saccharum Saturni.* 1745.

ACETAS PLUMBI. E. Acetas Plumbi. D.

vulgo, Sugar of Lead.

QUALITIES. *Form*, irregular masses resembling lumps of sugar, being an aggregation of acicular four-sided prisms terminated by dihedral summits, which are slightly efflorescent; by careful crystallization it may be obtained in quadrangular prisms. *Taste*, sweet and astringent. CHEMICAL COMPOSITION. Although termed a *Super*-acetate, it appears to be a neutral salt, and that its power of reddening vegetable blues is attributable to a partial decomposition; for when dissolved in water containing the least portion of carbonic acid, a white carbonate of lead is precipitated, and a corresponding portion of acetic acid is necessarily disengaged. According to the experiments of Berzelius, this salt, in its anhydrous state, consists of one proportional of acetic

acid, and one proportional of oxide of lead; so that the proportion of the metallic base is one third of that in the *sub*-acetate. SOLUBILITY. It is dissolved in 25 parts of water, hot or cold; it is also soluble in alcohol. When common water is employed the solution is quite turbid, unless a small proportion of acetic acid be previously added. INCOMPATIBLE SUBSTANCES. *The alkalies, alkaline earths and their carbonates; most of the acids; alum; borax; the sulphates, and muriates; soaps; all sulphurets; ammoniated, and tartarized iron; tartarized antimony; undistilled water.* The solution of *acetate of ammonia* decomposes this salt, in consequence of the carbonic acid which is generally diffused through it. Certain bodies appear likewise to be incompatible with the compounds of lead, not from the *chemical* changes they induce, but from the contrary effects they produce upon the body; thus Mercury appears to invalidate their powers and to counteract their effects, as we may have observed in treating saturnine cholic. I suspect also that antimony operates in the same manner; M. Merat relates a case of an apothecary who was cured of a desperate saturnine cholic, after having taken, in the course of eight days, eighty grains of tartarized antimony. MED. USES. I feel no hesitation in pronouncing this salt of lead to be one of the most valuable resources of physic; from the results of numerous cases, I state with confidence that it is more efficient in stopping pulmonary and uterine hemorrhage, than any other known remedy, and that its application is equally safe and manageable, but it must not be combined with substances capable of decomposing it, nor must it be simultaneously administered with the medicines which are frequently prescribed in conjunction with it, as an *Infusion of*

Roses, with *Sulphate of Magnesia.* Alum has also been in some cases added to it, with the intention of increasing its astringency. It is evident that under such circumstances an insoluble and inert *Sulphate of Lead* will be produced. The experiments of Orfila confirm the truth of these views, and shew that such substances act as counter-poisons for the salts of lead. According to my experience, those vegetable acids which decompose the acetate of lead, and form insoluble salts with its base, are not *medically* incompatible, when administered simultaneously with it, although no scientific physician would prescribe such a mixture; this fact is shewn by the circumstance of potations, containing malic and tartaric acids, not having been found to invalidate the efficacy of this salt; whether the stomach in the first instance prevents the decomposition, and its necessary results, or allows the operation of the usual affinities, and then subsequently decomposes the insoluble compound which results from them, by the abstraction and *digestion* of its vegetable constituent, are questions for future inquiry, when the laws of gastric chemistry shall be better understood, and more justly appreciated. Forms of Exhibition. In that of pill, guarded by opium; it will be prudent to recommend an abstinence from all potation, except that of cold water, or draughts composed of diluted acetic acid, for at least an hour after the ingestion of the pill. Dose, gr. ½ to gr. j. Officinal Prep. *Cerat. Plumb. super-acetat.* L.*

* Royal Preventive. This pretended prophylactic against venereal virus, is a solution of *Super-acetate of lead.*

POTASSA CUM CALCE. L.E.

KALI CAUSTICUM CUM CALCE. D.

The addition of lime to potass renders it less deliquescent, and more manageable, as an escharotic.

POTASSA FUSA. L.

POTASSA. E. KALI CAUSTICUM. D.

Lapis infernalis. P.L. 1720.

QUALITIES. *Form*, a white brittle substance, extremely caustic and deliquescent, and possessing in an eminent degree all the properties denominated *alkaline.* SOLUBILITY, f℥j of water dissolves ʒvij; it is also soluble in alcohol. CHEMICAL COMPOSITION. This preparation, independent of its impurities, is the *hydrated protoxide of potassium.* MED. USES. It is a most powerful caustic *(causticum commune acerrimum)*, and is frequently employed to establish an ulcer; or, instead of incision, to open a tumour. It has the advantage of other caustics, from the circumstance of our being able to neutralize its powers by touching it with vinegar, and thus to arrest its progress in an instant; it is however more liable to produce a large eschar than nitrate of silver, in consequence of the chemical action of the alkali upon the skin. As an internal remedy it is only employed in solution. See *Liquor Potassæ.*

POTASSÆ ACETAS. L. ACETAS POTASSÆ. E.

ACETAS KALI. D. *Kali Acetatum.* P.L. 1787.—*Sal diureticus.* P.L. 1745.—*Terra foliata Tartari—Sal Sennerti.—Magisterium Purgans Tartari—Sal essentiale vini. Oleum Tartari Sennerti—Sal digestivus Sylvii, &c.*

QUALITIES. *Form*, masses of a foliated, laminar

texture, extremely deliquescent; *Odour*, slight and peculiar; *Taste*, sharp and pungent. SOLUBILITY: f℥j of distilled water at 60° dissolves 404 grains, or 100 parts of it are soluble in 105 parts of water; the solution soon undergoes spontaneous decomposition; it is soluble in four times its weight of alcohol. CHEMICAL COMPOSITION. It consists of one proportional of each of its components, or 45 potass and 48 acetic acid. INCOMPATIBLE SUBSTANCES. It is decomposed by *tamarinds*, and *most sub-acid fruits*; by almost every acid, as well as every variety of neutral salt, whether *alkaline*, *acid*, or *metallic*. MED. USES. In small doses, diuretic; in larger ones, mildly cathartic. DOSE, ℈j to ʒj to produce the former, ʒij to ʒiij to excite the latter of these effects. FORMS OF EXHIBITION. It is not admissible in powders or pills, but should be always exhibited in solution. (*Form.* 36, 38, 39.) In the course of the present work, references have been frequently made to this article for an explanation of certain views regarding the chemical powers of the digestive organs, as well as the operation of several remedies, dependent upon them: I beg therefore to observe, that the results of experiments carefully conducted, and of observations faithfully recorded, during the exercise of my profession, have fully satisfied me that the digestive organs possess the power of readily decomposing all saline compounds into which *vegetable* acids enter as ingredients, and of eliminating their alkaline base; which, being in the course of circulation carried to the kidnies, excites them into action, and promotes the excretion of urine; and that it is in this way, the *acetate*, *citrate*, *super-tartrate*, and other combinations of potass or soda, prove diuretic: on the other hand, it is equally evident that salts containing the *mineral*

acids are not under the control of the decomposing powers of the *chylo-poietic* organs, and consequently do not undergo any changes *in transitu*, although some of these salts, especially the more soluble ones, are absorbed, and stimulate the urinary organs by their contact; this happens with *nitrate of potass*, which may be chemically detected in the urine of those persons who have taken it. *Sulphate* of potass however, from its insolubility, is not readily absorbed, and its composition will not allow the developement of its base; it has not therefore any tendency to produce an influence upon the urinary secretion. But it must be observed, that the diuretic operation of any saline body that acts by absorption, is at once suspended* if a catharsis is induced, either by the largeness of the dose, its increased solubility, or by the effect of its combination with any other remedy; for it is a law, that *the processes of assimilation and absorption are arrested, or very imperfectly performed during any alvine excitement:* the different effects of the saline compounds of the alkalies with tartaric acid, elucidate in a very striking manner the truth of this law—thus super-tartrate of potass or *cream of tartar* acts in well regulated doses, as we all know, upon the kidneys; the tartaric acid being in this case abstracted and assimilated by the digestive process, and the alkaline base at the same time eliminated and subsequently absorbed; but if we increase the solubility of the compound, by reducing it to the state of a neutral tartrate *(soluble tartar)*, or by combining it with boracic acid, or some

* The *secondary* diuresis, which sometimes succeeds catharsis, offers an apparent exception to this law; but this must not be confounded with that which is the result of a *primary* action upon the urinary organs, by the absorption of a specific stimulant.

body that has a similar effect; or what is equivalent to it, if we so increase the dose of the cream of tartar, that catharsis follows its administration, then diuresis will not ensue, since no decomposition can take place under such circumstances. *Nitre*, and those salts which are carried to the kidneys without previous decomposition, are subject to the same law, for if we combine them with purgatives, their presence can no longer be recognised in the urine; (see *Scillæ Radix, and Terebinthinæ Oleum.)* By a parity of reasoning we might infer, that by associating saline diuretics with substances capable of rendering the powers of digestion more acute, we should be more likely to ensure their successful operation; that such is actually the fact is satisfactorily proved by the unequivocal results of daily experience, for alkalies and their compound salts are never more active than when exhibited in combination with vegetable bitters; and the invigorating influence of *bitter extractive* upon the digestive organs, has been already explained. *(See Part the First, p.* 111; *Note.)* For the same reason, although purgatives, when *simultaneously* exhibited with this class of diuretics, will invalidate their powers, they may nevertheless, when previously exhibited, be the means of assisting their operation; for it is probable that the absorbents are more ready to take up medicinal bodies after a full evacuation of the bowels. *(See Part the First, p.* 117.*)* This view of the operation of saline diuretics appears to me to offer much matter of practical importance, shewing the circumstances which are most likely to assist, or invalidate the operation of this class of medicinal substances; it admonishes us for instance not to combine them with those bodies, whose *primary*

operation is upon the bowels, nor with substances capable of so affecting them *chemically*, as to render them unsusceptible of the necessary changes *in transitu*, as would happen were we for example to exhibit the acetate of potass in the acidulated infusion of roses. At the same time, it seems to suggest some hints that might lead to a more just and practical arrangement of diuretic remedies in general.

ADULTERATIONS. *Tartrate of potass* is discovered by adding a solution of tartaric acid, which will occasion with it a copious precipitate; the *sulphates*, by their forming with acetate of lead, or muriate of baryta, precipitates insoluble in acetic or muriatic acid. The brown tinge which it frequently exhibits depends upon the same cause as that which usually imparts colour to the *Liquor. Ammon. Acet.* This salt is also sometimes contaminated with *lead*, which arises from its having been prepared by decomposing the *acetate of lead* by *carbonate of potass*.

POTASSÆ CARBONAS. L. E.

Carbonate of Potass.

QUALITIES. *Form*, crystals which are four-sided prisms with dihedral summits, permanent in the air: *Taste*, slightly alkaline without acrimony. CHEMICAL COMPOSITION. It is a *bi-carbonate*, consisting of two proportionals of carbonic acid and one proportional of potass; and in its crystalline form, it also contains water equal to one proportional. SOLUBILITY. It is soluble in 4 parts of cold, and in 5-6ths of its weight of boiling water, in which it is partially decomposed, carbonic acid being emitted during the solution; it is quite insoluble in alcohol. MED. USES. In cases where an alkali is indicated, this

preparation offers an agreeable and efficient remedy; and experience has shewn that its additional proportion of carbonic acid does not in the least invalidate its alkaline agency. In disordered states of the digestive functions, alkalies frequently act with surprising effect; in calculous affections their value has been already noticed (see *Liquor Potassæ*), and the stomach appears to bear the protracted exhibition of the carbonate of potass or soda, with more temper than it does that of any other alkaline combination; and on account of the increased quantity of carbonic acid which this salt contains, it is preferable for effervescing draughts. (See *Acid. Citric.* and *Form.* 59, 75.) Incompatible Substances. *Acids* and *acidulous salts; borax; muriate of ammonia; acetate of ammonia; alum; sulphate of magnesia; lime water; nitrate of silver; ammoniated copper; muriate of iron; sub-muriate and oxy-muriate of mercury; acetate of lead; tartarized antimony; tartarized iron; the sulphates of zinc, copper, iron, &c.* Dose, grs. x to ʒss.

POTASSÆ NITRAS. L.E. Nitrum. D.

Nitre or *Salt Petre.*

Qualities. *Form*, crystals which are six-sided prisms usually terminated by dihedral summits: *Taste*, bitter and sharp with a sensation of cold. Chemical Composition. It consists of one proportional of nitric acid, and one proportional of potass. Solubility. It dissolves in seven parts of water at 60°, and in its own weight at 212°. Its solubility is considerably increased by adding muriate of soda to the water; its solution is attended with a great reduction of temperature; it is quite insoluble in alcohol. Incompatible Substances. *Alum;*

sulphate of magnesia; sulphuric acid; the sulphates of zinc, copper, and iron; according to the usual laws of affinity, it should be also decomposed by *sulphate of soda;* this however only takes place at the temperate of 32°, and then but partially. MED. USES. Refrigerant, in which case, the draught should be swallowed immediately after the solution of the salt is complete, for if it be allowed to stand for some time, its effect with regard to cooling is not nearly so evident (see *Form:* 84), as a diuretic, its powers are too inconsiderable to be employed, except in combination (*Form:* 30, 37, 43); a solution of ʒj to f℥vj of rose water forms a good detergent gargle, and a small portion allowed to dissolve slowly in the mouth, will frequently remove an incipient inflammation of the tonsils: for its *modus operandi* as a diuretic, see *Potassæ Acetas.* DOSE, grs. x to xv, as a diuretic or refrigerant. Grs. xxv to xl are aperient, and in large doses it excites vomiting, bloody stools, convulsions, and even death. The best antidotes are opium and aromatics. IMPURITIES. As it occurs from the hand of nature it is far from pure, and even by art it is freed with difficulty from sea salt; the presence and quantity of which in any specimen, may be learnt by adding nitrate of silver to its solution as long as any precipitate is produced.

POTASSÆ SUB-CARBONAS. L.E.

SUB-CARBONAS KALI. E.

Kali Præparatum, P.L. 1787. *Sal Absinthii, Sal Tartari.* 1745.

Before the nature of this salt was well understood, it received various appellations according to the different methods by which it was procured, and it was supposed to possess as many different virtues, as *Salt of Wormwood, Salt of Tartar, &c.*

QUALITIES. *Form*, coarse white grains, so deliquescent, that by exposure to air they form a dense solution, (*Oleum Tartari per deliquium*, P.L. 1720.) CHEMICAL COMPOSITION. This salt, although far from being pure, is sufficiently so for every pharmaceutical purpose. It consists of one proportional of acid and one proportional of potass, with variable quantities of *sulphate of potass*, *muriate of potass*, *siliceous earth and alumina*. SOLUBILITY. It is dissolved by twice its weight of water; the residue, if any, may be considered as impurity; it is insoluble in alcohol; with oils it combines, and forms soaps. INCOMPATIBLE SUBSTANCES. They are enumerated under *Potassæ carbonas*. MEDICAL USES. Antacid, and diuretic, (*Form.* 29,) but it is far less pleasant than the carbonate; it is principally used for making saline draughts, see *Acid. Citric.* and *Form.* 35. DOSE, grs. x to ʒss. OFFICINAL PREP. *Potassæ Acetas*, (*g*) L.E.D. *Liquor Potassæ*, (*h*) L.E.D. *Potassæ Sulphuretam*, (*g*) L.E.D. *Potassæ Tart.* (*g*) L.E.D. *Liquor Arsenicalis*, (*g i*). ADULTERATIONS. Its degree of purity may be estimated by the quantity of nitric acid, of a given density, requisite for the saturation of a given weight. The purest *sub-carbonate* is that obtained by incinerating *cream of tartar*, since most of the impurities are decomposed by the heat during the process. (*Sub-carbonas Potassæ Purissimus*. E.)

POTASSÆ SULPHAS. L.E. SULPHAS KALI. D.
Kali Vitriolatum, P.L. 1787.
Tartarum Vitriolatum, 1745, *and* 1720.
Sal de duobus, *&c.*

QUALITIES. *Form*, crystals which are short six-

sided prisms terminated by six-sided pyramids; sometimes the body of the prism is wanting, when a dodecahedron results; they are slightly efflorescent, and when heated they decrepitate. SOLUBILITY. f℥j of water dissolves only grs. 24: the salt is insoluble in alcohol. INCOMPATIBLE SUBSTANCES. It is partially decomposed by the nitric and muriatic acids, in which case, a portion of the base being saturated, a corresponding portion of *bi-sulphate* results; this fact illustrates a chemical law of some importance, viz. *that a substance less weakly attracted by another than a third, will sometimes precipitate this third from its combination with the second, in cases wherein a* super, *or* sub-*salt is readily formed.* The history of tartrate of potass will furnish farther illustrations. Sulphate of potass when in solution, is entirely decomposed by *lime* and *its compounds;* by *oxy-muriate of mercury; nitrate of silver;* and by *acetate* and *sub-acetate of lead.* MEDICAL USES. On account of its insolubility, it does not possess much activity as a purgative, but is said to be powerfully deobstruent; it should be exhibited in the form of powder, and in conjunction with rhubarb, or some other purgative medicine. DOSE, grs. x to ℥ss. From its hardness and insolubility, it is a most eligible substance for triturating and dividing powders. OFFICINAL PREP. *Pulvis. Ipecac. co.* L.E.D. Under the name *Sulphas Potassæ cum Sulphure,* the Edinburgh college retains the preparation formerly known by the name of *Sal Polychrest;* and as it is produced by deflagrating nitre with sulphur, the product, besides sulphate of potass, contains *bi-sulphate* and *sulphuret of potass.* It possesses no superiority over the common sulphate.

POTASSÆ SUPER-SULPHAS. L.

Sal Enixum of Commerce.

QUALITIES. *Crystals*, long hexangular prisms; *Taste*, sour and slightly bitter. CHEMICAL COMPOSITION. It is a bi-sulphate, consisting of two proportionals of acid, and one proportional of base. SOLUBILITY. It is soluble in twice its weight of water, as well as in alcohol. MEDCIAL USES. It affords a convenient mode of exhibiting sulphuric acid combined with a saline purgative, in a solid form; as it is more soluble, so is it more active than the sulphate. DOSE, grs. x to ʒij. It forms a grateful adjunct to rhubarb. See *Form.* 22.

POTASSÆ SULPHURETUM. L.E.

SULPHURETUM KALI. D.

Kali Sulphuretum, P.L. 1787. *Hepar Sulphuris.*

QUALITIES. *Form*, a hard brittle mass; *Colour*, liver brown, hence the old name of *hepar; Taste*, acrid and bitter; *Odour*, none when dry, but if moistened, it yields the stench of sulphuretted hydrogen. CHEMICAL COMPOSITION. It is not a perfect chemical sulphuret, as the alkali employed for its preparation is in the state of *sub-carbonate;* it consists of sulphur, potass, and a proportion of carbonic acid. SOLUBILITY. Although soluble in water, it is changed during its solution, the greatest portion being converted into an *hydroguretted sulphuret*, and a part into *sulphate of potass.* INCOMPATIBLE SUBSTANCES. *Acids; acidulous salts; earthy and metallic salts.* MED. USES. It presents us with a form in which sulphur is soluble in water; it is diaphoretic, and has been found advantageous in cutaneous affections, (*Form.* 54,) and in arthritic and rheumatic complaints; while,

from its known chemical action on metallic salts, it has been proposed as an antidote to such poisons.

POTASSÆ SUPER-TARTRAS. L.E.

TARTARUM CRYSTALLI. E.

Super-Tartrate of Potass, Crystals of Tartar.

QUALITIES. *Form*, small irregular brittle crystals, which when reduced to powder are termed *cream of tartar*. *Taste*, harsh and acid. CHEMICAL COMPOSITION. It is a *bi-tartrate*, consisting of two proportionals of acid and one proportional of potass. SOLUBILITY. It requires 120 parts of water at 60°, and 30 parts at 212°, for its solution; it is slightly soluble in alcohol. The watery solution of this salt was first observed by Berthollet to undergo a spontaneous decomposition by keeping, during which a mucous matter is deposited, and there remains a solution of carbonate of potass coloured with a little oil. It has long been regarded a pharmaceutical desideratum, to increase the solubility of *cream of tartar;* Vogel discovered that it might be accomplished by combining it with boracic acid, and accordingly a formula has been introduced into the Codex Medicamentarius of Paris, for preparing a "*Tartras Acidulus Potassæ Solubilis, admixto Acido Boracico.*" The following is the process. Let thirty parts of boracic acid, and twenty parts of distilled water be heated together in a silver dish; as soon as this has been effected, add, in divided portions, 120 parts of super-tartrate of potass, taking care to shake the mixture continually; the whole will soon liquefy, ("*mire liquescent,*") and by continuing the heat, a pulverulent mass will result. As it is extremely deliquescent it must be carefully preserved from the

contact of the air; it dissolves in its own weight of water at 55°, and in half its weight at 212°. It is probable that the result is a new salt, in which the boracic and tartaric acids exist in combination,* but grant even that the chemical identity of the super-tartrate is preserved inviolate in the compound, I would ask what medical advantage can possibly attend the discovery? The peculiar value of cream of tartar depends doubtless upon its comparative insolubility, as I have already stated in the *First Part page* 134, and farther under the head of *Potassæ Acetas*; modify this, and you will instantly change the medicinal effects of the salt; for like the neutral tartrate it will act upon the bowels, and therefore cease to undergo those changes *in transitu* which are essential to its characteristic operation (*see p.* 485.) Alum also has been observed by Berthollet to have in some measure the same effect in increasing the solubility of cream of tartar. INCOMPATIBLE SUBSTANCES. *Alkalies* and *alkaline earths; the mineral acids, &c.* MEDICAL USES. In doses of ʒiv to ʒvj, it acts as a hydragogue cathartic, occasioning a considerable discharge of serous fluid into the intestines; when however it is often repeated, it is liable to occasion debility of the digestive organs, and consequent emaciation: in smaller doses it acts as a diuretic, (*Form.* 40,) ʒj in ℥j of boiling water, flavoured with lemon peel and sugar, forms when cold an agreeable cooling beverage well known by the name of *Imperial.* As it decomposes the carbonate of potass, the union of these salts will afford a very pleasant purgative draught. (*Form.* 19.) OFFICINAL PREP. *Pulv. Jalap. comp.* (*b, i.*) E. *Pulv. Scammon.* E. *Pulv.*

* It may be termed a *Boro-tartrate:*

Sennæ comp. L. *Ferrum Tartarizatum, (g)* L. *Antimonium Tartarizatum, (g)* L.E.D. *Soda Tartarizata, (g)* L. E. D. ADULTERATIONS. Super-sulphate of potass, *Sal Enixum*, is the substance with which tartar is usually adulterated; it may be detected by its superior solubility, and by the solution affording with muriate of baryta a precipitate insoluble in muriatic acid.*

POTASSÆ TARTRAS. L. TARTRAS POTASSÆ. Olim Tartrum Solubile. E. TARTRAS KALI. D.
Kali Tartarizatum, P.L. 1787.
Tartarum Solubile. P.L. 1745.

QUALITIES. *Form*, this salt, although ordered to be crystallized, is generally kept in its granular form. *Taste*, bitter and cool. CHEMICAL COMPOSITION. It consists of one proportional of acid, and one proportional of base. SOLUBILITY. When in its crystalline form it is soluble in its own weight of water, but in its ordinary granular form, 4 parts are required for its solution; hence, compared with the insoluble super-tartrate, it has justly acquired the name of *soluble* tartar; when long kept in solution, its acid is decomposed, and its alkali remains in a state of a *sub-carbonate*. It is also readily soluble in alcohol. INCOMPATIBLE SUBSTANCES. *Magnesia, baryta*, and *lime; acetate* and *sub-acetate of lead*, and *nitrate of silver* decompose it. All acids, and *acidulous salts*, tamarinds, and other *sub-acid vegetables*, by neutralizing a proportion of the base, convert it into the state of super-tartrate; this fact offers another

* ESSENTIAL SALT OF LEMONS. The preparation sold under this name, for the purpose of removing iron moulds from linen, consists of cream of tartar and super-oxalate of potass, or *salt of sorrel*, in equal proportions.

illustration of the chemical law of affinity, explained under the head of *super-sulphate of potass.* The practitioner should bear this in his recollection, for I have frequently seen a dose of *soluble tartar* directed in the acidulated *infusion of roses;* the result was of course very different from that which the author of the prescription intended to produce. MED. USES. It is a mild and efficient purgative, and forms a very valuable adjunct to resinous purgatives or to Senna, the griping properties of which it corrects by accelerating their operation. DOSE, ʒj to ℥j, in solution.

PULVERES. L.E.D. *Powders.*

For the administration and advantages of this form of preparation, see part the first, page 160. The following Officinal Formulæ offer some valuable combinations.

PULVIS ALOES COMPOSITUS. L. Pulvis Aloes cum Guaiaco. D. It consists of Aloes 3 *parts*, Guaiacum 2 (*e*), and compound powder of cinnamon 1 *part* (*m*). It combines sudorific and purgative effects. *Dose*, grs. x to ℈j. See *Form.* 17.

PULVIS ALOES CUM CANELLA. D. and P.L. 1807. Aloes 4 *parts*, white canella (*d*) 1 *part*. It is known in the shops by the name of *Hiera Picra.* The compound is more adapted for the form of pills than that of powder. It is very generally used by the lower classes, infused in gin. *Dose*, grs. x to ℈j.

PULVIS ANTIMONIALIS. L.D. Oxidum Antimonii cum Phosphate Calcis. E. This preparation was introduced into the Pharmacopœia, as the succedaneum of the celebrated *fever powder of Dr. James,** the

* JAMES'S ANALEPTIC PILLS. These consist of James's Powder, gum ammoniacum, and the pill of Aloes with Myrrh, (*Pil. Rufi*) equal parts, with a sufficient quantity of the tincture of Castor to make a mass.

composition of which was ascertained by Dr. George Pearson. (*Phil. Trans.* lxxxi. 317.) It consists of 43 parts of the phosphate of lime, mixed, or perhaps chemically combined, with 57 parts of oxide of antimony, of which a portion is vitrified; and it is probable, that the difference of the two remedies depends principally upon the quantity of oxide which is vitrified: the specification of the original medicine is worded with all the ambiguity of an ancient oracle, and cannot be prepared by the process as it is described. Experience has established the fact, that *James's powder* is less active than its imitation; it affects the bowels and stomach very slightly, and passes off more readily by perspiration; in general however the difference is so inconsiderable, that we need not regret the want of the original receipt. As it is quite insoluble in water, it should be given in powder, or made into pills. It is diaphoretic, alterative, emetic, or purgative, according to the extent of the dose and the state of the patient; in combination it offers several valuable resources to the intelligent practitioner. (See *Form.* 17, 48, 55, 57, 61.)

Pulvis Cinnamomi Compositus L. Cinnamon bark *four*, Cardamom seeds *(b) three*, ginger root (*b*) *two*, long peper *(f) one part*. It is principally used to give warmth to other preparations, e. g. *Pulv. Aloes comp.* L. D.

Pulvis Contrayervæ Compositus. L. Contrayerva *five*, prepared shells, *eighteen parts*. (*k.*) Dose, grs. x to xl. It is said to be stimulant and diaphoretic.

Pulvis Cornu Usti cum Opio. L. Opium *one part*, burnt hartshorn *eight*, powdered cochineal *one part*. Ten grains contain one of opium.

Pulvis Cretæ Compositus. Prepared chalk *twelve parts*, tormentil root (*e*), acacia gum (*k*), of

each *six*, cinnamon bark *eight* (*e*), long pepper (*e*) *one part*. It is an antacid, astringent, and carminative. *Dose*, grs. v to ℈j.

Pulvis Cretæ Compositus cum Opio. L. Compound powder of chalk *thirty-nine parts*, Opium *one part*.

Pulvis Ipecacuanhæ Compositus. L. E. D. Ipecacuan *one part*, Opium (*f*) *one part*, sulphate of potass (*k*) *eight parts*. This combination has been long established in practice, as a valuable sudorific, under the name of *Dover's Powder*. It affords one of the best examples of the power which one medicine possesses of so changing the action of another, as to produce a remedy of new properties; in this combination the opium is so modified, that it may be given with perfect safety and advantage in inflammatory affections accompanied with increased vascular action: it would seem that whilst the Opium increases the force of the circulation, the Ipecacuan relaxes the exhalent vessels, and causes a copious diaphoresis: the sulphate of potass is also an important ingredient, for experience has fully proved that ipecacuan and opium, in the same proportions, have not so powerful an effect without it; its action must be purely mechanical, dividing and mixing the active particles more intimately, and it appears that the success of the remedy depends very much upon its being finely powdered. *Dose*, grs. v to ℈j, diffused in gruel, or in the form of a bolus. (See *Formulæ* 56, 57, 58.) The saline constituent in the original *Dover's Powder*, was the result of the deflagration of nitre, and was therefore deliquescent; its dose was as much as from 40 to 70 grains. In the *Codex* of Paris, this compound is directed to be prepared by melting together *four parts* of sulphate of potass, with an equal proportion of nitrate of potass; to which when nearly cold

is to be added, and well mixed by triture, *one part* of pulverized extract of opium; the powders of ipecacuan and liquorice root, of each *one part*, are to be added last. It is evident that the proportions of opium and ipecacuan in this combination, are less than those in ours, and yet it is said to be more powerfully diaphoretic on account of the nitre. An arrangement which is indebted for its medicinal virtue to a similar mode of operation, is presented in *Formula* 66.

Pulvis Scammoniæ Compositus. L. Scammony and hard extract of jalap, of each *four parts*, ginger root (*d*) *one part*. The Edinburgh preparation of the same name, differs very materially in composition, its ingredients being scammony and cream of tartar in *equal parts*.

Pulvis Tragacanthæ Compositus. L. Powdered Tragacanth, acacia gum, and starch, of each *one part;* refined sugar, *two parts*. From what has been already stated under the head of mucilage of tragacanth, it appears to be a superfluous, if not an injudicious demulcent; and since starch is insoluble in cold water, the object for introducing it is not very obvious.

Powders should be preserved in opaque green bottles, as they are materially affected by the action of light and air. Many of the compound ones should be considered as extemporaneous, and ought to be prepared only when they are required. The practitioner is also cautioned against purchasing any medicine in its powdered form, for so universal is the system of adulteration, that regular formulæ are observed in the wholesale houses for sophisticating powders, and Mr. Gray, in his "*Supplement to the Pharmacopœias*" has given several specimens, under the title of "*Pulveres Reducti*," p. 320.

QUASSIA. L.E.D. (Quassia Excelsa. *Lignum.*) *Quassia.*

This wood owes all its properties to a peculiar bitter principle, which has been examined by Thomson and named *Quassin;* it is solid, slightly transparent, and of a yellowish-brown colour. (See *Infusum Quassiæ.*) It is said to owe its name to a West Indian negro, called Quassi, who first used it in fevers.

RHEI RADIX. L.E.D. *Rhubarb.**

Two varieties of this root are known in the shops, viz. *Turkey* or *Russian*, and *East Indian* or *Chinese.*

1. TURKEY or RUSSIAN. (*Rheum Palmatum.*)

QUALITIES. *Form*, small round pieces, rather compact and heavy, perforated in the middle; *Colour*, lively yellow with streaks of white; it is easily pulverized, affording a powder of a bright buff-yellow colour. CHEMICAL COMPOSITION. Gum, resin, extractive, tannin, gallic acid, and a peculiar colouring matter, with traces of alumina and silex; the white or flesh-coloured streaks pervading its substance, consist of sulphate and oxalate of lime: according to the experiments of Mr. John Henderson, there is besides a peculiar vegetable acid, to which he has given the name of *Rheumic* acid, but M. De Lassaignes has satisfactorily proved that this is no other than the oxalic acid: the purgative powers of the root appear to be intimately connected with its extractive and resinous elements, but the subject is still involved in considerable obscurity. SOLUBILITY. Water at 212° takes up 24 parts in 60, see *Infusum Rhei:* by

* WARNER'S CORDIAL. Rhubarb bruised ℥j; Sennæ ℥ss; Saffron ʒj; Powdered Liquorice ʒiv; Raisins pounded lbj; Brandy oiij: digest for a week and strain.

decoction, its purgative qualities are lost, and it becomes more bitter and astringent; alcohol extracts 2·7 from 10 parts, (see *Tinct. Rhei.*) MED. USES. In this substance, Nature presents us with a singular and most important combination of medicinal powers, that of an astringent with a cathartic property; the former of which never opposes or interferes with the energy of the latter, since it only takes effect when the substance is administered in small doses, or if given in larger ones, not until it has ceased to operate as a cathartic; this latter circumstance renders it particularly eligible in cases of diarrhœa, as it evacuates the offending matter before it operates as an astringent upon the bowels. It seems to act more immediately upon the stomach and small intestines, and therefore in relaxed and debilitated states of these organs, it will prove an easy and valuable resource; it may, for such an object, be exhibited in conjunction with alkalies, bitters, and other tonics. (*Form. 93.*) Its cathartic property is most efficient when given in substance. It was formerly supposed that by toasting rhubarb we increased its astringency, but this process merely diminishes its purgative force, so that a larger dose may be taken. The colouring matter of rhubarb may be detected in the urine of persons to whom it has been exhibited; it does not however appear to possess any specific powers as a diuretic. DOSE, grs. vj to x as a tonic; ℈j to ʒss as a purgative; the operation of which is considerably quickened by the addition of neutral salts; the supersulphate of potass forms also a very useful adjunct, and its acidulous taste completely covers that of the rhubarb. Its powder, when sprinkled upon ulcers, is found to promote their healthy granulation. OFF. PREP. *Infus: Rhei.* L.E. *Vinum Rhei Palmati.* E.

Tinct. Rhei. L.E.D. *Tinct. Rhei comp.* L. *Tinct. Rhei cum Aloë.* E. *Tinct. Rhei cum Gentian.* E. *Pil. Rhei comp.* E.

2. East Indian, or Chinese. (*Rheum* Undulatum?*)

Qualities. *Form*, long pieces, sometimes flat, as if they had been compressed; they are heavier, harder, and more compact than those of the preceding species, and are seldom perforated with holes; *Odour*, stronger; *Taste*, more nauseous; white streaks less numerous, and it affords a powder of a redder shade than *Turkey* rhubarb. Chemical Composition. It differs from the *Turkey* in containing less tannin and resin, and according to the experiments of Mr. A. T. Thomson, less oxalate of lime, in the ratio of 18 to 26. It contains however more extractive and gallic acid. Solubility. Water takes up one half of its weight, but the infusion, although more turbid, is not so deep coloured as that of Russian rhubarb; alcohol extracts 4 parts in 10. Its habitudes with acids, alkalies, and neutral salts, differ likewise from those of the Russian variety, as Mr. A. T. Thomson has exhibited in a very satisfactory manner. (*London Dispensatory, Edit.* 2, *p.* 339.) Adulterations. The inferior kinds of *Russian*, *East Indian*, and even *English* rhubarb, are artfully dressed up and sold under the name of Turkey rhubarb. I am well informed that a number of persons in this town, known in the trade by the name of *Russifiers*, gain a regular livelihood by the art of dressing this article, by boring, rasping, and then colouring the inferior kinds;

* Dr. Rehman asserts that it is the root of the same species as that which produces the Turkey variety, but that it is prepared with less care.

for which they charge at the rate of eighteen-pence per pound. The general indications of good rhubarb are, its whitish or clear yellow colour, and its possessing the other characteristic properties as above mentioned; it ought also to possess in an eminent degree the peculiar odour, for when this is dissipated, the powers of the medicine are nearly destroyed. In the form of powder, rhubarb is always more or less mixed with foreign matter; the detection of which can be alone effected by a trial of its efficacy.

RICINI* OLEUM. L.E.D. *(Ricinus Communis.)* *Castor Oil.*

Qualities. *Form*, a viscid and colourless, or pale straw-coloured oil; it is nearly inodorous, but on being swallowed, excites a slight sensation of acrimony in the throat. It has all the chemical habitudes of the other expressed oils, except those which relate to its solubility in alcoholic and ethereal menstrua. Med. Uses. It is mildly cathartic, and is particularly eligible in cases where stimulating purgatives would prove hurtful, but in obstinate constipation, where copious evacuations are required, this oil cannot be trusted, it will insinuate itself through the intestinal canal, bringing with it a small portion of the more fluid contents, but leaving behind it the collection of indurated fœces. Forms of Exhibi-

* The seeds of this plant, from which the oil is expressed, are variegated with black and white streaks, resembling in shape as well as colour, the insect Ricinis or *Tick*, whence the name. These seeds, from the acrid juice in their skins, are very drastic and emetic; they were however used by Hippocrates. Mathiolus attempted to correct their emetic quality by torrefaction, but without success. Gulielmus Piso proposed a tincture of them, but the preparation is not only uncertain, but unsafe in its operation.

TION. The most efficacious mode of administering it is by floating it upon tincture of senna, or peppermint water, or some other similar vehicle; it is also sometimes given with success in coffee or mutton broth, or suspended in water by the intervention of mucilage, yelk of egg (*Form.* 13), or by honey, which at the same time contributes to its laxative operation; alkalies, although they form an emulsion with it, convert it into a saponaceous compound, and impair its cathartic force. DOSE, f℥ss to f℥iss. ADULTERATIONS. It is usually adulterated with olive oil or poppy oil, and when to a considerable extent, scammony is added to quicken its operation. There is however a peculiarity in castor oil which serves to distinguish it from every other fixed oil, viz. its great solubility in highly rectified spirit; for instance, f℥iv of alcohol of ·820 will mix uniformly with any proportion of castor oil, whereas it will not dissolve more than fʒj of *Linseed Oil*; when the spirit is diluted, its action on both these oils is equally diminished, so that common *spirit of wine* has but little power even over castor oil; but here chemistry again interposes its aid, for by the addition of camphor, spirit of ·840 is enabled to dissolve castor oil, whilst it has no influence upon the other fixed oils; castor oil is also very soluble in sulphuric æther.

SACCHARUM. L.E.D. *Sugar.*

Sugar, as a pharmaceutical agent, is employed for accelerating the pulverization of various resinous substances, and when exhibited with the most acrid of them, it prevents their adhesion to the coats of the intestines, by which they might irritate and inflame them; it is also extensively used on account of its

power in preserving animal and vegetable substances. *(See Conservæ.)* Milk boiled with fine sugar will keep for a great length of time, and might be very conveniently employed during a long voyage. Dr. Darwin also observes that fresh meat cut into thin slices, either raw or boiled, might be preserved in coarse sugar or treacle, and would furnish a very salutary and nourishing diet to our sailors. Sugar exerts also some chemical affinities which are highly interesting to the pharmaceutic chemist. Vogel has published a paper to shew, that when sugar is boiled with various metallic oxides, and with different metalline salts, it has the property of decomposing them; sometimes reducing the oxide to the state of metal, and at others depriving the oxide only of one of the proportionals of oxygen; thus, *sulphate of copper* and *nitrate of mercury* are precipitated in a metallic form, whilst *peroxide of mercury* and *acetate of copper* are converted into protoxides; *corrosive* sublimate is changed into *calomel*, but *calomel* is not susceptible of any further decomposition. All those metallic salts which have the power of decomposing water, are not affected by sugar, as those of *iron*, *zinc*, *tin*, and *manganese*.

SAPO. L.E.D. *Soap.*

I. Durus. *(Hispanicus.)* *Hard*, or *Spanish Soap.*

Chemical Composition. Oil 60·94, soda 8·56, water 30·50, the water is partially dissipated by being kept, and the soap therefore becomes lighter. Muriate of Soda is also an essential ingredient* of hard

* In those districts where Soap is generally made from wood ashes, or from Russian or American potass, unless Salt were added in large quantities, it would not have any consistence. As Kelp and common Barilla contain a sufficient quantity of it, no farther addition is required.

soap. SOLUBILITY. Water dissolves about one-third of its weight of genuine soap, and forms a milky solution; alcohol also dissolves it, and affords a solution nearly transparent, although somewhat gelatinous.† INCOMPATIBLE SUBSTANCES. 1. All acids and acidulous salts which combine with the alkali, and develope the oil. 2. Earthy salts, e. g. *Alum; muriate* and *sulphate of lime; sulphate of magnesia.* 3. Metallic salts. *Nitrate of silver; ammoniated copper; tincture of muriated iron; ammoniated iron; acetite, sub-muriate,* and *oxy-muriate of mercury; acetate of lead; tartarized iron; tartarized antimony; sulphates of zinc, copper, and iron.* 4. All astringent vegetables. 5. Hard water. MEDICAL USES. In large doses it is purgative, in smaller ones, it is decomposed *in transitu*, and its alkali is carried to the kidneys; in this way it may act as a lithontriptic; or it may produce its effects by correcting any acidity which may prevail in the *primæ viæ*, for the weakest acid is capable of decomposing soap, and of uniting with its alkaline base; a solution of soap in lime water was long regarded as one of the strongest solvents of urinary calculi that could be administered with safety, but the result of such a mixture is an insoluble soap of lime, and a solution of soda; in habitual constipation, and in biliary obstructions, it is frequently prescribed in conjunction with rhubarb, or some bitter; in which cases it can only act as a laxative, or as a chemical agent, in increasing the solubility of the substance with which it is united. It has been also given in solution as an antidote to metallic poisons, and it is often success-

* TRANSPARENT SOAP is made by carefully evaporating the alcoholic solution.

fully injected as a clyster, in unrelenting and habitual costiveness; as an external application, it is used in the form of liniment, (see *Linimenta.*) OFFICINAL PREPARATIONS. *Pil. Saponis cum Opio. (i.)* L. *Pil. Scillæ comp. (k.)* L. *Pil. Aloet. (i.)* E. *Pil. Aloes et Assafœtida. (i.)* E. *Pil. Aloes cum Zinzib. (i.)* D. *Pil. Colocynth. comp. (i.)* D. *Emplast. Saponis.* L.E. *Ceratum Saponis.* L. *Liniment. Saponis comp.* L. *Liniment. Saponis cum Opio.* L.

II. SAPO MOLLIS. *Soft Soap.*

This differs from *hard soap* chiefly in its consistence, which is never greater than that of hog's lard; it is transparent, yellowish, with small seed-like lumps of tallow diffused through it: the alkali employed for its formation is a ley of potass, instead of that of soda.

SARSAPARILLA. L.E.D. (Smilax Sarsaparilla. *Radix.*)

Sarsaparilla.

QUALITIES. *Form,* long and slender twigs, covered with a wrinkled brown bark; *Odour,* none; *Taste,* mucilaginous and slightly bitter. CHEMICAL COMPOSITION. Its virtues appear to reside in fecula; it also contains a very large proportion of vegetable albumen. SOLUBILITY. It communicates its active principle most completely to boiling water. (See *Decoct. Sarsaparillæ.)* MED. USES. According to Monardes, it was imported by the Spaniards into Europe in 1549, as a specific remedy for the venereal disease; but it soon fell into disrepute, and so it continued until about the middle of the last century, when it

was again brought into esteem by Hunter and Fordyce, as a medicine calculated to assist the operation of mercury, as well as to cure those symptoms which may be called the *sequelæ* of a mercurial course. Dose, of the powdered root, ℈j to ʒj, three times a day. In selecting the roots, it will be right to choose such as are plump, not carious, nor too dusty on breaking; but rough, and which easily split longitudinally. Officinal Prep. *Decoctum Sarsaparillæ.* L.E.D. *Decoct. Sarsaparillæ comp:* L.D. *Extractum Sarsaparillæ.* L.

SASSAFRAS. L.E.D. (Laurus Sassafras. *Lignum, Radix, et Cortex.*)

The Wood, Root, and Bark of Sassafras.

Qualities. *Odour*, fragrant; *Taste*, sweet and aromatic. Chemical Composition. The qualities of this plant depend upon an essential oil and resin. Solubility. Its active parts are soluble in water and alcohol. Med. Uses. It is said to be diaphoretic, and diurectic; and has been employed in cases of scurvy, rheumatism, and in various cutaneous affections; it also formerly enjoyed the reputation of being an antisyphilitic remedy. Its powers are very questionable. Officinal Prep. *Oleum Sassafras.* L.E.D. *Decoct: Sarsaparillæ comp:* L.D. *Decoct: Guaiac:* L.E.D. *Aqua Calcis comp:* D.*

* Godfrey's Cordial—The following receipt for this nostrum was obtained from a wholesale druggist, who makes and sells many hundred dozen bottles in the course of a year There are however several other formulæ for its preparation, but they are not essentially different. Infuse ℥ ix of Sassafras, and of the sseds of Carraway, Coriander, and Anise, of each ℥ j, in six pints of water, simmer the mixture until it is reduced to four pints; then add lbvj of Treacle, and boil the whole for a few minutes; when it is cold, add f ℥ iij of the tincture of Opium.

SCAMMONIA. L.E.D. (Convolvulus Scammonia *Gummi-resina.*)

SCAMMONIUM. D. *Scammony.*

QUALITIES. *Form*, blackish-grey cakes; *Taste*, bitter and sub-acrid; *Odour*, heavy and peculiar; when rubbed with water, the surface lathers or *lactifies*. *Specific gravity* 1·235. CHEMICAL COMPOSITION. Resin is the principal constituent; 16 parts of good *Aleppo* Scammony yield 11 parts of resin, and 3½ of watery extract. That from *Smyrna* contains not more than half the quantity of resin, but more extractive, and gum. SOLUBILITY. Water, by trituration, takes up one-fourth, alcohol two-thirds, and proof spirit dissolves all, except the impurities. INCOMPATIBLE SUBSTANCES. Neither acids, metallic salts, nor ammonia, produce any change in its solutions, but the fixed alkalies occasion yellow precipitates; and yet they do not appear to be *medicinally* incompatible with it; thus Gaubius, "*Scammoneum acidi commixtio* reddit inertius; alcali fixum, contra, adjuvat.*" The mineral acids appear to destroy a part of the substance, without in the least altering the rest. The discrepancy which exists in authors respecting the power of this drug, seems to have arisen from its operation being liable to uncertainty, in consequence of peculiar states of the alimentary canal; for instance, where the intestines are lined with an excess of mucus, it passes through without producing any action, but where the natural mucus is deficient, a small dose of scammony may irritate and even inflame the bowels. MED. USES. It is an efficacious and powerful cathartic, very eligible in worm cases, and

* M. Virey says "On observe que des acides *châtrent*, pour ainsi parler, tout l'energie de la Scammonée."

in the disordered state of bowels which so commonly occurs in children. Dose, grs. iij to xv, in the form of powders triturated with sulphate of potass, sugar, or almonds; when given alone, it is apt to irritate the fauces; it may be also administered in a solution, effected by triturating it with a strong decoction of liquorice, and straining. (*Form.* 16, 20.) Officinal Prep. *Confect: Scammon:* L.D. *Pulv: Scammon: co.* L.E. *Extract: Colocynth: co.* L. *Pulv: Sennæ co.* L. Adulterations. Two kinds of Scammony are imported into this country, that from *Aleppo*, which is the best; and that from *Smyrna*, which is more compact and ponderous, but less pure: it is commonly mixed with the expressed juice of the *cynanchum monspeliacum;* it is also sophisticated with *flour*, *sand*, or *ashes;* their presence may be detected by dissolving the sample in proof spirit, when the impurities will sink, and remain undissolved; carbonate of lime is moreover frequently added to Scammony, in which case the sample will effervesce in acids: there is however a compound bearing the name of Scammony, to be met with in the market, which is altogether factitious, consisting of jalap, senna, manna, gamboge, and ivory black. Good Scammony ought to be friable, and when wetted with the finger, it should *lactify*, or become milky: and the powder should manifest its characteristic odour, which has been compared to that of old ewe milk cheese.

SCILLÆ RADIX. L.E.D. (Scilla Maritima.) *Squill Root.* (Bulb.)

Qualities. *Odour*, none; *Taste*, bitter, nauseous, and acrid; when much handled, it inflames, and ulcerates the skin. By drying, the bulb loses about

four-fifths of its weight, and with very little diminution of its powers, provided that too great a heat has not been applied. CHEMICAL COMPOSITION. According to Vogel, gum 6—tannin 24—sugar 6—bitter principle (*Scillitin*, which is white, transparent, and breaks with a resinous fracture) 35—woody fibre 30. SOLUBILITY. Squill gives out its virtues so perfectly to any of the ordinary menstrua, as to render the form of its exhibition, in that respect, a matter of indifference. INCOMPATIBLE SUBSTANCES. *Alkalies* diminish their acrimony and bitterness, and are probably *medically* inconsistent with their diuretic qualities, but farther experiments are required to decide this question: *vegetable acids* produce no effect upon their sensible qualities, but are said to increase their expectorant power. MED. USES. According to the dose, and circumstances under which it is administered, it proves expectorant, diuretic, emetic, or purgative; as an expectorant, it can never be employed where pulmonary inflammation exists, for in such cases, instead of promoting, it will check any excretion from the lungs; its combination with a diaphoretic will frequently increase its powers, and generally be a measure of judicious caution. See *Form:* 48.) As a diuretic, it seems to act by absorption, and we accordingly find, on the authority of Dr. Cullen, that *when the squill operates strongly on the stomach and intestines, its diuretic effects are less likely to happen;* he therefore found that by accompanying it with an opiate, (*Form:* 28) the emetic and purgative operation may be avoided, and the squill be thereby carried more entirely to the kidneys. Experience, moreover, has taught us the value of combining this medicine with some mercurial preparation, by which its diuretic powers are very considerably

augmented, (*Form:* 31, 32, 34,) but we must take care that it does not occasion purging. In the exhibition of squill, it has been often delivered as a rule, to give it to the extent necessary to induce nausea, as affording a test of the medicine being in a state of activity. Dr. Home, in opposition to the opinion of Cullen, maintained that the powers of Squill as a diuretic, were increased by combining it with bodies capable of promoting its emetic operation: after what has been observed, however, it is unnecessary to dwell upon the mischievous tendency of such a practice. As an emetic, it has been advised in solution, in cases of hooping cough, but its extreme uncertainty renders it unfit for exhibition, unless as an adjunct to emetic combinations, as in *Form:* 3. Dose. Of the dried root gr. j to iv. Officinal Prep. *Acetum Scillæ*, L.E.D. *Pil: Scill: comp:* L.E.D. *Pulv: Scill:* E.D. *Syrup: Scill: maritim:* E. *Tinct: Scill:* L.D.

SENNÆ FOLIA. L.E.D. (Cassia Senna.)

Senna Leaves.

Qualities. *Odour*, faint and sickly; *Taste*, slightly bitter, sweetish, and nauseous. Chemical Composition. Extractive, resin, mucilage, and saline matter; it contains within itself a purgative principle and a bitter element; and although the latter is *per se* inert, yet in combination, its presence aids and exalts the efficacy of the former. Solubility. Both water and spirit extract the virtues of Senna; to water and proof spirit the leaves communicate a brownish colour, more or less deep according to the proportions employed; to rectified spirit they impart a fine green colour. Med. Uses. See *Infus: Sennæ*. Offi-

CINAL PREP. *Confectio Sennæ*, L.E.D. *Extract: Cassiæ Sennæ.* E. *Infus: Sennæ.* L. D. *Infus: Tamarind: cum Senna.* E.D. *Pulv: Sennæ comp:* L. *Tinct: Sennæ.* L.D. *Tinct: Sennæ comp:* E. *Syrup: Sennæ.* L.D. ADULTERATIONS. The leaves of senna are imported from Alexandria in a state of adulteration, being mixed by the merchants of Cairo with the leaves of *Cynanchum Oleafolium*, (Arguel) and with those of *Colutea Arborescens;* the former are distinguished by their greater length as well as by their structure, which differs from the leaves of Senna in having a straight side, and being regular at their base, and in not displaying any lateral nerves on the under disk; the latter are so different from Senna leaves, that there is no difficulty in at once recognising them. The *Tripoli Senna* contains a much larger proportion of *Cynanchum*, and of the other adulterations; as a general rule, those leaves which appear bright, fresh, free from stalks and spots, that are well and strongly scented, smooth and soft to the touch, thoroughly dry, sharp pointed, bitterish, and somewhat nauseous, are to be preferred.

SINAPIS SEMINA. (*Sinapis Nigra*, L. *Alba.* E.D.)

Mustard Seeds.

CHEMICAL COMPOSITION. Fecula, mucilage, a bland fixed oil, an acrid volatile oil on which their virtues depend, and which on standing deposits a quantity of sulphur, and an ammoniacal salt. SOLUBILITY. Unbruised mustard seeds, when macerated in boiling water, yields only an insipid mucilage, which like that of linseed, resides in the skin; but when bruised, water takes up all the active matter, although it is scarcely imparted to alcohol. MED.

Uses. It is a beneficial stimulant in dyspepsia, chlorosis, and paralysis; for which purpose, a tea spoonful of the bruised seeds may be administered; or a *whey* may be made, by boiling a table spoonful of the bruised seeds in oj of milk, and straining; of which a fourth part may be taken three times a day, (see also *Form:* 106). The farina made into a paste with crumbs of bread and vinegar, affords one of the most powerful external stimulants which we can apply, and is technically termed a *Sinapism*; it produces intense pain, and excites an inflammation entering much more into the true skin than that which is excited by the Lyttæ; it is therefore worthy attention in all internal inflammations where bleeding is limited: if necessary it may be quickened by the addition of oil of turpentine. If a table spoonful of powdered mustard be added to oj of tepid water, it operates briskly as an emetic. Officinal Prep. *Cataplasm: Sinap*, L.D. *Emplast: Meloes comp:* E.* Adulterations. Fine powder, or flour of mustard, as it occurs in commerce, contains only one-sixth part of genuine mustard, the remainder consists of flour, coloured by turmeric, and made pungent by the addition of powdered capsicum.

SODA TARTARIZATA. L. Tartras Sodæ et Potassæ. E. Tartarus Sodæ et Kali. D. olim. *Sal de Seignette. Sal Rupellensis*, or *Rochelle Salt.*

Qualities. *Form*, irregular prismatic crystals, very slightly efflorescent. Chemical Composition.

* Whitehead's Essence of Mustard.—This consists of *oil of turpentine, camphor*, and a portion of *spirit of rosemary;* to which is added a small quantity of *flour of mustard.*

Whitehead's Essence of Mustard Pills.—Balsam of Tolu, with resin!

It is a triple salt, formed by neutralizing the excess of acid in super-tartrate of potass, with soda. SOLUBILITY. It is soluble in five parts of water at 50°. MED. USES. Similar to those of *Potassæ Tartras.*

SODÆ CARBONAS. L. E. *Carbonate of Soda.*

This salt, when properly prepared, is a *bi-carbonate* of soda; its taste is very slightly alkaline, and it is much less soluble in water than the sub-carbonate; its chemical habitudes, as connected with its medicinal applications, are similar to those of the *carbonate of potass*, which see. MEDICAL USES. As it is less nauseous, so is it more eligible than the *sub*-carbonate; in other respects, its effects are the same, *vid. Sodæ Sub-carbonas.* DOSE, grs. x to ʒss.*

SODÆ MURIAS. L. E.

SAL COMMUNE, Murias Sodæ. D.

Muriate of Soda. Common Salt.

QUALITIES. *Form*, that of regular cubes, which do not deliquesce unless contaminated with muriate

* SODAIC POWDERS.—Contained in two distinct papers, one of which is blue, the other white; that in the former consists of ʒ ss of the *carbonate of soda*, that in the latter of grs. xxv of *tartaric acid.* These powders require half a pint of water. It is very evident that a solution of these powders is by no means similar to "*Soda Water*," which it is intended to emulate; for in this latter preparation, the soda is in combination only with carbonic acid; whereas the solution of the "*Sodaic Powders*" is that of a neutral salt, with a portion of fixed air diffused through it.

PATENT SEIDLITZ POWDERS.—These consist of two different powders; the one, contained in a white paper, consists of ʒ ij of *Tartarized Soda*, and ℈ij of *Carbonate of Soda;* that in the blue paper, of grs. xxxv of tartaric acid. The contents of the white paper are to be dissolved in half a pint of spring water, to which those of the blue paper are to be added; the draught is to be taken in a state of effervescence. The acid being in excess renders it more grateful, and no less efficacious, as a purgative.

of magnesia.* CHEMICAL COMPOSITION. It consists, according to Berzelius, of 46·55 of muriatic acid, and 53·44 of soda; according to the new theory however, this salt must be considered as a true *muriate of soda*, only while it remains in an aqueous solution; for when it is reduced to dryness, the muriatic acid and the soda become both decomposed, and the hydrogen of the former uniting with the oxygen of the latter, they both pass off in the form of water, while the chlorine of the muriatic acid unites with the metallic base of the soda, to form *chloride of sodium*, in the proportion of 22 sodium, to 33·5 chlorine. Late researches have also detected both in rock and in other salt, the presence of *muriate of potass*. SOLUBILITY. It is equally soluble in cold and in hot water, one part of the salt requiring rather more than 2½ parts. MED. USES. The effects of salt* upon the animal and vegetable kingdoms, are striking and important, and have furnished objects of the most interesting enquiry to the physiologist, the chemist, the physician, and the agriculturist; it appears to be a natural stimulant to the digestive organs; and that carnivorous animals are instinctively led to immense

* Our English Salt is generally thus contaminated; for which reason it is unfit for the curing of several kinds of fish; this will not appear strange, says Mr. Parkes, when it is considered that merely its own weight of water is all that is necessary for the complete solution of *muriate of magnesia;* a circumstance which renders it impossible to preserve such salt for any length of time, in a dry state. This muriate however might be separated from Common Salt, on a large scale, for one shilling per cwt. By exposing the salt to a gentle heat in reverberatory furnaces, the muriatic acid of the magnesian muriate will fly off, and the magnesia (on a subsequent solution of the salt) will be precipitated. It is well known that *muriate* of magnesia begins to part with its acid at a temperature a little higher than that of boiling water.

* The annual quantity of salt raised from the Salt Mines and Springs in Europe, is estimated at from 25 to 30 millions of cwt.

distances in pursuit of it; the reader is referred to "*Parkes on the repeal of the Salt Laws*," and to an interesting work by my late lamented friend, Sir Thomas Bernard, entitled, "*Case of the Salt Duties, with Proofs and Illustrations.*" Salt, when taken in moderate quantities, promotes, while in excessive ones, it prevents digestion: it is therefore tonic and anthelmintic, correcting that disordered state of the bowels which favours the propagation of worms. In Ireland, where, from the bad quality of the food, the lower classes are greatly infested with worms,*

* I have myself witnessed the bad effects of a diet of unsalted fish; and in my examination before a Committee of the House of Commons in 1818, appointed "for the purpose of inquiring into the laws respecting the Salt Duties," I stated the great injury which the poorer classes in many districts, sustained in their health, from an inability to procure this essential article. Lord Somerville (in his address to the Board of Agriculture) gave an interesting account of the effects of a punishment which formerly existed in Holland. "The ancient laws of that country, ordained men to be kept on bread alone, UNMIXED WITH SALT, as the SEVEREST punishment that could be inflicted upon them in their moist climate; the effect was horrible: these wretched criminals are said to have been DEVOURED BY WORMS, engendered in their own stomachs."

The great advantages which could accrue to this nation in its fisheries, agriculture, manufactures, and commerce, from a remission of the odious and impolitic tax upon salt, are incalculable: it is a boon which has been long promised and will I hope be shortly granted; although it must in justice to the present government be stated, that so enormous a revenue is not easily supplied by commutation. The government of France appears to have been as impolitic with regard to this tax as the English. Buonaparte abolished the collection of turnpike dues; and imposed a tax on salt, payable at the Salt pans, in its stead. It is not perhaps generally known, that by the aid of this tax he was enabled to complete the grand entrance into Italy, over the Simplon; so that it may be fairly observed, that if HANNIBAL was enabled to cross the Alps by the aid of VINEGAR—BUONAPARTE, by the assistance of SALT, succeeded in constructing a public road over the same mountains.

a draught of salt and water is a popular and efficacious anthelmintic. *Form:* 133, is a prescription by Rush, who says that in this manner he has administered many pounds of common salt with great success in worm cases. In the first volume of the Medical Transactions we shall find an interesting account of a cure of this disease by salt, after the failure of other remedies; I beg also to refer the practitioner to another case illustrative of its anthelmintic powers, published by Mr. Marshall, (*London Medical and Physical Journal*, vol. xxxix, No. 231,) which is that of a lady who had a natural antipathy to salt, and was in consequence most dreadfully infested with worms during the whole of her life. In very large doses *Salt* proves purgative; it is also absorbed, and carried to the kidneys, but it undergoes no decomposition *in transitu*, nor does it appear to possess any considerable powers as a diuretic; its solution in tepid water, in the proportion of ℥ss—℥j in oj of water, forms the common domestic enema. Dose, when intended to act as a cathartic, from ℥ss to ℥j very largely diluted; when to answer the other intentions, from grs. x to ʒj

SODÆ SUB-BORAS. L.D. Boras Sodæ. E.
Borax.

Qualities. *Form*, irregular hexaedral prisms; slightly efflorescent. *Taste*, alkaline and styptic; when heated it loses its water of crystallization, and becomes a porous friable mass *(calcined borax)*. Chemical Composition. Boracic acid, 34—soda, 17—water, 49. Solubility. It is soluble in 20 parts of water at 60°, and in 6 parts at 212°. Incompatible Substances. It is decomposed by *acids; potass;* and the *sulphates* and *muriates* of the

earths, and by those of *ammonia*. MED. USES. It is only employed in the form of powder mixed with 8 or 10 parts of honey, as a detergent linctus in aphthæ, *&c.* The Chinese employ it in inflammatory sore throat; for which purpose they first reduce it to an extremely fine powder, and then blow it through a reed upon the inflamed surface. OFF. PREP. *Mel Boracis.* L. ADULTERATIONS. *Alum*, and *fused muriate of soda*, are substances with which it is sometimes sophisticated, to discover which, dissolve it in distilled water, and after saturating the excess of the base with nitric acid, assay the solution with nitrate of barytes and nitrate of silver.

SODÆ SUB-CARBONAS. L.E.D.

Sub-carbonate of Soda.

QUALITIES. *Form*, octohedrons, truncated at the summits of the pyramids; it effloresces when exposed to the air, and at 150° Fah. undergoes watery fusion, its crystals containing as much as seven proportionals of water; *Taste*, mild, but alkalescent. CHEMICAL COMPOSITION. Soda 29·5—carbonic acid 20·7. SOLUBILITY. It is soluble in two parts of water at 60°, and in considerably less than its weight of boiling water; it is insoluble in alcohol. INCOMPATIBLE SUBSTANCES are enumerated under *Potassæ Carbonas*. MEDICAL USES, are similar to those of the sub-carbonate of potass, but it is preferable to it for internal use, as being more mild and less nauseous; and moreover Fourcroy states it as his opinion that soda is more eligible for medicinal purposes than potass, on account of its analogy with animal substances, which always contain it, while on the contrary, no portion of potass is found in them. Are then the absorbents more disposed to take up soda than potass?

The results of experience do not appear to sanction such a conclusion. FORMS OF EXHIBITION. It may be administered in solution, in an electuary, or in pills; when exhibited in the latter form, it must be previously deprived of its water of crystallization, (*Sodæ Sub-carbonas exsiccata.* L.) or the pills will fall into powder as they dry. DOSE, gr. x to ʒj, twice or thrice a day.

SODÆ SULPHAS. L.E.D.

Natron Vitriolatum, P.L. 1787. *Sal Catharticus Glauberi.* P.L. 1745.

QUALITIES. *Form*, transparent prismatic crystals, which effloresce; when exposed to heat, it undergoes watery fusion, that is, it melts in its own water of crystallization. *Taste*, saline and bitter. CHEMICAL COMPOSITION. Sulphuric acid 24·64,—soda 19·36—water 56. SOLUBILITY. f℥j of water at 60° dissolves ʒiiiss; in boiling water it is considerably more soluble; it is quite insoluble in alcohol. INCOMPATIBLE SUBSTANCES. The same as those which decompose *sulphate of magnesia.* MEDICAL USES. A common and useful purgative; its nauseous taste may be in a great degree disguised by the addition of a small quantity of lemon juice, or *cream of tartar.* DOSE, ℥ss to ℥ij. In an effloresced state it is just equal in efficacy to double the weight of that which is in a crystalline form. It is rendered more active by being combined with other purgative salts, especially with sulphate of magnesia, and the compound is more soluble and less nauseous; (*Form.* 8, 10.) A portion of triple salt, a *magnesio-sulphate of soda*, probably results from the combination, a salt which may be frequently detected in parcels of sulphate of magnesia, and may be known by its crystals, which are regular

rhomboids; it is also contained, according to Dr. Murray, in the brine or *mother liquor* of sea water; and it constitutes the whole of that salt which was formerly sold under the name of "*Lymington Glauber's Salts.*" *

* CHELTENHAM SALTS.—A factitious compound has been long vended, as a popular purgative, under this name; it is formed by triturating together the following salts. *Sulphate of Soda*, grs 120. *Sulphate of Magnesia*, grs. 66. *Muriate of Soda*, grs. 10. *Sulphate of Iron*, gr. ½. As a purgative it is very efficacious, and superior probably to that which is actually obtained by the evaporation of the Cheltenham water itself, for notwithstanding the high pretensions with which it has been publicly announced, it will be found to be little else than common *Glauber's Salt*. This fact has been confirmed by the experiments of Mr. Richard Phillips, (*Annals of Philosophy*, No. lxi,) who observes, that the "REAL CHELTENHAM SALTS contain no *chalybeate property*," but are merely sulphate of soda, mixed with a minute quantity of soda, and a very small portion of common salt." It could not be imagined that the salt should contain oxide of iron even in a state of mixture, much less in combination, for carbonate of iron is readily decomposed by ebullition, and the oxide of iron is precipitated before the salt can be crystallized. A preparation, under the name of *Thomson's* Cheltenham Salts, is accordingly manufactured in London, by evaporating a solution consisting of sulphate of soda and sub-carbonate of soda.

"EFFLORESCENCE OF REAL CHELTENHAM SALTS." The preceding salt deprived of its water of crystallization.

"EFFLORESCENCE OF REAL MAGNESIAN CHELTENHAM SALTS," MADE FROM THE WATERS OF THE CHALYBEATE MAGNESIAN SPA. This is asserted to be a *sub-sulphate* from nature, which combines both a *pure* and a *sub-sulphated* magnesia in its composition; "but," says Mr. Phillips, "neither nature nor art has ever produced such a combination; in truth, it consists of *Epsom Salt*, with small portions of magnesia, and muriate of magnesia or muriate of soda.

MURIO-SULPHATE OF MAGNESIA AND IRON. The preparation thus named by Mr. Thomson, was found by Mr. Phillips to consist of Epsom Salt, deprived of part of its water of crystallization, and discoloured by a little rust of iron, and containing a small portion of muriate of magnesia.

Thus it appears, that not one of these preparations is similar to the water which is drank at the Spa; in order to remedy this difficulty, Mr. Thomson, prepared the "ORIGINAL COMBINED CHELTENHAM SALTS,"

SPARTIUM. L. E. (Spartii *Cucumina*. L. *Summitates*. E.)
GENISTA. D.

The tops of Broom.

QUALITIES. When bruised, they yield an unpleasant *odour*, and a nauseous bitter *taste*. SOLUBILITY. Water and alcohol alike extract their active matter. MED. USES. They certainly act as a powerful diuretic, and even prove so to animals that browse upon them. I have frequently exhibited them in the Westminster Hospital, with very great success, in the form of decoction. (See *Form*. 41.)

SPIRITUS. L. SPIRITUS STILLATITII.
Distilled Spirits.

These are the solutions of the essential oils of vegetables in diluted alcohol, or proof spirit; they are obtained by distilling spirit with the recent vegetables; sometimes however they are extemporaneously made by at once dissolving the oils in the spirit. (See *Spiritus Tenuior*.) MEDICAL USES. Like the *distilled waters*, they serve as vehicles for the exhibition of more active medicines; they are also occasionally employed as grateful stimulants. It is unnecessary to dwell on each of these simple spirits, as their virtues are the same as those of the substances from which they are extracted, united to the stimulus of the alcohol. The following are officinal:—*Spirit: Anisi*. L. *Spir: Anisi comp:* L. D. *Armoraciæ comp:* L. *Carui*. L. E. D. *Cinnamomi*. L. E. D. *Juniperi comp:* L. D. *Lavandulæ*. L. E. D. *Lavan-*

by evaporating the waters to dryness: but a very small share of chemical penetration is required to satisfy us that no process of this description can remedy the defect described, for as Mr. Phillips has observed, the chalybeate properties of the water *must* be essentially altered by such an operation.

dulæ comp: L. E. D. *Menth: Pip:* L. D. *Menth: Virid:* L. *Myristic:* L. E. D. *Pimentæ.* L. D. *Pulegii.* L. *Raphani comp:* D. *Rosmarini.* L.E.D.

SPIRITUS AMMONIÆ. L. D.

ALCOHOL AMMONIATUM. E.

Spiritus Salis Ammoniaci dulcis. P.L. 1745. *Spiritus Salis Ammoniaci.* P. L. 1720.

This is a solution of ammoniacal gas in spirit; in which a small portion of the sub-carbonate is also generally present. It is a powerful stimulant, but it is principally employed in the basis of the following compounds; viz. *Spirit: Ammoniæ comp:* L. E. D. *Spirit: Ammoniæ fœtid:* L.E.D. *Tinctura Castorei comp:* E. *Tinct: Guaiaci comp:* E. *Tinct: Opii Ammoniat:* E.

SPIRITUS AMMONIÆ AROMATICUS. L. D.

ALCOHOL AMMONIATUM AROMATICUM. E.

Spiritus Ammoniæ Compositus. P. L. 1787. *Spiritus Volatilis Aromaticus.* P.L. 1745. *Spiritis salis volatilis oleosus.* P.L. 1720.

This is a solution of several essentials oils, (*Cinnamon*, *Cloves*, and *Lemon.* L.—*Rosemary* and *Lemon.* E.—*Lemon* and *Nutmeg.* D.) in the spirit of ammonia. It is a valuable stimulant, and an agreeable adjunct, and efficacious corrective to other remedies, see *Form.* 97, 106. DOSE, f℥ss to f℥j.

SPIRITUS ÆTHERIS AROMATICUS. L.

ÆTHER SULPHURICUS CUM ALCOHOLE AROMATICUS. E.

Elixir Vitrioli dulce. P. L. 1745.

This preparation, which was excluded from the London Pharmacopœia of 1787, is now restored. It consists of Sulphuric Ether *one part*, rectified spirit *two parts*, impregnated with aromatics; the presence of spirit is necessary in this preparation, since the volatile oils would be insoluble in the æther without it. MED. USES. A grateful stimulant.

SPIRITUS ÆTHERIS NITRICI. L.

SPIRITUS ÆTHERIS NITROSI. E.

SPIRITUS ÆTHRUS NITROSUS. D.

Spiritus Nitri dulcis. P.L. 1745.

QUALITIES. A colourless fluid of the *specific gravity* ·850. *Odour*, extremely fragrant; *Taste*, pungent and acidulous; it is very volatile and inflammable. CHEMICAL COMPOSITION. A portion of nitric æther and nitric acid, combined with alcohol. SOLUBILITY. It is soluble both in water and alcohol. INCOMPATIBLE SUBSTANCES. With a solution of *green sulphate of iron* it strikes a deep olive colour, owing probably to its holding a portion of nitrous gas in solution; with the *tinctures of guaiacum* it produces a green or blue coagulum. MED. USES. When properly diluted, it is refrigerant and diuretic; and has been long employed as a grateful draught in febrile affections; as a diuretic, it frequently proves a valuable auxiliary in dropsy, (see *Form.* 41, 44.) DOSE, ♏x to xl, in any aqueous vehicle. By age and exposure to the air, it is gradually decomposed, and gives rise to the reproduction of nitrous acid.

SPIRITUS ÆTHERIS SULPHURICI. L.

ÆTHER SULPHURICUS CUM ALCOHOLE. E.
LIQUOR ÆTHEREUS SULPHURICUS. D.
Spiritus Ætheris vitriolici. P.L. 1787.
Spirit. Vitrioli dulcis. 1745.

QUALITIES. A fluid of the *specific gravity* ·816, consisting of *two parts* (by measure) of rectified spirit, and *one part* of sulphuric æther. MED. USES. It has all the properties of æther, but in an inferior degree. DOSE, fʒj to fʒiij.

SPIRITUS ÆTHERIS SULPHURICI COMPOSITUS. L.

This is intended as a substitute for the *Liquor Anodynus* of Hoffmann, although its composition was never revealed by him. In addition to its stimulating properties, it is supposed to add those of an anodyne nature. DOSE, fʒss to fʒij.

SPIRITUS RECTIFICATUS. L.

ALCOHOL FORTIUS. E. SPIRITUS VINOSUS RECTIFICATUS. D.

In this preparation, alcohol is nearly in the highest state of concentration, in which it can be easily prepared in the large way for the purposes of trade; its specific gravity however varies in the different pharmacopœias, viz. the London and Edinburgh preparation is stated to have that of ·835, while the rectified spirit of Dublin is ordered to be only ·840. The former, at the temperature of 60° *Fah.* consists of 85 parts of pure alcohol and 15 of water, the latter only of 83 per cent. of alcohol. It is a most powerful stimulant, but is rarely employed except in combina-

tion; as a pharmaceutical agent, its use is highly valuable and extensive. (See *Tincturæ.*) During the evaporation of spirit, a considerable reduction of temperature takes place, and it has lately been ascertained by Mr. Ritchie of Perth, that "*the degrees of cold induced by the evaporation of spirit of different degrees of strength are proportional to the strength of these spirits, reckoning from the degrees of cold induced by the evaporation of water.*" The application of this theorem will enable us to ascertain the strength of a spirit by the "DIFFERENTIAL THERMOMETER" of Leslie.

SPIRITUS TENUIOR. L.
ALCOHOL DILUTUM. E.
SPIRITUS VINOSUS TENUIOR. D.
Weaker, or *Proof Spirit.*

This is rectified spirit diluted with a certain proportion of water, and it is to be regretted that the quantity ordered for this purpose, should vary in the different Pharmacopœias; thus, according to the London and Dublin Colleges, its specific gravity is ·930, while the College of Edinburgh directs it to be of ·935. The former consists of 44 per cent of pure alcohol, and may be formed by mixing *four* parts, by measure, of rectified spirit, with *three* of water; the latter contains only 42 *per cent* of pure alcohol, and may be made by adding together *equal parts* of rectified spirit and distilled water. Alcohol in this state of dilution, is better adapted for taking up the principles of vegetables than rectified spirit; indeed diluted alcohol acts upon bodies as a chemical compound, and will dissolve what neither the same proportion of water nor of alcohol would, if sepa-

rately applied; we perceive therefore the importance of ensuring uniformity of strength in our spirits. (See *Tincturæ.*) It is necessary to remark that almost all the spirit sold under the name of "*Proof Spirit*," is contaminated with empyreumatic oil, and is unfit for the purposes of pharmacy; it ought therefore to be extemporaneously prepared by mixing together rectified spirit and water, in the proportions above stated. This however is rarely done, except the liquors are intended for the toilette, and hence it has been observed, that the cordials of the apothecary are generally less grateful than those of the distiller, the latter being extremely curious in rectifying and purifying his spirit. If common water be employed for the dilution of alcohol, the resulting spirit will be turbid, owing principally to the precipitation of sulphuric salts; this circumstance lately occasioned considerable embarrassment to the Curators of the Hunterian Museum at the College of Surgeons, who were compelled to prepare their own spirit, in consequence of an excise regulation preventing the distiller from sending out any spirit of that strength which is required for their anatomical purposes. A curious fact has just been noticed in the Laboratory of the Royal Institution, which is, that diluted spirit *becomes stronger* by being kept in vessels that are carefully closed by bladder! whence it would seem, that alcoholic vapour transpires through this animal membrane less freely than aqueous vapour; we are at present unable to offer a satisfactory explanation of this anomalous case of distillation, but it is probably connected with the different solvent powers of these two liquids, in relation to the animal membrane.

Med. Uses. Alcohol, although diluted to the degree of proof spirit, is still too strong for internal

exhibition; indeed, where its use is indicated, it is more generally given in the form of wine, malt liquors, or ardent spirits, which must be regarded only as diluted alcohol, although each has a peculiarity of operation, owing to the modifying influence of the other elements of the liquid; thus *Brandy** is said to be simply cordial and stomachic;† *Rum*, heating and sudorific; *Gin* and *Whiskey*, diuretic; and *Arrack*,‡ styptic, heating, and narcotic; it seems also probable that a modified effect is produced by the addition of various other substances, such as sugar and acids, which latter bodies, besides their anti-narcotic powers, appear to act by favouring a more perfect combination and mutual penetration of the particles of spirit and water. The effects also which are produced by the habitual use of fermented liquors, differ essentially according to the kind that is drank; thus Ale and Porter, in consequence of the nutritive matter, and perhaps the invigorating bitter with which they are charged, and the comparatively small proportion of alcohol which they contain, dispose to a plethora, which is not unfrequently terminated by

* I apprehend that the peculiar flavour of *Cogniac* depends upon the presence of an æthereal spirit, formed by the action of Tartaric or perhaps Acetic acid upon Alcohol; it is on this account that Nitric Æther when added to Malt spirits, gives them the flavour of French Brandy. The same flavour is also successfully obtained by distilling British spirits over wine lees, or by distilling a spirit obtained from Raisin Wine, which has become accescent.

In new brandy there also appears to be an uncombined acid, giving to it a peculiar taste and quality, which are lost by age. This explains the reason why the addition of five or six drops of "*liquor ammoniæ*," to each bottle of *new* brandy, will impart to it the qualities of that of the oldest date.

† Taylor's Red Bottle, commonly called the *Whitworth Doctor's*. British Brandy coloured with Cochineal, and flavoured with oil of Origanum.

‡ Mock Arrack. The author of '*Apicius Redivivus*,' directs for the purpose of making a mock Arrack, that two scruples of Benzoic acid be added to every quart of Rum. By a receipt of this kind the celebrated Punch of Vauxhall is prepared.

apoplexy; Spirits, on the other hand, induce severe dyspepsia, obstructed and hardened liver, dropsy, and more than half of all our chronical diseases; and Dr. Darwin moreover remarks that when they arise from this cause, they are liable to become hereditary, even to the third generation, gradually increasing, if the cause be continued, till the family becomes extinct: with regard to Wine, Rush has truly observed that its effects, like those of tyranny in a well formed government, are first felt in the extremities, while spirits, like a bold invader, seize at once upon the vitals of the constitution; the different kinds of wine, however, produce very different and even opposite effects, as stated under the history of that article, (see *Vinum.*)

STANNI LIMATURA. L.E.D.

The Filings of Tin.

The anthelmintic properties of Tin have been explained by three different hypotheses, viz. 1. *That it acts mechanically by dislodging the mucus from the intestines;* if this be true, it is difficult to explain the fact of its activity being increased by pulverization. 2. *That its efficacy depends upon the presence of arsenic;* if so, why should the *purest* specimens act with equal efficacy? 3. *That it operates by generating hydrogen gas in the intestinal canal:* it has been observed that this opinion is rendered probable by the fact, that sulphur increases its powers. Dose, ʒj or ʒij, mixed with honey, treacle, or conserve, and exhibited for several successive mornings, a purgative medicine being occasionally interposed, (see *Form.* 122.) The use of this remedy however is entirely superseded by the more efficacious exhibition of oil of turpentine.

SUCCI SPISSATI. E. See *Extracta.*

SULPHUR SUBLIMATUM. L.E.D.

Sublimed Sulphur. Flowers of Sulphur.

CHEMICAL COMPOSITION. It is probably a triple compound of oxygen, hydrogen, and some unknown base. SOLUBILITY. It is insoluble in water and alcohol, but soluble in oils, especially in that of linseed, which is a powerful solvent of all sulphureous substances. MED: USES. It is laxative and diaphoretic; it acts principally upon the large intestines, and very mildly, whence it proves useful in hemorrhoidal affections (*Form*: 12); and in consequence of the diaphoresis which it also excites, it is usefnl in chronic rheumatisms, catarrhs, and in some cutaneous affections. To promote its purgative effects, *magnesia* will be found a serviceable sdjunct in hemorrhoids; it may be given in the form of an electuary, or suspended in milk; its solution in oil, (*Oleum Sulphuratum*) is a most nauseous and acrid preparation. When sulphur is combined with metallic remedies, it generally lessens their activity. Its effects in curing psora are universally admitted, and the only objection to its use is the disgusting smell which accompanies its application, see *Unguent: Sulphuris.* Dr. Clarke of Dublin recommends a lotion which he says contains a sufficient impregnation of sulphur for the cure of psora in children, to be made by adding an ounce of broken sulphur to a quart of boiling water, and allowing it to infuse for twelve hours. In this process, the water probably takes up a small portion of sulphurous acid; it is difficult to explain the efficacy of the lotion in any other manner. When sulphur is internally administered, it transpires through the skin in the state of sulphuretted hydro-

gen, and blackens the silver in the pockets of those who take it. Dose ʒj to ʒiij. Officinal Prep: *Sulphur Lotum. L.E.D. Sulphur Præcipitatum. L. Unguent: Sulph: L. E. D. Unguent: Sulphur: comp: L.**

Sulphur Lotum. When sulphur is kept in loosely covered drawers its surface is soon acidified, when it is said to operate with griping, hence the common *flowers* are directed to be washed with water to get rid of any sulphurous acid; it is however rarely performed, and would seem to be a useless subtlety.

Sulphur Præcipitatum. L. *Lac Sulphuris, P.L.* 1720. This, when pure, differs in no other respect from sublimed sulphur than in its superior whiteness, which it owes to the presence of a small proportion of water; in consequence however of its mode of preparation, it always contains a small quantity of sulphate of lime, and not unfrequently other impurities; it may be assayed by pouring upon a suspected sample a sufficient quantity of *liquor potassæ* to cover it, and setting it aside in a warm place to digest, when the sulphur will be dissolved and the impurities remain; or it might be at once subjected to the operation of heat, which would volatilize the sulphur, and thus separate it from its contaminations.

SYRUPI. L.E.D. *Syrups.*

These are solutions of sugar in water, watery infusions, or in vegetable juices; the proportion of sugar is generally *two parts* to one of the fluids; if it exceeds this, the solution will crystallize, if it be less, ferment, and become acescent. ‡ The most certain

* Sulphur Lozenges. Sublimed Sulphur *one part*, sugar *eight parts*, Tragacanth mucilage q. s. used in Asthma, and in Hæmorrhoids.

‡ Sugar perfectly free from the extractive matter with which it

test of the proper consistence of a syrup is its specific gravity, a bottle that holds three ounces of water at 55 *Fah:* ought to hold four ounces of syrup. Syrups are introduced into medicinal formulæ, for several purposes, viz.

I. *To correct or disguise the flavour of disagreeable remedies.* Syrup: Aurantiorum. L.D. (*Form*, 35, 88, 102.)—Limonum. L.E.D.—Simplex (60, 85.)—Zingiberis (25, 33, 68.) Bitter Infusions, and saline solutions are rendered more nauseous by the addition of syrups.

II. *To produce Medicinal Effects.* Syrup: Allii. D. —*Altheæ.* L.E. (49)—*Acidi Acetosi.* E—Colchici. E. —Sennæ. E.D. (9)—Scillæ Maritimæ. E.—Rhamni. L. *Papaveris.* L.E.D. (13, 117, 119)—Rosæ (12)—Zingiberis (82, 103.)

III. *To communicate peculiar forms.*

Every syrup answers this purpose; for the necessary proportions, see *Electuaria.*

IV. *To communicate an agreeable colour.* Syrup: Croci. L.—Rhæados. L.D. (73, 75)—Caryophylli. Rubri. D.—Violæ. E. Except that of Saffron, these syrups are rendered green by alkalies, and red by acids.

exists in combination in nature, and which constitutes that compound to which the name of *Sweet Principle* has been given, will not, however diluted, undergo any kind of fermentation; for it is the presence of this peculiar extractive matter, the natural leaven of fruits, that enables it to undergo that process; since, however, all clayed sugars, or modifications of sugar which are short of perfect purity, still contain a small proportion of this extractive, they are capable of fermenting, when sufficiently dilute; Dr. Macculloch, in his admirable essay on the art of making wine, observes, that by the addition of a very small quantity of the *Sulphite of Potass* the fermentation of syrups and preserves, may be effectually prevented; he states also, that the same object may generally be attained by the use of *Oxy-muriate of Potass*, a salt absolutely tasteless, and easily procured.

General Remarks. The practitioner should never introduce syrups into those medicines which are liable to be injured by the generation of acids: I have frequently seen the *cretaceous mixture*, when charged with syrup, increase instead of check a diarrhœa; and the syrup of poppies, from its disposition to become ascescent, will often aggravate rather than allay the cholic of infants. The syrup of Senna furnishes the practitioner with a convenient purgative for children; that of buckthorn is more violent, and is on that account but rarely used, besides which, in preparing it the chemist not unfrequently substitutes the berries of the *Cornus Sanguinea*, the Dogberry-tree, or those of the *Rhamnus Frangula*, the Alder-Buckthorn, for the Rhamnus Catharticus; a circumstance which necessarily renders the efficacy of this syrup variable and uncertain. The syrup of the rose, when made with the leaves of the *Damask* rose, is gently laxative, and is well adapted for weak children; it is however not unusual, *Coloris gratia*, to substitute the leaves of the *red* rose, in which case the syrup will possess astringent instead of laxative properties. In the preparation of the syrup of poppies, the directions of the College are frequently not obeyed; it is sometimes made by dissolving the extract in syrup, formed with coarse sugar, or even with treacle; at others, by adding tincture of opium to a coarse syrup, in the proportion of ♏x to every f℥j. In the preparation of the syrup of violets, the juice of red cabbage is generally substituted; this is at least a harmless fraud. Note. The syrups which are printed in *Italics*, are very susceptible of decomposition, and should be kept in cool places.

TABACI FOLIA. L.E. (Nicotiana Tabacum. FoliaSiccata.(*Virginianæ*))

NICOTIANÆ FOLIA. D.

Tobacco.

QUALITIES. *Odour*, strong, narcotic, and fœtid: *Taste*, bitter and extremely acrid; *Colour*, yellowish green, (its brown appearance is artificial, being produced by the action of *sulphate of iron.*) CHEMICAL COMPOSITION. Mucilage, albumen or gluten, extractive, a bitter principle, an essential oil, nitrate of potass, which occasions its deflagration, muriate of potass, and a peculiar proximate principle upon which the properties of the plant are supposed to depend, and which has therefore been named *Nicotin.* Vauquelin considers it as approaching the volatile oils in its properties; it is colourless, has an acrid taste, and the peculiar smell of tobacco, and occasions violent sneezing; with alcohol and water, it produces colourless solutions, from which it is thrown down by tincture of galls. SOLUBILITY. Tobacco yields its active matter both to water and spirit, but more perfectly to the latter; long coction weakens its powers. An oil of tobacco of a most powerful nature, may be obtained by distilling the leaves and separating it from the water, on the top of which it will be found to float. MEDICINAL PROPERTIES. Tobacco is endued with energetic poisonous properties, which appear to depend on an especial action upon the nervous system, producing generally a universal tremor which is rarely the result of other poisons; the experiments of M. Orfila moreover demonstrate, that the action of Tobacco is much more energetic when the soluble portion is injected into the anus, than when it is applied to the cellular texture, and for a still stronger

reason, than when introduced into the stomach. Mr. Brodie, from the result of a well devised experiment, has deduced the conclusion that the infusion of Tobacco acts upon the heart through the medium of the nervous system. USES. As a powerful sedative it is sometimes valuable in medical practice; the leaves, when applied in the form of a cataplasm to the pit of the stomach, produce an emetic operation; (*Form:* 5.) In cases of obstinate constipation, depending upon violent spasmodic constriction, as in *ileus*, or *incarcerated hernia*, clysters of the smoke of Tobacco, or of an infusion made acccording to the London College, produce almost immediate relief (*Form.* 113); the practice is not unfrequently attended with severe vomiting, extreme debility, and cold sweats, circumstances which render its administration highly dangerous in cases wherein the patient has been already exhausted by previous suffering. I remember witnessing a lamentable instance of this truth some years ago; a medical practitioner, after repeated trials to reduce a strangulated hernia, injected an infusion of Tobacco, and shortly afterwards sent the patient in a carriage to the Westminster Hospital, for the purpose of undergoing the operation; but the unfortunate man arrived only a few minutes before he expired. Otherwise, the production of such a state of system appears essential to the successful operation of the remedy. Smoking or chewing Tobacco has been also advised in cases of spasmodic asthma, and as a general sedative to relieve suffering; in the process of *smoking*, the oil is separated, and being rendered empyreumatic by heat, it is thus applied to the fauces in its most active state. As a diuretic it was successfully exhibited by Dr. Fowler, but as its operation is uncertain and violent, and ap-

pears to be very analagous to that of Digitalis, which is far more safe and manageable, it has been very judiciously discarded from practice. The external application of Tobacco in the form of cataplasm or infusion, has been applied to several species of cutaneous disease, but even in this state it is liable to exert its virulent effects. A woman applied to the heads of three children afflicted with *tinea capitis*, a liniment consisting of powdered tobacco and butter, soon after which they experienced vertigo, violent vomiting, and fainting. (*Ephemerides des Curieux de la Nature*, Dec: ii, An: 1, p. 46.) It is a curious fact, that the juice of the green leaves instantly cures the stinging of nettles.

Adulterations. When it exhales a fetid odour, we may infer that it has been badly prepared, and not deprived of all its mucus; when pungent, the presence of some deleterious drug is indicated: Cascarilla is very usually added to impart a peculiar flavour; Nitre is also employed for the sake of making it kindle more rapidly, and to impress a lively sensation on the tongue; its vapour is of course very injurious to the lungs: its presence may be detected by treating a suspected sample with hot water, and after filtering the solution through charcoal, setting it aside in order that it may yield its crystals by evaporation. Traces of *Lead*, *Copper*, or *Antimony* may be discovered by boiling the Tobacco in strong vinegar, and after filtering it as before, by assaying it with appropriate tests. *Black Hellebore*, *Alum*, *Sugar*, and *Corrosive sublimate* are amongst the more usual sophistications. *Dried Dock* leaves are also sometimes substituted. Officinal Prep: *Infus: Tabacci.* L. *Vinum Nicotian; Tabac:* E.

Snuff. This well known errhine is prepared from

the dried leaves of Tobacco; in its manufacture however, numerous additions are made which are kept secret. *Salt* is added for the purpose of increasing its weight; *Urine*, Muriate of ammonia, and powdered Glass, to heighten its acrimony. The varied flavour of different *Snuffs* is owing to the leaf being in greater or less perfection; or to its having undergone some degree of fermentation; thus, for instance, the *Macouba Snuff* of Martinique is principally indebted for its acknowledged superiority to the fermentation which the Tobacco undergoes, from being moistened with the best cane juice; other kinds are excited into fermentation by moistening them with melasses and water.

Snuff possesses all the powers of Tobacco; the celebrated Santeuil experienced vomiting and horrible pains, amidst which he expired, in consequence of having drank a glass of wine, into which had been put same Spanish snuff.*

TAMARINDI PULPA. L. Tamarindi Indicæ. Tamarindus: Fructus. D. Fructus Conditus. E.

The Pulp or preserved Fruit of the *Tamarind*.

Qualities. *Taste*, sweetish acid; *Odour*, none. Chemical Composition. ℥j of Tamarinds is composed of Citric acid grs. 45, Malic acid grs. 2, Supertartrate of potass grs. 15, together with sugar, gum, jelly, fecula, and woody fibre. Uses. A pleasant febrifuge may be formed by infusing Tamarinds in water or milk; they improve the taste of the more

* Cephalic Snuff. The basis of this errhine, is powdered *Asarum*, diluted with some vegetable powder.

nauseous cathartics. OFFICINAL PREP: *Confectio Cassiæ.* L.E.D. *Infus: Tamarind: cum Senna.* E.D. CAUTION. Copper vessels should never be employed for the preparation of any compound which contains *Tamarinds.*

TARAXACI RADIX. L.E. (Leontodon Taraxacum) Dens Leonis. *Dandelion.*

QUALITIES. *Odour*, none; *Taste*, bitter, and somewhat sweet and acidulous. CHEMICAL COMPOSITION. The active principles appear to consist of extractive, gluten, a bitter principle *(not resinous)*, and tartaric acid. SOLUBILITY. Water extracts its virtues much better than spirit. INCOMPATIBLE SUBSTANCES. *Infusion of Galls, Nitrate of Silver, Oxy-muriate of Mercury, Acetate of Lead,* and *Sulphate of Iron* occasion precipitates in its solutions. MED. USES. It has long enjoyed the reputation of proving beneficial in obstructions of the liver, and in visceral diseases; Bergius extols its use in these complaints, and recommends the recent root to be boiled in whey or broth. Dr. Pemberton has more recently added his testimony to its value; he observes that he has seen great advantage result from using the extract in chronic inflammation, and incipient schirrus of the liver, and in chronic derangement of the stomach. FORMS OF EXHIBITION. In that of extract, or in decoction made by boiling ℥j of the sliced root in oj of water down to oss, adding to the strained liquid ʒj of Cream of tartar: the recent full grown root only should be used. DOSE f℥jj, twice or thrice a day. OFFICINAL PREP: *Extract: Taraxaci.* The roots are roasted and used at Gottingen by the poorer people for coffee, from which a decoction of them

properly prepared can hardly be distinguished.* The leaves of this plant are blanched, and very commonly used on the continent as a sallad.

TEREBINTHINA. *Turpentine.*

QUALITIES. *Consistence*, semi-fluid, and tenacious; *Odour*, aromatic; *Taste*, pungent. It is inflammable. SOLUBILITY. It is entirely soluble in rectified spirit but not at all in water, and is capable of entering into combination with fixed oils. CHEMICAL COMPOSITION. Resin, and an essential oil, the proportions of which vary according to the species of pine from which it is obtained; they all however possess the same general chemical, as well as medicinal properties, viz. 1. TEREBINTHINA CANADENSIS, Canada Turpentine, or Canada *Balsam* as it is sometimes improperly called, for it contains no benzoic acid, is obtained from the *Pinus Balsamea*. 2. TEREBINTHINA CHIA, Chian, or Cyprus Turpentine, from the *Pistachia Terebinthinus*. 3. TEREBINTHINA VULGARIS, Common Turpentine, Horse Turpentine, from the *Pinus Sylvestris* (the Scotch Fir.) 4. TEREBINTHINA VENETA, Venice Turpentine, from the *Pinus Larix*.‡ MED. USES.

* Various substances have been proposed at different times as substitutes for Coffee. In the "*Fourth Century of Observations*" in the *Miscellanea Curiosa*," we find a critical dissertation on the (*Cahve*) Coffee of the Arabians; and on European Coffee, or such as may be prepared from grain or pulse. Dillenius gives the result of his own preparations made with Pease, Beans, and Kidney Beans, but says that that made from Rye comes the nearest to true Coffee, and was with difficulty distinguished from it. This fact is curious, in as much as a spurious coffee has been lately vended, which is nothing more than roasted Rye. The article is well known by the name of "HUNT'S ŒCONOMICAL BREAKFAST POWDER."

‡ A fluid extract, prepared by decoction from the twigs of this species of fir, is the well known *Essence of Spruce*, which, when fermented

All the Turpentines are stimulant, diuretic, and in large doses cathartic, and externally rubefacient. They may be either made into pills with liquorice root, or suspended in water by the intervention of egg or mucilage, for which purpose, ʒj requires the yelk of one egg, or ʒiss of gum arabic. Dose, gr. x. to ʒj. They have been principally recommended in protracted gleets and leucorrhæa, in mucous obstructions of the urinary passages, and in calculous affections.

TEREBINTHINÆ OLEUM. L. E. D.

Oil of Turpentine.

Qualities. *Form*, a limpid and colourless liquid, whose *Specific gravity* is only ·792. *Odour*, strong, penetrating, and peculiar. *Taste*, hot, bitter, and pungent. Chemical Composition. It is an essential volatile oil, possessing however peculiar habitudes with respect to alcohol, being readily dissolved by *hot* alcohol, but as the spirit cools it again separates in drops; in the cold, it is very sparingly soluble in the strongest alcohol, but it dissolves completely in six parts of sulphuric ether. Med. Uses. It acts according to the dose, either on the primæ viæ producing catharsis, or on the kidneys exciting diuresis: thus its operation offers another illustration of the views which I have so anxiously pressed upon the attention of the practitioner under the article

with melasses, forms the popular beverage, called "*Spruce Beer*," (Cerevisia Pini Laricis.)

True Riga Balsam, *Beaume de Carpathes*. From the shoots of the *Pinus Cembra*, previously bruised, and macerated for a month in water. This same fir affords also *Briancon Turpentine*.

The Guestonian Embrocation for Rheumatism. ℞ Ol: Terebinthinæ f ℥ iss. Ol: Oliv: f ℥ iss. Acid: sulphuric: dilut: f ʒ iij.

Potassæ Acetas, furnishing a striking instance of the important influence of quantity or *dose*, in determining the specific operation of a remedy; in the present instance, ʒij of oil of turpentine may so excite the urinary organs as to produce even bloody urine, whereas ʒvi, or f℥j will stimulate the bowels and scarcely produce any apparent effect upon the urinary secretion. As a medicine acting powerfully on the first passages, its value seems only to have been lately appreciated; in Tænia, it may be said to act almost as a specific remedy, discharging it in all cases, *dead.* In obstinate constipation, depending on affections of the brain, I have lately had several opportunities of witnessing its beneficial effects; in an unfortunate instance of *Hydrocephalus acutus* in a boy of thirteen years of age,* it brought away an accumulation of feculent matter almost incredible as to quantity, after the total failure of the strongest doses of ordinary purgatives; and I believe, if its dose be sufficiently large, that it may generally be administered with perfect safety and confidence. Dr. Latham has long regarded it as a valuable medicine in Epilepsy, in which cases it may in the first instance prove beneficial by unloading the bowels, and subsequently in producing an affection of the head peculiar to its use; and, which generally succeeds a large dose, it is an approach to intoxication, but is unaecompanied with that hilarity and elevation of thought that so usually follow the potation of spirituous liquors. In small doses it produces diuresis, and is used with much advantage in sciatica and lumbago. *Form:* 107. This

* This case, which I attended with Mr. Machell of Great Ryde Street, was occasioned by a violent whirling of the body in a frolic! the circumstances attending it are so interesting that I shall take an early opportunity of submitting the details to the profession.

oil has the effect of communicating the odour of violets to the urine of those who take it, and what is still more extraordinary, to those even who merely expose themselves for a short time to its effluvia: a mixture of ♏x of this oil with f℥j of almond oil, introduced upon cotton into the ears, is serviceable in cases of deafness resulting from a diseased action of the ceruminiferous glands; it is also employed as a local stimulant in a variety of cases: and in colic, and obstinate constipation, it is sometimes exhibited in the form of an enema. Dose as an anthelmintic, f℥ss to f℥ij, repeated every eight hours until the worm is ejected; in these large quantities it is more convenient as well as more efficacious to administer it like castor oil, floating upon some liquid vehicle: by rubbing up Oil of Turpentine with mucilage, we do but render it more pungent, and less difficult to swallow. As a diuretic or stimulant it may be given in the form of an electuary, in doses of from ♏x to f℥j. It may be also employed as a very active clyster, made by carefully incorporating one or two table spoonsful of the oil with the yelk of an egg, and adding to it a pint of thin mucilage. This Terebinthinate clyster is well calculated to relieve a paroxysm of flatulent cholic. Officinal Prep. *Liniment. Terebinth.* L. The Pharmacopœias direct the rectification of the oil by redistillation,* when it is commonly called *Spirit* of turpentine, but it appears to be an unnecessary refinement.

* Scouring Drops. The peculiar odour which distinguishes oil of turpentine, may be destroyed by the addition of a few drops of some fragrant volatile oil, as that of lemons; a combination of this kind is commonly sold under the name of Scouring Drops, for the purpose of removing paint, oil, or grease from cloth.

TINCTURÆ. L. E. D. *Tinctures.*

These consist of alcohol, proof spirit, or spirit of greater or less density, holding in solution one or more of those proximate principles of vegetable or animal matter which are soluble in that menstruum, viz. *Sugar*, *resin*, *extractive*, *tannin*, *cinchonin*, *camphor*, *volatile oils*, *morphia*, *emetin*, *conein*, *elatin*, and *several acids*. The proper solvent of those bodies, termed *gum-resins*, appears to be proof spirit. The compilers of the *Codex Medicamentarius* of Paris, have defined the different degrees of spirituous strength requisite for the full and perfect extraction of the active elements of different bodies with great truth and nicety; thus they direct for these purposes a spirit of three different standards, viz. 36 (*Sp. gr.* ·837,) 32 (·856) 22, (·915) of Beaume's hydrometer; with the first are prepared the *resinous* tinctures; with the second those wherein the *resinous*, *extractive*, or *gummy* elements, hold nearly an equal place; and with the third those in which the latter predominate. We are moreover indebted to this committee for having set at rest a question which has been long doubtful, whether the addition of alkaline agents increases the extractive powers of the spirit? They have indeed ascertained by experiment, that the reverse not frequently obtains; for instance, they found that a smaller proportion of *guaiacum* was dissolved by the spirit of ammonia, than by alcohol of the same strength, and that the quantity of matter dissolved from the *root of Valerian* was the same in both cases. Very active

* Dutch, or Haerlem Drops. The basis of this nostrum consists of the residue of this redistillation, which is a thick, red, resinous matter, to which the name of *Balsam of Turpentine* has been given; a preparation, however, is frequently vended as "*Dutch Drops*," which is a mixture of oil of turpentine, tincture of guaiacum, spirit of nitric ether, with small portions of the oils of amber and cloves.

substances, soluble in alcohol, are those which are more particularly adapted for tinctures, since they furnish preparations which are efficient in small doses, and very manageable in extemporaneous prescription, such are the tinctures of *Opium*, *Digitalis*, *Hyoscyamus*, *Scilla*, *&c.* and from the chemical analysis of *Elaterium*, there can be no doubt, but that a very active and useful tincture of that substance might be introduced into practice; on the contrary, substances of little activity, except in large doses, are the least adapted for this form of exhibition, as in such cases the solvent will act more powerfully on the living system, than the principles which it may hold in solution, and when continued for any length of time, will lay the foundation of the pernicious custom of dram drinking; such tinctures, however, are not without their value in combination; they sometimes increase the efficacy, and often correct the operation or disguise the flavour of the medicines with which they may be united; for example, the cathartic tinctures in *Formula* 9, augment the purgative powers of the combination, at the same time that they correct its unpleasant operation; many other illustrations are presented in the different formulæ, for the explanation of which I must refer the student to the *Key Letters*. The addition of a tincture has likewise the effect of preserving decoctions and infusions from spontaneous decomposition, the *compound tincture of Cardamoms* answers such an object in the *compound decoction of Aloes*. Tinctures are sometimes made with ether, but they are generally more strongly characterised by the nature of the menstruum than by that of the substances dissolved in it, indeed ether is used in these cases, not to dissolve substances which would resist the action of alcohol and water,

but for the sake of its own direct action on the body; thus the Edinburgh pharmacopœia directs an *Ethereal Tincture of Aloes*, which is more penetrating and stimulant than the alcoholic tinctures; the London College, with the exception of the *Aromatic Spirit of Æther*, does not recognise any preparation of this nature: I have already alluded to the *Ethereal Tincture of Digitalis* of the French Codex, than which nothing can be more injudicious, for the digitalis does not amount to more than 1-70th part of the tincture, and must therefore be entirely counteracted by the stimulant effects of the menstruum. The same objection cannot be urged against the ethereal tinctures of *Castor*, *Musk*, and *Amber*, since in these cases, the subject and the menstruum concur in their mode of operation.

Tinctures derive their names from the substances which impart activity to them, and as the medicinal history of each substance is detailed under its proper head, it will be unnecessary to dwell at any length upon the individual virtues of these tinctures.

1. *Prepared with Rectified Spirit.*

Tinctura Assafœtidæ. L. D. *Dose*, f℥ss to f℥j.

——— Benzoes Comp. L. E. D. *Balsamum Traumaticum*, P. L. 1745. This is a combination of Benzoin, Storax, and Tolu, with aloes; it is regarded as a stimalating expectorant, but it is now very rarely used except as an application to wounds and languid ulcers. It is sold under the name of *Friar's Balsam*.

Tinctura Castorei. L. E. *Dose*, ♏xx to f℥ij. See Form. 14, 50, 70, 108, 111, 112.

Tinctura Castorei Composita. E. This is much more active than the preceding tincture, as it contains assafœtida, and its menstruum is ammoniated alcohol.

Tinctura Guaiaci. L. E. D. A simple solution of the guaiac.

Tinctura Guaiaci Ammoniata. This is a solution of the guaiac in the aromatic spirit of ammonia, and is consequently more stimulating than the preceding one, and more efficacious as a sudorific: after arterial action is properly reduced, it is certainly one of our best remedies in rheumatism. *Dose*, f℥j to f℥ij, at bed time, and its effects should be promoted by some warm beverage. It is worthy of remark, that nitrous acid and the spirit of nitric ether occasion an extraordinary decomposition in these tinctures, separating the guaiacum into coagulated masses, and imparting to the whole an intense bluish green colour. I find that *chlorine* has the same effect;* but the sulphuric and muriatic acids produce no disturbance. If equal parts of quick-lime and powdered guaiacum be rubbed together, and a quantity of water be poured over them, and the mixture be allowed to stand until it becomes fine, we shall obtain a solution of this substance, which will mix in any proportion

* The change of colour which Guaiacum undergoes by admixture with other bodies, not only affords a test by which we may appreciate its purity, but at the same time it becomes a reagent by which we may assay the virtues of other vegetable substances. According to the experiments of M. Taddey and Rudolphi, it appears that Guaiacum in powder, is an excellent test for vegetable gluten, forming with it a fine blue colour, whence it offers the means of determining the quality of wheat flour. From the experiments of M. Planche, it moreover appears that there is a series of vegetable roots which, when fresh, are capable of producing a blue colour, if introduced into an alcoholic solution of Guaiacum: so that we may hereafter be furnished with a chemical test that will at once appreciate their freshness, which is undoubtedly one of the greatest desiderata of pharmaceutical science.

While correcting the above note for the press, a communication has appeared from Mr. A. T. Thomson, in which he proposes Guaiacum as a test for the freshness of Colchicum.

with aqueous vehicles without decomposition, and to which the aromatic spirit of ammonia may be subsequently added with effect.

Tinctura Toluiferæ Balsami. E. D. This is only useful as an adjunct, to impart agreeable flavour and fragrance to other remedies.

The above tinctures, when added to water, are instantly decomposed, the practitioner must therefore remember that when he prescribes them in aqueous vehicles, it will be necessary to direct them to be triturated with some viscid liquor, as mucilage, previous to the addition of the water, in order to suspend the resinous precipitate.

2. *Tinctures prepared with Spirit above Proof.*

Tinctura Aloes Composita. L. D. *Elixir Proprietatis.* P. L. 1720. Tincture of Myrrh is the menstruum of the Aloes in this preparation, to which Saffron is added. *Dose*, ʒj to ʒij. *Form.* 70.

Tinctura Myrrhæ. L. The strength of the spirituous solvent has been very judiciously increased in the *Editio Altera* of the London Pharmacopœia, by which means a brighter tincture is obtained. It is rarely used except in astringent and detergent gargles, or as an external application to foul ulcers; diluted with water it presents us with an excellent lotion for spongy gums.*

* Hudson's Preservative for the Teeth and Gums. Equal parts of Tincture of Myrrh, Tincture of Bark, and Cinnamon water, to which are added Arquebusade and Gum Arabic.

Greenough's Tincture for the Teeth. The following receipt is given on the authority of Mr. Gray. Of *Bitter Almonds*, 2 oz. *Brazil Wood* and *Cassia Buds*, equal parts, half an ounce; root of the *Florentine Iris*, 2 dr.; of *Cochineal*, *Salt of Sorrel*, and *Alum*, equal parts, one drachm; *Rectified Spirit*, 2 pints; *Spirit of Horse Radish*, half an ounce.

Ruspini's Tincture for the Teeth. This consists of the root of the *Florentine Iris*, eight ounces; *Cloves*, one ounce; *Rectified Spirit*, two pints; *Ambergris*, one scruple.

3. *Tinctures prepared with Proof Spirit.*

TINCTURA ANGUSTURÆ. D. See *Cuspariæ Cortex.*

TINCTURA AURANTII. L.D. An agreeable adjunct to bitter infusions.

TINCTURA CALUMBÆ. L.E. A valuable stomachic.

TINCTURA CAMPHORÆ COMPOSITA. *Tinctura Opii Camphorata.* P. L. 1787. *Elixir Paregoricum.* P. L. 1745. This preparation has undergone both change of name and composition in the present Pharmacopœia; its old name was thought improper from its similarity to that of *tincture of opium*, and the *oil of aniseed* has been omitted on account of its disagreeable flavour; still, however, these perpetual changes are most distressing; the tincture, as it is now prepared, is very different from that which has been so long and so generally sold under the name of *Paregoric Elixir*, and the chemist is therefore obliged to keep both the preparations, and to send the one or the other, according as it may be required by the old or new name. One fluid-ounce contains nearly two grains of Opium and of benzoic acid, and about one grain and a quarter of camphor. In *doses* of ʒj to ʒiij, it is anodyne.

TINCTURA CAPSICI. L. It is an excellent stimulant. See *Capsici Baccæ.*

TINCTURA CARDAMOMI COMPOSITA. L. An agreeable cordial. See *Form.* 10, 88, 103.

TINCTURA CASCARILLÆ. L. D. It is added with much effect to different stomachic infusions. See *Form.* 94, 96, 99.

TINCTURA CATECHU. L. E. D. A warm and grateful astringent; very useful as an adjunct to cretaceous mixtures in diarrhœa, &c. See *Form.* 88. 90.

TINCTURA CINCHONÆ. L. E. D. Used as an

adjunct to the decoction or infusion of the bark. See *Form.* 62, 63, 97.

Tinctura Cinchonæ Composita. This resembles the celebrated tincture of Huxham, and although it contains less cinchona than the simple tincture, yet from the addition of aromatics it is more grateful and stomachic.

Tinctura Cinnamomi. L. D. See *Form.* 29.

Tinctura Cinnamomi Composita. L. E. D. As this is a combination of aromatics with cinnamon, it is more grateful and stomachic than the simple tincture.

Tinctura Conii Maculati. E. As *Conein* is perfectly soluble in spirit, this tincture constitutes a very elegant and efficient form for the exhibition of *Hemlock;* I have frequently experienced its effects, when added to febrifuge mixtures, with satisfaction. The London college has not hitherto admitted it into the list of tinctures, which is to be regretted.

Tinctura Croci. E. D. It has no medicinal use, independent of its colour.

Tinctura Digitalis. L.E.D. It is a very useful form for the exhibition of this valuable plant. *Dose,* ♏x, cautiously increased. See *Digitalis Folia,* and *Form.* 38.

Tinctura Gentianæ Composita. L. E. An elegant stomachic bitter, but less eligible as a remedy than the infusion.

Tinctura Hellebori Nigri. This preparation was strongly advised by Dr. Mead, in uterine obstructions. *Dose,* ♏xxx to ʒj. See *Hellebori Radix.*

Tinctura Humili. L.E. It is supposed to possess the tonic and narcotic properties of the hop. *Dose,* ʒss to ʒiij.

Tinctura Hyoscyami. L. This is a much more

powerful narcotic than the preceding tincture; and it is not liable to affect the head, nor to produce that disturbance in the bilary secretions which so inevitably follows the use of opium. *Dose*, f℥ss to f℥ij.

Tinctura Jalapæ. L. E. As the activity of Jalap does not reside in any one principle, but depends upon the combination of its gum, extractive, and resin, *proof* spirit is of course its appropriate solvent; and the resulting tincture is therefore an active purgative, but it is rarely administered except as an *adjuvant* to cathartic combinations. *Dose*, f℥j to f℥ss. See *Form.* 9, 14.

Tinctura Kino. L.E.D. This is little else than a solution of *Tannin;* it is however less astringent than the tincture of Catechu. *Dose*, f℥i to f℥ij.

Tinctura Lyttæ. L. *Tinct. Cantharides Vesicatoriæ.* E. *Tinct. Cantharides.* D. This tincture is highly stimulating, acting with great energy upon the urinary organs; it therefore offers a resource in gleets, fluor albus, incontinence of urine, &c. it has also proved serviceable as a highly stimulating diuretic, in cases of *Hydrops Ovarii.* See *Form.* 44. *Dose*, ♏x to f℥j, given in some demulcent infusion; it is likewise employed with advantage as a stimulating embrocation and rubefacient, in conjunction with *soap* or camphor *liniment.*

Tinctura Opii. L. E. D. This is at once a most convenient and elegant form for the exhibition of opium; ♏xix contain one grain of opium. See *Opium*, and *Form.* 13, 14, 35, 38, 50, 63, 79, 108, 117, 119, 120. As an external application, when rubbed upon the skin it produces anodyne effects, and it is said that these effects are very much increased by combining it with acetic acid; an *acetate of morphia* is probably thus produced.

Tinctura Quassiæ Excelsæ. E.D. The bitter principle of this root, *Quassin*, is completely extracted by proof spirit.

Tinctura Rhei. L. E. D. Less purgative, but more astringent and aromatic than the infusion. That made with the *East Indian* variety, is of a deeper colour, with a tinge of brown.

Tinctura Rhei Composita. L. A cordial, used principally as an adjunct to saline purgatives. *Dose*, fʒvj to f℥j, to produce purgative effects; from fʒj to fʒij, to act as a stomachic.

The Edinburgh Pharmacopœia directs two compound tinctures of Rhubarb for similar purposes, viz. *Tinct. Rhei et Aloes*, and *Tinct. Rhei et Gentianæ*.

Tinctura Scillæ. L.E.D. *Dose*, ♏x to xxx. See *Form.* 3, 37.

Tinctura Sennæ. L.E. *Dose*, fʒij to ℥j. See *Form.* 9.

Tinctura Sennæ Composita. E. In this tincture, the Senna is quickened by Jalap. *Dose*, fʒij to f℥j.*

Tinctura Serpentariæ. L.E.D. *Dose*, fʒi to fʒiij. It is principally employed as a stimulating adjunct to the infusion or decoction of Cinchona, in typhoid fevers.

Tinctura Valerianæ. L.D. It is only used as an adjunct to the infusion of Valerian.

Tinctura Valerianæ Ammoniata. L.D. This tincture is not more highly charged with the principles of the Valerian than the foregoing one, but as

* Daffy's Elixir. This is the *Tinctura Sennæ Composita*, with the substitution of treacle for sugar candy, and the addition of anniseeds and elecampane root. Different kinds of this nostrum are sold under the names of Dicey's Daffy, and Swinton's Daffy; but they differ principally in some subordinate minutiæ, or unimportant additions.

the ammonia corresponds with it in virtue, it is probably more powerful. *Dose*, ʒi to ʒij. See *Form.* 111, 112.

Tinctura Zingiberis. L.D. A highly stimulating preparation. See *Form.* 99.

TINCTURA FERRI AMMONIATI. L.

As this is merely a spirituous solution of the *Ferrum Ammoniatum*, the title of tincture is improperly applied to it; it seems moreover to be a very superfluous preparation.

TINCTURA FERRI MURIATIS. L.E.D.

Qualities. *Colour*, brownish yellow; *Taste*, styptic; *Odour*, very peculiar. Chemical Composition. It is an alcoholic solution of muriate of iron; the iron being in the state of *per-oxide*. Incompatible Substances. *Alkalies* and their *carbonates; the infusions of astringent vegetables; mucilage of gum arabic:* by this latter substance it is precipitated in gelatinous flakes. Med. Uses. It is one of the most active preparations of iron which we possess, and it moreover appears to exert a specific influence upon the urinary organs. Mr. Cline informs us that ♏x, given every ten minutes, until some sensible effect is produced, afford in dysuria speedy relief; in hemorrhage from the bladder, kidneys, or uterus, it acts as a powerful styptic. See *Form.* 42, 70. Externally, it is very efficacious in destroying venereal warts, either used alone, or diluted with a small portion of water. *Dose*, ♏x to ʒss, or ʒj.*

* De La Motte's Golden Drops. An Æthereal solution of Iron.

TORMENTILLÆ RADIX. L.E.D. (Tormentilla Officinalis.)

Tormentil Root.

Qualities. This root is knotty, externally blackish, internally reddish; *Odour*, slightly aromatic; *Taste*, austere and styptic. Chemical Composition. Its active matter is chiefly *Tannin*, and except galls and catechu, it appears to contain a larger proportion than any other vegetable astringent.* Solubility. Boiling water extracts all its virtues, as also does spirit. Incompatible Substances. *Solutions of Isinglass, the Salts of Iron; Alkalies* and *Alkaline Earths.* Med. Uses. It has been chiefly used in diarrhœa, and it is very efficacious in that, which is so frequently attendant on Pthisis. Dr. Fordyce recommends its union with Ipecacuan, by which combination, he observes, we shall astringe the vessels of the intestines, and at the same time relax those of the skin. Forms of Exhibition. In substance, or in decoction made by boiling ℥j of the root in oiss of water until reduced to oj. Dose, of the substance in powder, ʒss to ʒj; of the above decoction f℥j thrice a day. Officinal Prep. *Pulv. Cret. Comp.* L.

TOXICODENDRI FOLIA. L.E.

(Rhus Toxicodendron.)

Sumack Leaves, or *Poison Oak.*

Qualities. The leaves are inodorous, but have a sub-acrid taste. Chemical Composition. Gallic acid, tannin, and a certain acrimonious matter, upon

* It has, for this reason, been substituted for oak bark in the tanning of leather.

which the virtues of the plant depend, and which, according to Van Mons, is disengaged from the leaves in the state of gas during the night, or while they do not receive the direct rays of the sun. MED. USES. Dr. Alderson of Hull introduced the leaves of this plant to notice, in whose hands they proved successful in several cases of Paralysis; the same results however have not been obtained by other physicians; the plant has therefore fallen into disuse, and ought in deference to public opinion, to be removed from the materia medica.

TUSSILAGO. (Tussilago Farfara *Folia, Flores.*) *Coltsfoot.**

This plant has been regarded as a powerful expectorant from the earliest ages; it is at present only valued for the mucilage which it affords; a handful of the leaves boiled in ℔ij of water, until reduced to ℔j, will furnish, by the addition of a little sugar candy, a very grateful demulcent.

VALERIANÆ RADIX. L.E.D.

(Valeriana Officinalis *Sylvestris.*) *Valerian Root.*

QUALITIES. *Odour*, strong, peculiar, and unpleasant; *Taste*, warm, bitter, and sub-acrid. CHEMICAL COMPOSITION. Extractive, gum, resin, fecula, tannin, and a peculiar essential oil which seems to contain camphor, and on which its virtues probably

* BRITISH HERB TOBACCO. The basis of which is *Coltsfoot*; this appears to have had a very ancient origin, for the same plant was smoked through a reed in the days of Dioscorides, for the purpose of promoting expectoration, and was called by him βηχιον, from βηξ, tussis, whence *Tussilago*.

depend. SOLUBILITY. Its active matter is extracted by boiling water, alcohol, and the solutions of the pure alkalies. INCOMPATIBLE SUBSTANCES. *The salts of iron.* MED. USES. It is antispasmodic, tonic, and emmenagogue; and it is highly beneficial in those diseases which appear to be connected with a morbid susceptibility of the nervous system, as in hysteria, hemicrania, and in some species of epilepsy; and it would appear that its virtues in such complaints, may be frequently increased by combining it with cinchona. FORMS OF EXHIBITION. The form of powder is the most effectual, and next to this a strong tincture made with proof spirit; by docoction its powers are considerably impaired, and consequently the extract is an inefficient preparation. DOSE of the powder ℈j to ʒj; when the flavour disgusts, the addition of a small portion of *mace* or *cinnamon*, will be found to disguise it. See *Form.* 93, 112. OFFICINAL PREP. *Infus. Valerian.* D. *Tinct. Valerian.* L. D. *Tinct. Valerian. ammoniat.* L. D. ADULTERATIONS. The roots of a species of *crowfoot* are sometimes mixed with those of valerian; they may be distinguished by a caustic taste on chewing them; the roots have also often a disagreeable smell from the urine of cats, who are allured and delighted by their odour; and they are sometimes inert, from not having been taken up at a proper season, or from not having been carefully preserved.

VERATRI RADIX. L.E. (Veratrum Album.)

HELLEBORUS ALBUS. D.

White Hellebore Root.

QUALITIES. *Odour*, strong, and disagreeable; *Taste*, bitter, and very acrid; by drying, the odour is

dissipated, and in this state it is found in the shops. SOLUBILITY. Its active principles are soluble in water, alcohol, and the alkalies. CHEMICAL COMPOSITION. Pelletier and Caventou have lately discovered in this vegetable a new alkaline principle, white, crystalline, and acrid, to which they have given the name of *Veratrine:* it appears to exist in combination with gallic acid. MED. USES. The effects of this root are extremely violent and poisonous; the ancients employed it in various obstinate cases, but they generally regarded it as their last resource; it acts as a violent emetic and cathartic, producing bloody stools, great anxiety, tremors, and convulsions. Etmuller says, that the external application of the root to the abdomen, will produce vomiting; and Schroeder observed the same phenomenon to take place in a case where it was used as a suppository, and its juice has been applied to the purpose of poisoning arrows; notwithstanding these effects however the veratrum has been very safely and successfully administered in cases of mania, epilepsy, lepra, and gout:* but the most ordinary use of white hellebore is as a local stimulant, as an adjunct to errhine powders, or in the form of decoction, as a lotion; or mixed with lard, as an ointment in scabies,† and her-

* In the former editions of this work, I stated the probability of the *veratrum* being the active ingredient of the EAU MEDICINALE, and, upon the authority of Mr. James Moore, I inserted a formula for its preparation; subsequent enquiry however, has shewn the fallacy of this opinion; but the fact of the medicinal efficacy of the *veratrum*, when combined with opium, in the cure of gout, remains incontrovertible. One of the two *Sweating Powders* of WARD, was a combination of the *Veratrum* and *Opium*.

† EDINBURGH OINTMENT. The principle ingredients of which are the *White Hellebore* and *Muriate of Ammonia*.

petic eruptions: great caution however is required in its application, for several authors affirm that as an errhine, it has caused abortions, floodings which could not be restrained, and fatal hemorrhages from the nose. Dose, gr. iij to v, obtunded by the addition of twelve times its weight of starch, a pinch of which may be taken for several successive evenings; for internal administration it ought not to exceed gr. ij. Officinal Prep. *Decoct. Veratri.* L. *Tinct. Veratri albi.* E. *Unguent. Veratri.** L. *Unguent. Sulphur. comp.* L.

VINUM. *Wine.*

The term wine is more strictly and especially applied to express the fermented juice of the *Grape*, although it is generally used to denote that of *any* sub-acid fruit. The presence of *Tartar* is perhaps the circumstance by which the grape is most strongly distinguished from all the other sub-acid fruits that have been applied to the purpose of wine making; the juice of the grape, moreover, contains within itself all the principles essential to vinification, in such a proportion and state of balance as to enable it at once to undergo a regular and complete fermentation, whereas the juices of other fruits require artificial additions for this purpose; and the scientific application and due adjustment of these means, constitute the art of making wines.* It has been remarked, that all those wines that contain an excess of malic acid are of a bad quality, hence the grand

* For an account of which the reader is referred to a most ingenious, and interesting Essay by Dr. Macculloch, entitled "*Remarks on the Art of making Wine, with suggestions for the application of its Principles to the improvement of Domestic Wines.*

defect that is necessarily inherent in the wines of this country, and which leads them to partake of the properties of cider, for in the place of the *tartaric*, the *malic* acid always predominates in our native fruits.

The characteristic ingredient of all wines is *Alcohol*, and the quantity of this, and the condition or state of combination in which it exists, are the circumstances that include all the interesting and disputed points of medical enquiry. Daily experience convinces us that the same quantity of alcohol, applied to the stomach under the form of natural wine, and in a state of mixture with water, will produce very different effects upon the body, and to an extent which it is difficult to comprehend; it has, for instance, been demonstrated that Port, Madeira, and Sherry, contain from one-fourth to one-fifth their bulk of alcohol, so that a person who takes a bottle of either of them, will thus take nearly half a pint of alcohol, or almost a pint of pure brandy! and moreover that different wines, although of the same specific gravity, and consequently containing the same absolute proportion of spirit, will be found to vary very considerably in their intoxicating powers; no wonder then that such results should stagger the philosopher, who is naturally unwilling to accept any tests of difference from the nervous system, which elude the ordinary resources of analytical chemistry; the conclusion was therefore drawn, that alcohol must necessarily exist in wine, in a far different condition from that in which we know it in a separate state, or in other words, that its elements only could exist in the vinous liquor, and that their union was determined, and consequently alcohol produced, by the action of distillation. That

it was the *product*, and not the *educt* of distillation, was an opinion which originated with Rouelle, who asserted that alcohol was not completely formed, until the temperature was raised to the point of distillation; more lately the same doctrine was revived and promulgated by Fabbroni, in the memoirs of the Florentine Academy. Gay Lusac has, however, silenced the clamorous partisans of this theory, by separating the alcohol by distillation at the temperature of 66° *Fah.* and by the aid of a *vacuum*, it has since been effected at 56°: besides, it has been shewn that by precipitating the colouring matter and some of the other elements of the wine by *sub-acetate of lead*, and then saturating the clear liquor with *sub-carbonate of potass*, the alcohol may be completely separated without any elevation of temperature; and by this ingenious expedient Mr. Brande has been enabled to construct a table, exhibiting the proportions of combined alcohol which exist in the several kinds of wine: no doubt therefore can remain upon this subject, and the fact of the difference of effect, produced by the same bulk of alcohol, when presented to the stomach in different states of combination, adds another striking and instructive illustration to those already enumerated in the course of this work, of the extraordinary powers of chemical combination in modifying the activity of substances upon the living system. In the present instance, the alcohol is so combined with the extractive matter of the wine, that it is probably incapable of exerting its full specific effects upon the stomach, before it becomes altered in its properties, or, in other words, *digested:* and this view of the subject may be fairly urged in explanation of the reason why the intoxicating effects of the same wine are so liable to vary, in degree, in the same

individual, from the peculiar state of his digestive organs at the time of its potation. Hitherto we have only spoken of *pure* wine, but it is essential to state that the stronger wines of Spain, Portugal, and Sicily, are rendered marketable in this country by the addition of *Brandy*, and must consequently contain *uncombined* alcohol; the proportion of which however will not necessarily bear a ratio to the quantity added, because, at the period of its admixture, a renewed fermentation is produced by the scientific Vintner, which will assimilate and combine a certain portion of the foreign spirit with the wine: this manipulation, in technical language, is called *fretting-in.* The free alcohol may, according to the experiments of Fabbroni, be immediately separated by saturating the vinous fluid with *sub-carbonate of potass*, while the combined portion will remain undisturbed: in ascertaining the fabrication and salubrity of a wine, this circumstance ought always to constitute a leading feature in the inquiry; and the tables of Mr. Brande would have been greatly enhanced in practical value, had the relative proportions of *uncombined* spirit been appreciated in his experiments, since it is to *this*, and not to the *combined* alcohol, that the injurious effects of wine are to be attributed. "It is well known," observes Dr. Macculloch, "that diseases of the liver are the most common, and the most formidable of those produced by the use of *ardent* spirits; it is equally certain that no such disorders follow the intemperate use of *pure* wine, however long indulged in: to the concealed and unwitting consumption of spirit, therefore, as contained in the wines commonly drunk in this country, is to be attributed the excessive prevalence of those hepatic affections which are comparatively little known to our continental neigh-

bours." Thus much is certain, that their ordinary wines contain no alcohol, but what is disarmed of its virulence, by the prophylactic energies of combination.

The odour, or *bouquet*, and flavour which distinguish one wine from another, evidently depend upon some volatile and fugacious principle, soluble in alcohol; this in sweet and half fermented wines, is immediately derived from the fruit, as in those from the *Frontignan* and *Muscat* grapes; but in the more perfect wines, as in *Claret*, *Hermitage*, *Rivesaltes*, and *Burgundy*, it bears no resemblance to the natural flavour of the fruit, but is altogether the product of the vinous process; and in some wines it arises from the introduction of flavouring ingredients, as from almonds in Madeira wines, as well as in those of Xeres and Saint Lucar, and hence their well known nutty flavour. Among the ancients it was formerly, and in modern Greece it is to this day, the fashion to give a resinous flavour, by the introduction of Turpentine into the casks.*

Wines admit of being arranged into four classes.

1. Sweet Wines. Which contain the greatest proportion of extractive and saccharine matter, and generally the least ardent spirit, though this is often rather disguised than absent; as in these wines, a proportion of sugar has remained unchanged during the process of vinification, they must be considered as the results of an imperfect fermentation, and are in fact mixtures of wine and sugar; accordingly, what-

* "Resinata bibis vina, Falerna fugis."—*Martial.*

Pliny, (lib: 14. c. 14.) mentions a Wine under the name of *Myrrhina*, which was so called on account its being impregnated with Myrrh.

ever arrests the progress of fermentation, must have a tendency to produce a sweet wine; thus boiling the *must* or drying the fruit will, by partially separating the natural leaven and dissipating the water, occasion such a result as is exemplified by the manufacture of the wines of Cyprus, the *vino cotto* of the Italians and the *vinum coctum* of the ancients, by that of *Frontignac*, the rich and luscious wines of *Canary*, the celebrated *Tokay*, *Vino Tinto* (Tent of Hungary) the Italian *Montefiascone*, the Persian *Schiras*, the *Malmsey wines of Candia*, *Chio*, *Lesbos*, and *Tenedos*, and those of the other islands of the Archipelago. The wines of the ancients, as Chaptal observes, were so concentrated by boiling, that they rather deserve the name of extracts or syrups, than that of wines; they must have been very sweet, and but little fermented; apparently, to remedy this, they were kept for a great length of time; according to Aristotle and Galen, seven years was the shortest period necessary for keeping wine before it was fit to drink, but wines of a century old were not uncommon at the tables of the luxurious citizens of ancient Rome, and Horace boasts of his drinking *Falernian*, born at it were with him, or which reckoned its age from the same consuls.*

* " O Nata mecum consule Manlio.—*Od: xxi. Lib:* 3.

The Odes of Horace abound with manifestations of the same taste, thus,

" I pete ——— ——— ———

Et Cadum Marsi memorem duelli.—*Od: xiv. Lib:* 3.

Here Horace sends his Slave for a cask of the wine on which the Marian war was recorded, and which must therefore have been sixty-eight years old.

In Ode xxviii. book 3, we find him calling for

" Bibuli Consulis amphoram."

Now as Horace was born in the Consulate of Manlius, as above stated, which happened A. U. C. 688, and Bibulus was Consul in 694, the wine

2. Sparkling or Effervescing Wines, as Champagne, are indebted for their characteristic properties to the presence of carbonic acid; they rapidly intoxicate, in consequence of the alcohol, which is suspended in, or combined with this gas, being thus applied in a sudden and very divided state to a large extent of nervous surface; for the same reason, their effects are as transitory as they are sudden.

3. Dry and Light. These are exemplified by the more esteemed German wines, as *Hock*, *Rhenish*, *Mayne*, *Moselle*, *Necker*, and *Elsass*, and those highly flavoured wines, *Burgundy*, *Claret*, *Hermitage*, &c. They contain a very inconsiderable degree of ardent spirit, and combine with it the effect of an acid.

4. Dry and Strong, as *Madeira*, *Port*, *Sherry*, &c. The name *Sec*, corruptly written Sack, signifies dry; the *Sec* wine prepared at Xeres* in Spain, is called according to our orthography *Sherris*, or *Sherry*. In the manufacture of Sherry, *Lime* † is added to the

must have been hoarded from the time that Horace was six years of age.

Wine however might, according to the opinion of our Poet, be too old; he terms wine of this description "*Languidiora Vina*," and Plautus compares old wine which has lost its relish and strength, to a man who has lost his teeth by age, "*Vinum vetustate edentulum.*"

The Romans had their wine cellars at the top of their houses; thus Horace,

"*descende* Corvino jubente,

The object of such an arrangement was that the wine might ripen sooner by the smoke, for their fires were made in the middle of their rooms, with an opening above to let out the smoke, which is described as rolling to the top of the house, in the Eleventh Ode of the Fourth Book.

"Rotantes vertice fumum."

* ξηρος signifies *dry*. This is a curious coincidence.

† The *Sack* of Shakespeare was probably *Sherry*; a conjecture which receives additional strength from the following passage.

grapes, a circumstance, observes Dr. Macculloch, apparently conducive to its well known dry quality, and which probably acts by neutralizing a portion of *malic* or *tartaric* acid.

By the adulteration and medication of wines, three principal objects are attempted, viz. 1. *To give them strength*, which is effected by adding any ardent spirit; but the wine is slowly decomposed by it. 2. *To perfect or change their colour*. It is very usual to change *white* wines, when they have grown brown or rough, into *red* wines, by means of sloes, or other colouring matter. 3. *To lessen, or remove their acidity*. It is well known that lead in different forms has frequently been employed for this purpose; the practice however is attended with most dangerous consequences; but which Dr. Macculloch is inclined to believe has been over-rated, since the compounds which this metal forms with the tartaric and malic acids are insoluble; but against this argument, the decicive results of experience may be opposed, and Fourcroy conceived that by the addition of lead, a soluble triple salt, an *aceto-tartrate of lead*, was produced. The fraud may be easily detected by the test * invented by Dr.

Falstaff.—" You rogue, here's *lime* in this Sack too: There is nothing but roguery to be found in villainous man: yet a coward is worse than a cup of sack with *lime* in it; a villainous coward."

Huldrick Van Speagle, in his "*Famous Historie of most Drinks*," says, "*Sack is no hippocrite, for any man who knows what an Anagram is will confesse that it is contained within the litteral letters and limmits of its own name, which* is to say, CASK, i. e. SACK." See Taylor's Translation of the Work of the painful and industrious Huldricke Van Speagle, a grammatical Brewer of Lubeck. A.D. 1637.

* Expose equal parts of sulphur and powdered oyster shells to a white heat for fifteen minutes, and when cold, add an equal quantity of cream of tartar: these are to be put into a strong bottle with common water to boil for an hour; and the solution is afterwards to be decanted into ounce phials, adding 20 drops of muriatic acid to each. This liquor

Hahnemann. The ancients, it appears, were acquainted with this property in Lead, for according to Pliny, the Greeks and Romans improved the quality of their wines by immersing a plate of lead in them.* Wine, as a pharmaceutical agent, is employed to extract several of the principles of vegetables, and to dissolve certain mineral bodies: as a solvent, however, it is liable to many serious objections, as inequality of strength, and uncertainty of composition; thus sound and perfectly fermented dry wine, as *Sherry*, is frequently unable to dissolve iron, while tartarized antimony is instantly decomposed by every other. As a menstruum, to obtain an extract, it is quite inadmissible on account of the residuum which it leaves by evaporation.

Vinum Aloes. L. E. D. This solution contains all the virtues of the Aloes, and is more agreeable than the tincture. It is a warm stomachic in doses of f℥j to f℥ij, and a stimulating purgative when given from f℥j to f℥ij.

Vinum Ferri. L. D. When prepared according to the London College, each pint is stated to contain 22 grains of the red Oxide of Iron; the strength however must in every case depend upon the quantity of *tartar* contained in the wine. Very dry Sherry is frequently incapable of acting upon the iron until a small proportion of Cream of Tartar be added to it; would it not therefore be adviseable to direct at once a given portion of *ferrum tartarizatum* to be dissolved

will precipitate the least quantity of Lead from wines in a very sensible black precipitate. As Iron might be accidentally contained in the wine, the muriatic acid is added to prevent its precipitation.

* Lead will not only correct the acidity of wines, but remove the rancidity of oils: a property which is well known to Painters, and which affords an expedient for making an inferior olive oil pass for good.

in wine? The Dublin formula is more eligible than that of the London Pharmacopœia, since it directs the use of *Rhenish* wine instead of Sherry as a solvent, and iron *wire* in preference to iron *filings*; this last circumstance is important, for the purest iron can only be drawn, and this is most easily acted upon by the super-tartrate of potass. *Med. Uses.* It is the least unpleasant of all the preparations of iron, and its medicinal activity is supported by the testimony of ages, for it is one of the oldest preparations with which we are acquainted. *Dose* fʒj to f℥ss.

Vinum Ipecacuanhæ. L.E.D. The virtues of this root are completely extracted by Wine. *Dose* as an emetic from fʒij to f℥ss: as a diaphoretic from ♏xx to xl. *See Form.* 1, 51.

Vinum Opii. L.E. This is a vinous solution of the *extract* of Opium combined with various aromatics, which are supposed to modify the effects of the opium, while by the substitution of the extract for the crude of opium, it is considered as being less likely to disturb the nervous system. I submit whether the views offered under the history of Wine, respecting the relative effects of combined and uncombined Alcohol, might not lead us by analogy to prepare a more efficient *vinum opii*, and a preparation less likely to affect the stomach: by adding the opium to the wine during its state of fermentation, it would enter into intimate union with its elements, in the same way that brandy is incorporated by the technical manipulation of *fretting in:* this suggestion is also sanctioned by the generally acknowledged superiority of the *Black Drop*, which I have little doubt is indebted for its peculiar efficacy to the state of

* Ford's Laudanum. This is similar to the *Vinum Opii*, with the substitution only of a dilute spirit for the wine.

combination in which the *acetate of morphia* exists in the vinous menstruum. See p. 469. The present preparation is nearly analogous to the celebrated *Liquid Laudanum* * of Sydenham, and its degree of narcotic power is nearly the same as that of the ordinary tincture.

VINUM VERATRI. L. Since the discovery of the real nature of the *Eau Medicinale*, this preparation has fallen into disuse, and might be now removed to make room for a *Vinum Colchici*.

ULMI CORTEX. L. E. D. (Ulmus Campestris). *Elm Bark.*

QUALITIES. *Odour*, none; *Taste*, slightly bitter and mucilaginous. CHEMICAL COMPOSITION. Gum, extractive, gallic acid, and super-tartrate of potass. SOLUBILITY. Water is its appropriate solvent. MED. USES. It has been commended in herpetic eruptions, but in the hands of Dr. Willan and others it has not proved successful; it is one of those articles that might be discarded from our Pharmacopœia with much propriety. OFFICINAL PREP. *Decoct: Ulmi.* L.D.

UNGUENTA. L. E. D. *Ointments.*

These are unctuous substances analogous to *Cerates* except in consistence, which is much less firm, and scarcely exceeds that of butter: formerly, ointments were numerous and complicated in their composition, and surgeons adapted with much technical formality different ointments to answer different indications:

* *Laudanum.* Paracelsus first bestowed the term Laudanum upon a preparation of Opium, *a* LAUDATA *ejus efficacia, quasi* LAUDATUM *medicamentum.*

this practice however has undergone a very judicious reform, and it is now well understood that *in general* all that is required in an ointment is a suitable tenacity and consistence, to keep the parts to which it may be applied soft and easy, and at the same time to exclude from them the atmospheric air; in some cases, however, these simple compositions are made the *vehicles* for more active remedies, as in the following preparations, *viz.*

Unguentum Elemi Compositum. L. The elemi and turpentine in this ointment, render it stimulant and digestive.

Unguentum Hydrargyri Fortius. L. The precise nature of this compound does not appear to have been known until the late researches* of Mr. Donovan, (*Annals of Philosophy*, *November* 1819,) which promise to lead to a more uniform, efficacious, and economical mode of preparing it; for they *shew

* It is to be hoped that a quantity of the ointment will be prepared according to these views, and be submitted to a more extended series of experiments. The oxide may be procured by decomposing *Calomel* by a solution of pure potass, or by pouring a solution of the nitrate of mercury into a caustic alkaline solution; this oxide should be at first triturated with a little lard, in the cold, to make the penetration complete, taking care that the lard be quite free from common salt, or else *Calomel* will be the ultimate result: the mixture is now to be submitted to the action of heat, and it is very important to attend to the necessary temperature, for at 212° the oxide and lard will not unite, at 600° the oxide will be decomposed and the mercury volatilized, at 500° and 400° the oxide is partially decomposed, some red oxide being formed and mercury reduced; the proper temperature is between 300° and 320°, at which it should be maintained for an hour, and the ointment should be stirred until cold.

* Four ounces, *troy*, of mercurial ointment, prepared six months before, were kept at 212°, when it separated into two distinct strata, viz. the *upper* one which was light grey, and extremely active as a medicine, and the *under* one, which upon being triturated with magnesia, yielded a large proportion of metallic mercury, and which was not found to possess any activity.

that in the officinal ointment, the mercury exists in two different conditions,—in the state of metal, *mechanically mixed*, and in that of an oxyd, *chemically combined* with the lard, and that the medicinal activity of the ointment exclusively resides in this latter portion, the presence of metallic mercury not only being useless but injurious, by obstructing the absorption of the active compound of the oxide. Mr. Donovan accordingly formed a direct chemical combination, by continually agitating together lard and black oxide of mercury at the temperature of 350° *Fah.* for two hours. At the end of the processs it appeared that every ounce of lard had dissolved, and combined with, 21 grains of oxide; and from the trials which have been made respecting its activity, it would seem to be as efficient as the officinal ointment, and moreover that it may be introduced by inunction in one third of the time. The investigation is highly important, for it not only offers the means of preparing a mercurial ointment more economically, but one more active and manageable, and less liable to that want of uniformity in strength, which must always attend a preparation in which so much labour is required for its completion; for independent of that variation in strength which will arise from imperfect triture, it is by no means an uncommon practice to use chemical means, which are not admissible, to facilitate the process, such as the addition of *Sulphur*, which is found to abridge very considerably the labour requisite for the extinction of the mercury, but it converts a portion of the metal into a *Sulphuret*, and diminishes the power of the unguent. There is however a method of facilitating the process, which is not liable to any apparent objection, but the theory of its operation is obscure; it consists in adding to

the half prepared ointment a portion of that which has been long kept; which appears to act as a *leaven* to the whole mass.

The following table exhibits the relative quantity of mercury contained in each of the different ointments directed by the British Pharmacopœiæ, and in that prepared according to the process of Donovan.

One Drachm of the Lond:	*stronger ointment* contains of Merc:	30 grs.
	weaker ointment	10 —
of the Edinb:	*common ointment*	12 —
of the Dub:	*stronger ointment*	30 —
	weaker ointment	20 —
of that prepared according to Donovan.....		$2\frac{1}{2}$ —

Mercurial ointment furnishes the most prompt, and least exceptionable mode of impregnating the system. The external method of administering mercury, says Mr. John Hunter, is always preferable to the internal, because the skin is not nearly so essential to life as the stomach, and therefore is capable in itself of bearing much more than the stomach. The inunction is generally performed by rubbing ʒss to ʒj on some part of the body where the cuticle is thin, generally on the inside of the thigh, except perhaps in cases of chronic hepatitis, when it is more usually applied to the region of the liver, care being taken that the friction is continued until every particle of the ointment disappears; and for obvious reasons, the operation ought if practicable to be performed by the patient himself: where it has been an object to saturate the system with mercury as quickly as possible, I have witnessed the advantage of confining, by means of slips of bladder, a drachm of mercurial ointment in each axilla, in addition to mercurial friction: camphor,

turpentine, and other stimulants have been sometimes added to the ointment, with a view of promoting its absorption; this however is an erroneous practice, since these acrid ingredients soon produce pustules on the skin, which prevent the continuance of the friction; the warm bath is a more certain, and less objectionable *adjuvant*, many practitioners therefore advise the body to be immersed in a warm bath, once and again before the course is commenced, and to repeat it once or twice a week during its continuance: the length of time to be employed in a course of mercury, and the quantity to be given, are circumstances that must in every case be left to the discretion of the practitioner. Mercury, when introduced into the body, acts as a powerful stimulant, and pervades every part of the system; hence it is the most powerful evacuant belonging to the Materia Medica; from its stimulant operation, exerted directly or indirectly, we are able to explain its utility in the cure of disease, and it may be made to act according to management and circumstances, as a tonic, antispasmodic, diuretic, cathartic, sialogogue, emmenagogue, or alterative; but its most important operation is that displayed in removing the diseases induced by the syphylitic poison, although its *modus operandi* is still buried amongst the many other arcana of physic. The mode of directing and controlling the influence of mercury in the cure of the venereal disease, is now very generally understood, and it is to be hoped that a full confidence in its anti-syphilitic powers is as universally maintained, in spite of the late opinions which tend to depreciate its value and to question its necessity; there is however no advantage to be gained, as was once imagined, by exciting profuse salivation. In its next important application, that of

curing chronic affections of the liver and dropsy, a remark which has been suggested to me by the results of practice, may not be unacceptable. I think I have generally observed, that when the remedy has been pushed to such an extent as to excite the salivary glands to excessive secretion, the urinary organs cease to participate in its stimulating action, and *vice versa*, for the mouth is rarely affected when the mercury runs off by the kidneys; this may suggest a precaution of some practical moment in the treatment of dropsy, and it will be generally judicious to accompany the administration of this metal with certain diuretics, in order to direct its operation to the kidneys;* and it would seem, that for such an object those diuretic medicines should be preferred that act *primarily* on the organs, as alkalies and their combinations, squill, &c.: the success of such a plan of treatment will also depend greatly upon the exact period at which these remedies are administered; it will for instance be right to wait until the system is, to a certain degree, under mercurial influence. It is hardly necessary to observe, that if the mercury runs off by the bowels, we shall be deprived of all, or of a great share of, the benefit to be expected. In certain cases, the lymphatic vessels seem to resist the admittance of mercury, and to refuse the conveyance of it to the general circulation: I have already thrown

* Whenever it is our object to direct the mercurial impression to any particular organ, we should if possible rouse its excitability by some specific stimulus. An exception, however, to this doctrine would seem to offer itself in the fact, that children at the period of dentition are not readily salivated; *a priori*, we should have certainly supposed that a predisposition to a flux of saliva, would have produced a contrary effect. As it is, we can only conclude that those organs are indisposed to take on any action that may be incompatible with, or adverse to that of dentition.

out some vague hints upon this subject, in the First Part of this work (p. 115), and I must refer the reader to some farther remarks, which I apprehend bear upon this question under the following article.

Unguentum Oxidi Hydrargyri Cinerei. E. This consists of a mixture of *one part* of grey oxide of mercury, and *three parts* of axunge: it was reasonable to suppose, *a priori*, that as the whole of the mercury in this ointment is oxidized, its adoption would supersede the necessity of the labour required for the preparation of the common mercurial ointment, and at the same time afford a combination of equal if not superior efficacy; but experience has not justified the conclusion, for it has been found to possess little or no activity; the consideration of it is therefore introduced into this work, not on account of its utility, but as an object upon which I may pause with advantage, to offer those observations which its history is so well calculated to call forth and illustrate: the circumstance which renders this preparation inert, will now receive a satisfactory explanation from the experiments of Mr. Donovan, as related in the preceding article; in short, it is a *mechanical mixture*, instead of a *chemical combination;* and I beg again to urge the importance of this distinction, and to offer the present example as a farther illustration of the views I have already submitted upon the subject. By subjecting this ointment for some hours to a heat of 300°, it would without doubt become an active preparation. It is probable that the lymphatics offer less resistance to the ingress of a mineral body into the system when it is presented to them in combination with some animal substance, which must alone be regarded as their peculiar stimulus, and the only matter which they are destined perpetually to receive and convey; for the

same physiological reason, the lacteals may probably take up iron with greater readiness, when in combination with vegetable matter, than when introduced into the stomach in a more purely mineral form; (*see page* 381.)

Unguentum Hydrargyri Mitius. L. This weaker preparation is sometimes preferred, as it irritates the skin less; it is however principally used as a topical dressing to venereal sores, and as an application to kill vermin on the body.

Unguentum Hydrargyri Nitratis. L.E.D. vulgo *Citrine Ointment.* It is stimulant, detergent, and alterative; when diluted with an equal quantity of simple ointment or almond oil, it may be almost regarded as a specific in opthalmia tarsi, smeared upon the cilia every night at bed time.

Unguentum Hydrargyri Nitrico-oxydi. L. An excellent stimulant application, well adaptsd for giving energy to indolent ulcers. If mixed with any ointment containing resin, it loses its red colour, passing through olive green to black, which depends upon the conversion of the *red* into the *black* oxide of mercury.

Unguentum Hydrargyri Præcipitati Albi. L. Stimulant, and detergent.

Unguentum Lyttæ. L. As the active ingredient in this ointment is derived from an infusion of the Lyttæ, it is extremely mild, and frequently inefficacious; the *ceratum lyttæ* furnishes a more certain application.

Unguentum Picis Liquidæ. L.E.D. *Tar Ointment.* This ointment has been much extolled for the removal of tetter, and for the cure of tinea capitis.

Unguentum Resinæ Nigræ. L. olim, *Ung. Basilicum nigrum.* Digestive and stimulant.

Unguentum Sambuci. L.D. It possesses no advantage over the simple ointment.

Unguentum Sulphuris. L.E.D. This ointment is a mechanical mixture of Lard and Sulphur, although it would appear that a small proportion of the latter exists also in a state of chemical combination.

Med. Uses. A specific in the itch. Dr. Bateman proposes a combination, equally efficacious, but which has not the same disagreeable smell; *viz.* "Take of subcarbonate of potass, *half an ounce;* rose water, *one ounce;* red sulphuret of mercury, *one drachm;* essential oil of Bergamot, *half a fluid drachm;* sublimed sulphur, hog's lard, of each *eleven ounces.* Mix them."

Unguentum Sulphuris Compositum. L. More stimulating than the simple ointment, from the addition of white hellebore; it is frequently found to excite too much irritation.

Unguentum Veratri. L.D. It is used for the cure of scabies, but is less certain than the ointment of sulphur.

Unguentum Zinci. L. E. D. Astringent and stimulant; very beneficial in some species of ophthalmia, smeared upon the tarsi, every night.

UVÆ URSI FOLIA. L.E.D. (Arbutus Uva Ursi.)

Uva Ursi, Bear-berry, or *Trailing Arbutus. Bear's Whortle-berry, Wild Cranberry, &c.*

Qualities. *Odour,* slight, resembling that of hyson tea; *Taste,* bitterish, and sub-astringent.

* Bailey's Itch Ointment. This is a very complicated combination; containing *Nitre, Alum, Sulphate of Zinc,* and *Cinnabar,* made into an ointment with Olive oil and Lard, and perfumed with the essential oils of *Anise Seeds, Origanum,* and *Lavender;* and coloured with Alkanet root.

Chemical Composition. Tannin, mucilage, gallic acid, extractive, resin, and traces of lime. Solubility. Both water and alcohol extract its virtues. Med. Uses. The ancients employed it on account of its astringency, the moderns however have exhibited it for various diseases, and, it would seem, without any theory respecting its *modus operandi*; but it has at length fallen into disrepute, and probably, with justice; when it is administered, the form of powder is preferred, and in doses from ℈j to ʒj.

ZINCI OXYDUM. L.E.D.

Oxide of Zinc.

This is occasionally used internally as a tonic, and may be exhibited in the form of pill. It is however principally employed externally, as a mild but efficient astringent; viz. *Ung: Zinci.* Adulteration. Dr. Roloff of Magdeburgh has lately discovered the casual presence of *Arsenic* in this oxide; by boiling the substance in distilled water, and assaying the solution with the ammoniaco-nitrate of silver, its presence may be instantly recognised; *Chalk* may be detected by sulphuric acid, exciting an effervescence; and *White Lead*, by its forming an insoluble sulphate of lead. It ought to be volatile.

ZINCI SULPHAS. L.E.D.

Sulphate of Zinc, olim, *White Vitriol.*

Qualities. *Form*, crystals, which are four-sided prisms, terminated by four-sided pyramids; they are slightly efflorescent; *Taste*, styptic, metallic, and slightly acidulous. Chemical Composition. One proportional of oxide, and one proportional of acid;

its crystals contain seven proportionals of water. SOLUBILITY. It is soluble in 2·5 times its weight of water at 60°, and in less than its own weight of boiling water, but is quite insoluble in alcohol. INCOMPATIBLE SUBSTANCES. *Alkalies; earths; hydrosulphurets; astringent vegetable infusions; Milk.* MED. USES. Tonic, astringent, and, in large doses emetic, (*Form.* 4.) As an emetic it operates directly, and offers therefore a prompt resource in cases of poison, or where an immediate discharge from the stomach is required; it appears to differ from most remedies of this nature, in not proving diaphoretic in smaller doses: in spasmodic* coughs it is administered with the best effects, especially when combined with camphor or myrrh, (*Form.* 105): in affections of the chest attended with inordinate secretion, I have witnessed much benefit from its exhibition, particularly when presented in the form of lozenge; and, when dissolved in water, in the proportion of grs. ij to f℥j, it forms a useful injection in fluor albus, &c. DOSE, as an emetic from grs. x to ʒss—as a tonic, and astringent, from grs. j to ij. OFFICINAL PREP. *Liquor: Alum: comp: (b,)* L. *Solutio Sulphatis Zinci.* E. *Solutio Acetatis Zinci, (g.)* E. *Tinctura Acetatis Zinci. (g.)* D. ADULTERATIONS. The *white vitriol* of commerce ought never to be used in medicine, without previous purification, since it generally contains the sulphates of copper and iron.

ZINGIBERIS RADIX. L.E.D. (Zinziber Officinalis.) *Ginger Root.*

CHEMICAL COMPOSITION. Volatile oil, fecula, and resino-extractive matter; on the first of these

* The various quack remedies advertised for the cure of the *hooping cough* are either *Opiates*, or medicines composed of *sulphate of zinc.*

principles its well known flavour and odour depend; but its pungency resides in the last. SOLUBILITY. Water, alcohol, and ether, extract its virtues. MED. USES. It is highly stimulant, and is therefore frequently beneficial in flatulent cholic, dyspepsia, and gout; it is however more generally employed as an adjunct to other remedies to promote their efficacy, or to correct their operation, (see *Form.* 40, 67,) and it is found, that it does not produce the ill effects of those spices, whose virtues reside in an acrid oil. DOSE, of the powder grs. x to ℈j. OFFICINAL PREP. *Syrup: Zingib:* L.E.D. *Syrup: Rhamni: (d.)* L. *Tinct: Zingib:* L.D.* *Tinct: Cinnamom: comp: (b.)* L. *Acid: Sulphuric: aromat:* E. *Confectio Opii* L. *Confectio Scammon: (d.)* L.D. *Infus: Sennæ. (d.)* L. *Pulvis Cinnamom: comp: (b.)* L.E.D. *Pulv: Scammon: comp: (d.)* L.D. *Pulv: Sennæ comp: (d).* L. *Pil: Aloes.* D. *Pill: Scillæ comp:* L. D. *Vinum Aloes.* L. E. D. ADULTERATIONS. The powder is rarely met with in any tolerable degree of purity: there are two varieties of ginger in the market, viz. the *Black*, produced by scalding the root, and afterwards hastily drying it in the sun; and the *White*, being that which has been carefully washed, scraped, and gradually dried.

* OXLEY'S CONCENTRATED ESSENCE OF JAMAICA GINGER.—A mere solution of Ginger in rectified spirit.

GINGER BEER POWDERS.—White sugar ʒj ℈ij, ginger grs. v, subcarbonate of soda grs. xxvj, in *blue paper*. Tartaric acid grs. xxx, in each *white paper*. These proportions are directed for half a pint of water.

GINGER BEER. The following is the receipt by which this popular beverage is prepared. Take of lump sugar half a pound; of cream of tartar half an ounce; Bruised Ginger an ounce; boiling water one gallon. Ferment for twenty-four hours with yeast.

PRESERVED GINGER.—That from India is almost transparent, while that manufactured in Europe is always opaque and fibrous.

FINIS.

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TO THE PATENT MEDICINES, and NOSTRUMS,

DESCRIBED IN THIS WORK.

"*Arcana revelata fœtent.*"—BOERH:

"*Nullum Ego cognosco remedium nisi quod* TEMPESTIVO *usu fiat tale.*"—IBID.

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