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Publication/Creation

Cincinnati : Kost & Pool, 1849.

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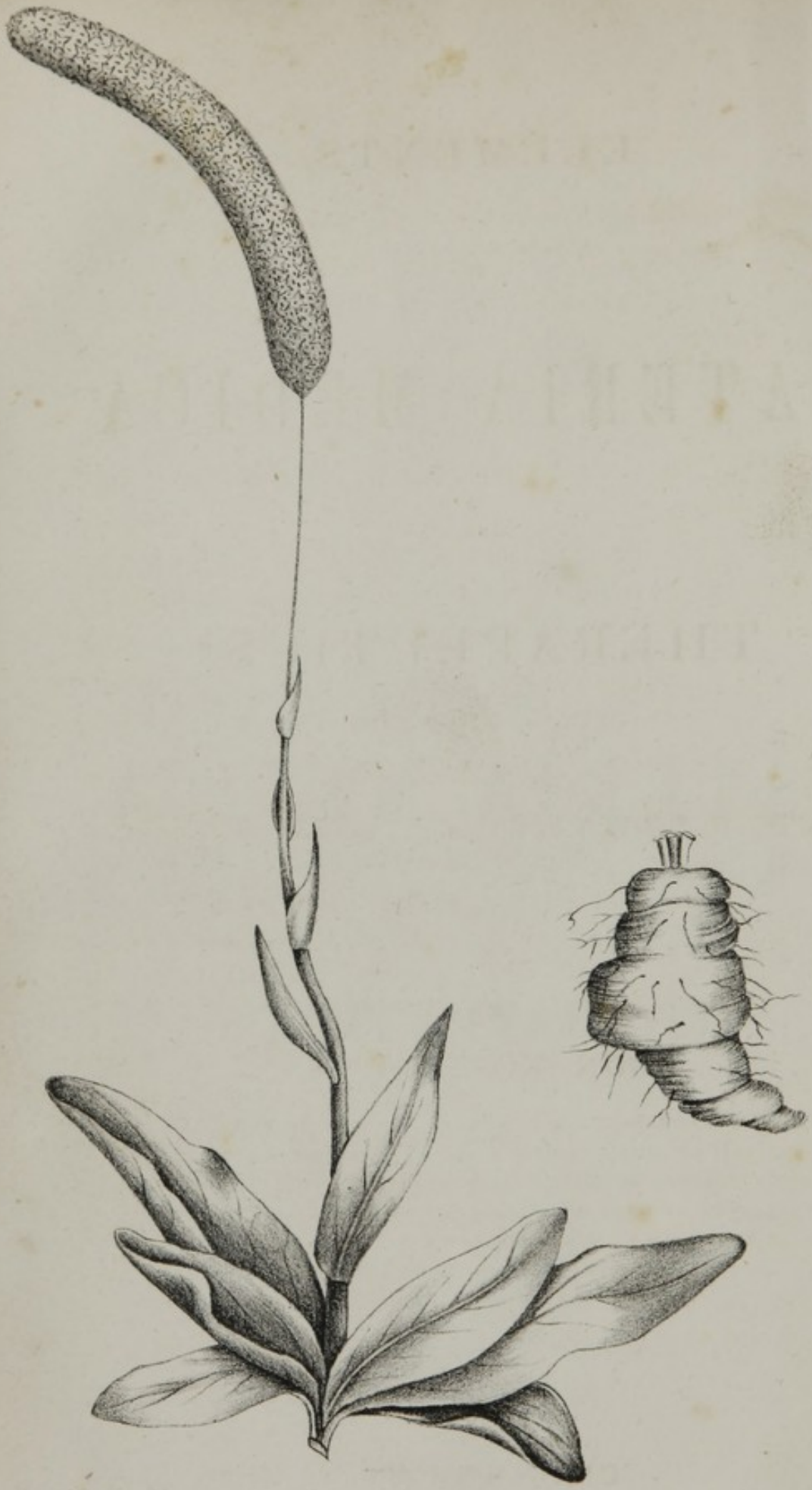


WASHINGTON, D.C.

MATERIA MEDICA

AND

THERAPEUTICS.



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ELEMENTS

OF

MATERIA MEDICA

AND

THERAPEUTICS:

ADAPTED TO THE NEW PHYSIOLOGICAL SYSTEM OF PRACTICE.

BY

JOHN KOST, M. D.,

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LSCO

CINCINNATI:

PUBLISHED BY KOST & POOL.

1849.

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PREFACE.

No apology is necessary for the appearance of a regular treatise on Materia Medica and Therapeutics adapted to the Reformed Practice, for although most works on Theory and Practice have necessarily comprised some brief descriptions of the physical and therapeutic characters of many of the most prominent medical agents, still, in the New System, there has, as yet, appeared nothing like a *scientific* and *systematic* treatise on this important department of Medical Science.

The paramount importance of a work of this kind at the present juncture, is apparent from various considerations of the subject. In the reformed, as well as in the old system, very much of the necessary professional study involves a *knowledge of medical agents* or the *principles of therapeutics*. Now as no treatise adapted to the old system, either apprehends or contemplates the principles on which is founded the new practice, there are no means, except oral instruction, as by competent private Preceptors, popular Lecturers, and College Professors, by which a knowledge of Materia Medica and Therapeutics, as contemplated in the New System, can possibly be obtained by our students. As to private preceptors, few are fully competent, — themselves not having had any facilities more ample, excepting that they may have improved by the inductions of more mature reasoning, and practical observation. Popular lecturers we have but few, and our college instructions have been much embarrassed from a want of proper text-books.

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Our practitioners have ever been justly supposed to control the destiny of the new system, and hence there has been the deepest solicitude for their high professional attainment and general literary polish. The means for accomplishing an object fraught with so much interest, alas, have been too much overlooked. In vain may we hope to fix high the standard of professional attainment while our text-books are so incomplete and our cabinets so imperfectly supplied. It were folly to hope that the assiduity and ambition of our students would transcend even the ordinary demands of our authorities.

The hope of doing something in the way even of advancing a knowledge of Materia Medica and Therapeutics, but especially of *amplifying* the means of our students to attain it, has been the grand incentive to so arduous an undertaking. Nevertheless the object of furnishing the general practitioner and practical pharmaceutist of the Reformed System, a convenient and useful book of reference has not been overlooked.

Meaner objects could only have failed to inspire a zeal commensurate with a task so difficult and an engagement fraught with so much responsibility. No one could have been more conscious than the author, that the undertaking, in every way is peculiar. In collecting the *elements* for the *first* treatise on any department of medical science, adapted to a new system of practice, differing in the main from every other one, the course must necessarily lead over untrodden grounds; this may be more truly said of the present work. Many of the most prominent articles of the old Materia Medica, as the Mercurials, Antimonials, and all other poisons, are totally rejected, while not a few of the grand principles of Therapeutics of the two systems stand opposed. This therefore creates a ne-

cessity of another collection of remedial agents, as well as a modified system of Therapeutics.

Thus the author has made a new collection of Materia Medica, arranged on a new system of Therapeutics. This collection and arrangement, contemplate, in every particular, the new views in medical science, and maintain all the principles of a truly physiological and rational system of medical practice.

The articles of the Materia Medica, have been disposed in a most natural arrangement, founded chiefly upon their physiological effects, and in part on their Physical, Chemical, and Mechanical properties. Thus they are first arranged into three grand divisions, corresponding with the three primary principles of remedial action; i. e. the *Physo-dynamic* or Physiological, *Chemical*, and the *Mechanical*. The first of these divisions, which comprises the greater portion of the Materia Medica, is disposed into two clearly defined sub-divisions, viz: Mutantients (*Evacuents*) and Immutantients (*Non-evacuents*). All these divisions and sub-divisions, are then arranged into classes and orders, according to the various qualities of impression, that the different agents concerned, are capable of producing.

By reference to what is written on these classes and orders, in their respective places, it will be discovered, that all the different physiological effects of remedies, are fully contemplated in the first, while the orders, more particularly, involve a consideration of the various qualities and modifications, of these effects, and the manner in which the remedies comprised, fulfil the different and complicated indications of cure. To illustrate: The class *Cathartics*, comprises all those remedies, which possess the power to produce this physiological effect (*purging*); but it is left for the various orders of Cathartics, as *simple purgatives*, *hydra-*

gogues, *cholagogues*, &c., to develop the different qualities or modifications, of the cathartic power. Thus one order of cathartics will produce an evacuation simply of the ordinary contents of the intestines, chiefly in virtue of their power over the muscular coats of the canal; another will produce discharges from the bowels, of a very different character, by their influence over the internal exhalants — these are *hydragogues;* while the cholagogues, are remarkable for their influence over the biliary apparatus.

No other arrangement of the Materia Medica, now known, will compare with this, in point of utility and practical convenience, and it is difficult to decide which, the student, or the practitioner, is most accommodated, by this classification.

The principle of association, than which, there is nothing more available to the understanding and the memory, is here most effectively exemplified.

The plan of grouping together articles of similar virtues is of the greatest advantage. If, then, in addition to this, the relative importance or therapeutic value of the different articles is indicated by the position in which they appear in the arrangement, the plan will still be of greater utility. In the disposition, therefore, of the articles, as well as their orders, the author has taken into the account, — 1. Their therapeutic power, activity, and applicability; 2. The expense and facilities of procuration; 3. The convenience of preservation, preparation, and exhibition; and, 4. The chances of getting them in a pure, unadulterated, and unimpaired state. It is proper to remark, however, that in some instances, the physical characters, and a few other circumstances, have slightly modified this plan. Thus, for instance; among the cathartics, the esculents are first represented, and yet they are not the most important cathartic

remedies. Here the idea of gradation of power seems to have prevailed, and perhaps improperly; the mildest come first, and the most powerful, last. The only claim of propriety, in view of the general plan, would here seem to be in the fact, that the milder cathartics, or aperients, are more frequently indicated than the other kind. Among the stimulants, it will be seen that articles have been grouped according to their physical characters; but still the respective orders are represented, perhaps, in accordance with their relative importance.

It will at once be discovered, that although the list of the articles is rather extensive, yet it was designed to represent only the chief examples of all the different orders of medical agents of our new system, so as to give space for a more full exposition of the main principles of therapeutics. These examples, however, furnish an ample list for all the practical purposes of our profession. With this arrangement and examples before him, it will be an easy matter for the practitioner to extend the list of his remedial agents according to pleasure, it being in no way difficult for him to assign the articles thus added their proper place in the plan. The author is now engaged also in getting up an extensive and largely illustrated work on Medical Botany, in which a most comprehensive list of the Materia Medica will appear.

It will be seen, that the different agents treated of have not only been considered in reference to their strictly therapeutic character, but their officinal and general synonymes; Natural, and, in some cases, their General History, Commerce, Botanical and Chemical character, Analysis, and Pharmaceutic Preparation, &c., have been treated of to a greater or less extent. This has seemed necessary at the present juncture. These subjects are all collaterally connected with this department of the science, and as they are

necessary to its complete understanding, and are not treated of in any collected and practical form in other works usually found in the libraries of our practitioners, the author has deemed it proper to follow the precedents of other writers on this subject.

Great pains have been taken, to point out the essence, or particular principles of plants, &c., upon which the medical virtues are dependant, and to show how these are to be extracted, and prepared for use. This knowledge is of the greatest importance, to Pharmacy and Practical Medicine. The virtues of remedies, are often lost or destroyed, by a deficient knowledge of their chemical nature. Organic Chemistry, has hitherto been too much neglected, and, in consequence, Pharmacy has been far on the back-grounds. The author hopes, that the numerous practical hints and illustrations, on this subject, given throughout the work, will not fail to do its part in advancing Organic Chemistry, at least so far as it relates to Medicine.

The attention paid to the Pharmaceutic Preparations of our remedies, will doubtless be fully appreciated. Our profession has suffered much inconvenience from a want of a standard work on Pharmacy. We have, as yet, had no fixed nomenclature, or any efficient means to maintain a uniformity in our formulæ. The author has made this a subject of special investigation, for several years, in which he labored to investigate the chemical and organic character, of our most important plants, so that he might reduce our *formulary* from the present unsettled state, into something more like a system. The formulæ of all our popular compounds, will be found in their appropriate places. The regular Latin nomenclature, has been adopted, and the unmeaning vulgar names, have been studiously avoided. So far as the authorized preparations of the different National

Pharmacopœias correspond with our principles, they have generally been adopted, and to make the work as satisfactory, as possible, the formulæ of the different Colleges have been given together, in a condensed form, placing in parenthesis, with their initials, the points of difference, while those of coincidence, were made the basis of the formulæ.

If the present work, or some better one, that may yet be published, were adopted as a standard for our preparations, until something in the shape of an authorized Dispensatory is got up, it would obviously be of great advantage, since so much confusion has unavoidably existed on the subject. While every physician uses preparations peculiar only to himself, all the reports of treatment in our journals, papers, and private correspondence, must continue to be unnecessarily prolix.

As the knowledge of Medical Botany, among our practitioners, is not yet as complete as could be desired, the author, at considerable expense, had several hundred drawings, taken from nature, expressly for this work, but his engravers failed to complete the job in time for their use. To atone for this, a number of larger drawings have been taken, also from nature, and some of them beatifully lithographed and colored, and others engraved and colored.

Numerous works have necessarily been consulted, especially in the descriptions of exotic plants and drugs. These have generally been fully credited, though sometimes, in order to save space, the initials and abreviations, have only been given. The abreviations &c. of the names not written in full will be found in a list of explanations.

It may not be improper here to express a hope that the historical and biographical table of Prof. Pereira, with its additions, will be both interesting and useful to many of our medical men who have an inclination to enquire into the history of the Materia Medica.

The author may perhaps be permitted to state that he has expended much time and labor upon the work in order to present clearly the newly developed principles of Therapeutics, with as large a collection of facts on Materia Medica as was possible, without being too prolix and voluminous. That he may have failed, however, in many respects, in making the work just what it should be, he has no inclination to dispute, as no one could reasonably expect in the first edition of the *only* work on a new and intricate subject, to avoid all errors and imperfections, but he ventures to hope that a candid public will make all due allowances. If he may justly indulge the thought that he has contributed, even but a *little*, to the advancement of a knowledge of his subjects, he is amply repaid for his toil.

CINCINNATI, *January*, 1849.

EXPLANATORY TABLES.

Troy, or Apothecaries' Weight.

Measure.	*Signs.*	*Equivalents.*	*Signs.*	*Equivalents in grains,*	*Signs.*
One Pound,	℔j. =	12 Ounces,	℥xij. =	5760	grs.
" Ounce,	℥j. =	8 Drachms,	℥viij. =	480	grs.
" Drachm,	℥j. =	3 Scruples,	℈iij. =	60	grs.
" Scruple,	℈j. =	20 Grains,	gr. xx. =	20	grs.

Apothecaries' or Wine Measure, U. S., D.

Measure.	*Signs.*	*Equivalents.*	*Signs.*	*Equivalents.*	*Signs.*
One Gallon,	Cj. =	8 Pints,	Oviij. =	61440 | Minims.	♏
" Pint,	Oj. =	16 Fluid ounces,	f℥xvj. =	7688 | "	♏
" Fluid oz.,	f℥j. =	8 Fluid dr'hms,	f℥viij. =	480 | "	♏
" Fluid dr'm,	f℈j. =	60 Minims,	♏ lx. =	60 | "	♏

This standard of measure is adopted by the U. S. Pharmacopœia, and is generally in use in this country.

Imperial Measure adopted in the Pharmacopœias, L. and E.

Measure.	*Signs.*	*Equivalents.*	*Signs.*	*Equivalents.* Minims.	*Wine Measure in former Pharmacopœia.*
One Gallon,	Cj. =	8 Pints,	Oviij. =	76800 | 61470	♏ = Oviij.
" Pint,	Oj. =	20 Fluid oz.,	f℥xx. =	9600 | 7680	♏ = f℥xvj.
" Fluid oz.,	f℥j. =	8 Fluid d'ms,	f℥viij. =	480 | 480	♏ = f℥viij.
" Fluid dr'm,	f℈j. =	60 Minims,	♏ lx. =	60 | 60	♏ = lx.

The Imperial Gallon and Pint, thus evidently contain more than the Wine Measure, in the proportion of about 5 to 4; but the College, by dividing the Pint into f℥xvi., obtain nearly the same quantities for the ounce, drachm, and minim.

Aproximative Measure.

This has, sometimes to be employed, and it is important to know the capacities of the several vessels which are in use for this purpose. This knowledge may be thus given:—

A teacup contains about a gill, = f℥iv.
A wine glass - - - = f℥ij.
A tablespoonfull - - = f℥ss.
A teaspoonful - - = f℈j.

In small quantities, the most common mode of dispensing

fluids is by *dropping* them. Drops, however, are not of uniform amount, as their size will depend upon the consistency of the fluid and the shape of the vessels from which they fall. The number of drops, therefore, required to measure a *fluid drachm*, at least, ought to be known before this mode is resorted to.

ABBREVIATIONS.

Sex. Syst.—Sexual, or Linnæan system of artificial classification.

Nat. Ord.—Natural order, according to Lindley, unless otherwise expressed.

Gen. Char.—Generic character.

Spec. Char.—Specific character.

U. S.—United States Pharmacopœa.

U. S. Dis.—U. S. Dispensatory.

L. or Lond.—London College or Pharmacopœa.

E. or Ed.—Edinburg College or Pharmacopœa.

D. or Dub.—Dublin College or Pharmacopœa.

Sp. Gr.—Specific gravity.

Eq.—Equivalent.
F.—Fahrenheit.
Fr.—French.
Ger.—German.
Ital.—Italian.
Span.—Spanish.
Arab.—Arabic.
Per.—Persian.
Hin.—Hindoo.
Chi.—Chinese.
Pol.—Polish.
Russ.—Russian.
Eng.—English.
Port.—Portuguese.
Gr.—Greek.
Malab.—Malabar.
Vul.—Vulgar.
Aa.—Each.
Aq.—Water.
Cong.—Gallon.

Linn.—Linnæus.
Lind.—Lindley.
De Cand.—De Candolle.
Nees v. Esen.—Nees (Fred.) von Esenbeck.
Eberm.—Ebermair (H.) the colleague of Nees.
Raf.—Rafinesque.
P. or Per.—Pereira.
R.—Royle.
G.—Griffith, of Phila.
Nutt.—Nuttall.
Juss.—Jussieu.
Tourn.—Tournefort.
Lam.—Lambert.
Hook.—Hooker.
Q. s.—Quantity sufficient.
Ss.—Half.
℞.—Recipe.

ERRATA.

The Author has not had time to review the work with sufficient care, since completed, and there may be errors that have not been discovered. It is hoped, however, that there are none of much importance. It is, perhaps, no more than justice to the author remark, that most of the errors yet discovered are alterations from copy.

In some of the copies, there are small comas after the Chemical Symbols and their figures, on pages 144, 145, 177, 178, 196, 282, and 300, which should be all omitted.

On page 145, second line from the top, instead of O^{23}, read O^{13}. On page 177, the tenth line from the bottom, for KO2, C^{4}. H^{2}., read KO, $2C^{4}$ H^{2} O^{5}. On page 196, last line of the second paragraph from the top, in place of NH^{3}. C^{4}. H^{3}. O^{3}, read NH^{3}, C^{4} H^{3} O^{3}.

In some of the copies on page 65, eight lines from the bottom, for "involve" read *involves*.

Page 368, fifth line from the top, for "liquors" (in some of the copies), read *liquor;* and in the ninth, for "effects" read *effect*.

Page 123, for "Androsæmiofolium," read *Androsæmifolium*.

*** It is hoped that the reader will be able to correct the reading of whatever other errors may be found.

TABULAR VIEW

OF

THE HISTORY AND LITERATURE

OF THE

MATERIA MEDICA.*

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1. WORKS ON THE HISTORY OF MEDICINE GENERALLY.

Le Clerc (Dr. D.) Histoire de la Medicine. Gen. 1696. 4to.; Amst. 1723. 4to; a la Haye, 1729. (Brought down to the time of Galen. An English translation, by Drs. Drake and Baden, 8vo. Lond. 1699.)

Friend (Dr. J.) The History of Physick from the time of Galen to the beginning of the Sixteenth Century. 2 vols. 8vo. Lond. 3d ed. 1727.

Schulze (Br. J. H.) Historia Medecinæ a rerum initio ad annum urbis Romæ DXXXV. deducta. Lips. 4to. 1728.

Ackermann (Dr. J. C. G.) Institutiones Historiæ Medicinæ. 8vo. Norimb. 1792.

Sprengel (Kurt.) Versuch einer pragmatischen Geschichte der Arzneikunde. 3tte. Aufl. 5 in 6. Thle. 8vo. Halle. 1821–28. (There is a French translation in 9 vols. by A. J. L. Jourdan, of the 2nd ed. 8vo. 1815–20.)

Choulant (Dr. D. L.) Tafeln zur Geschichte der Medicin, nach der Ordnung ihrer Doctrinen. Leipzig, 1822. fol.

Augustin (F. L.) Vollstandige Uebersicht der Geschichte der Medicin in Tabellarischer Form. 2te verbess. Ausg. 4to. Berlin, 1825.

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* From Pereira. Element. Mat. Med. with additions.

Hamilton (Wm.) The History of Medicine, Surgery, and Anatomy, from the Creation of the world to the commencement of the Nineteenth Century. 2 vols. small 8vo. London, 1831.

Bostock (Dr. J.) History of Medicine, in the Cyclopæd. of Pract. Med. vol. 1.

Broussais (Dr. C.) Atlas Historique et Bibliographique de la Medecine, ou Histoire de la Medecine. Paris, 1834. (A translation of Choulant's Tables, with some additions.)

2. WORKS CONTAINING A SPECIAL HISTORY OF PHARMACOLOGY.

Cullen (Dr. Wm.) Treatise of the Materia Medica. 2 vols. 4to. 1789.

Burdach (Dr. K. F.) System der Arzneymittellehre. 3 vols. 8vo. 1807–9.

Voigtel (Dr. F. G.) Vollstandiges System der Arzneimittellehre. 2 vols. 8vo. 1816–17.

Choulant. Op. supra cit.

Bischoff (Dr. C. H. E.) Die Lehre von des chemischen Heilmitteln oder Handbuch der Arzneimittellehre. 3 vols. 8vo. Bonn. 1825–31.

Broussais (Dr. C.) Op. supra cit. (Choulant's Table in French, without additions.)

3. CATALOGUES OF PHARMACOLOGICAL WORKS.

Baldinger (E. G.) Literatura Universa Materiæ Medicæ, Alimentariæ, Toxicologiæ, Pharmaciæ, et Therapiæ generalis medicæ atque chirurgicæ potissimum Academica. 8vo. Marb. 1793.

Burdach (K. F.) Die Literatur der Heilwissenchaft. 3 Bde. 8vo. Gotha. 1810–21. (The 2d volume contains the Materia Medica.)

Reuss (J. D.) Repertorium Commentationum a Societatibus Literariis editarum secundum disciplinarum ordinem digestum. Vol. x. ad xvi. ad Anatomiam, Artem Medicam Chirurgicam et Obstetriciam. 4to. Gotting. 1813–21. (The eleventh volume A. D. 1819, contains the Materia Medica and Pharmacy.)

Ersch (J. S.) Handbuch der Deutschen Literatur seit der Mitte des achtzehnten Jahrhunderts bis auf die neueste Zeit, systematisch bearbeitet und mit den nothigen Registern versehen. Neue Ausgabe. 3 tter. Band enthaltend. I. Medecin. II. Naturkunde. Leipzig, 1822.

Young (Dr. T.) An Introduction to Medical Literature, &c., 1813. 2d ed. 8vo. Lond. 1823.

WATT (Dr. Robt.) Bibliothica Brittanica, or a general introduction to British and Foreign Literature. 2 pts, authors and subjects. 4 vols. 4to. Edinb. 1824. (See vol. iv.; subjects Medica, Materia; Medicines; Pharmacopœia, and Pharmacy.)

SPRENGEL (C.) Literatura Medica externa recentior seu enumeratio librorum plerorumque et comentariorum singularium, ad doctrinas medicas facientium, qui extra Germaniam ab anno inde 1750 impressi sunt. Leipsiæ, 1829.

ROY (C. H.) Catalogus Bibliothecæ Medicæ, t. vi. Amstel. 1830. (The 2d volume contains the "Materies Medica.")

ENSLIN (F. C. F.) Bibliotheca Medico-Chirurgica et Pharmaceutico-chemica. 5 te. Auflage. Leipzig, 1838.

See also PLOUCQUET, "Literatura Medica Digesta," 4 vols. 4to. Tubingæ, 1808–9; and "Continuatio et Supplementum I." Tubingæ, 1813, [vol. 3, art. "Medicamenta" and "Medicina subd. Literatura"];—BERNSTIEN, "Medicinisch-chirurgische Bibliothek." Frankf. 1839. [Art. "Materia Chirurgica," p. 333];—VOITGEL, op. supra cit.; BUCHNER, "Einleitung in die Pharmacie," Nurnb. 1827;—SCHWARTZ, "Pharmakologische Tabellen," Leipz. 1833; Dierbach, "Die neuesten Entdeckungen in der Materia Medica," Bd. 1, Heideb. 1837; and Baillière's "Catalogue des Livres," 1840.

EGYPTIAN MEDICINE.

B. C.

THOUT or THAUT (also called Hermes or Mercury,) regarded as the founder of Medicine.

Medicine practiced first by priests, afterwards by physicians who confined themselves to the study of one disease. (Herod. *Euterpe* LXXXIV.)

The sick exposed in public places. *(Strabo.)*

Purges, vomits, and clysters, used for three days successively in every month. (Ibid. LXXVII.) Abstinence; dietetical regulations: the hog regarded as unclean. Baths and unguents.

Worshipped a bulbous plant (κρόμμυον; Squilla?) to which they erected a temple Pauw.

Employed *aetites*, slime of the Nile, frictions with crocodile's fat in rheumatism, and mucilage of *semina psyllii*. Salt, νίτρον (carbonate of soda?), alum, plasters, and unguents; white lead and verdigris occasionlly entered into the latter.

Fumigations with *Cyphi* (κῦφι) a mixture of various drugs. (Dioscorides, i. 24.)

B. C. EGYPTIAN MEDICINE—*Continued.*

1729. Spices, balm, and myrrh, carried to Egypt, and doubtless used by the Egyptians. (*Gen.* xxxvii. 25.)

1680. Embalming practiced. Palm wine, aromatics, myrrh, cassia, and other odorous substances (not frankincense), as well as νιτρον (carb. soda ?) and gum used in this process. Herod. *Euterpe*, lxxxvi.)

Alexandrian School, [see Greek Medicine.]

Consult.—Pauw (M. De), "Phil. Dissert. on the Egyptians and Chinese," vol. 1. p. 130, 1795. Alpinus (Prosper), "De Medic. Ægypt." Lugd. 1745. Also Clot-Bey, "Apercu General sur l'Egypt." 2 vols. 8vo. Paris, 1840.

HEBREW MEDICINE.

B. C.

The infliction and cure of diseases on various occasions ascribed by the Sacred Historian to the direct interposition of God. (Exod. ix. 15. Numb. xii. 10.)

Remedial agents consisted principally in strict hygienic means. (Circumcision, diatetical rules, separation, ablution, combustion of infected garments.) (See *Gen.* xvii. 10; Lev. xi. & xiii.; 2 Kings v.)

1491. Medicine practiced by the priests. (Lev. xiv.) Gold, silver, lead, tin, iron and brass (copper ?) mentioned by Moses.

1491. Odoriferous ointment and confection; the most ancient recipes on record. (Exod. xxx. 23–25, & 34, 35.)

"There are named in the Pentateuch about 20 minerals, 10 vegetables and animals." (Alston.)

1063. Music employed as a remedy. (2 *Sam.* xvi. 16.)

884. Sesquisulphuret of Antimony used as a face paint. (2 Kings, ix. 30.)

713. Fig poultice. (2 Kings, xx. 7.)

600. Physicians (not priests) referred to. (*Jerem.* viii. 22.) N. B. The so-called Egyptian physicians (*Gen.* l. 2.) were probably ενταφιαστων undertakers, or embalmers.

The following substances are referred to in the Bible: the Olive, Saffron, Barley, Wheat, the Fig, the Vine, Myrrh, Bdellium, Galbanum, Cumin, Coriander, Flax, Garlick, Balm of Gilead, Olibanum (Frankincense), Cassia, Cinnamon, the Almond, Pomgranate, Dill, (in our translation incorrectly called Anise)—Colocynth ? Ricinus ?

A. D.

40. Herod was let down into a bath of oil. (Josephus, *Bell. Jud.* lib. I. cap. 33, § 5.)

A. D. HEBREW MEDICINE—*Continued.*

Oil and wine applied to wounds. (Luke, x. 34.) Various superstitious practices. (Adam Clark *Comm.* Note to Mark, v. 26.)

For other information respecting Hebrew medicine, consult the "Bible;"—J. H. HORNE's "Introd. to the Crit. Study and Knowl. of the Holy Script." vol. iii. 8th ed. 1839;—LAUTENSEHLAGER, "Dissert. de medicis veterum Hebræorum, eorumque methodo sanandi," Strasburg, 1786;—K. SPRENGEL, "Analecta Historica ad Medicinam Ebræorum," Hal. 1796.—D. CARCASSONE, "Essai Historique sur la Med. des Hebreux, anciens et modernes." 8vo. Montp. 1815.—A "Flora Biblica" is contained in SPRENGEL's "Historia Rei Herbariæ," t. i. Amstel. 1807.

ASSYRIANS.

B. C.

The Babylonians had no professors of Medicine.—They exposed their sick in public places, in order that passengers might communicate their experience as to the best mode of cure. (Herodotus, *Clio* xcvii.) Extracted oil from the Sesamum. (Ibid. cxviii).

Consult,—SMOLL (D. G.), "Venerandæ Antiquitatis Assyriorum Chaldæorum, &c. Phylosophorum Medicorum Regum et Principum Philosophica et med. Principia." 4to. Lubec, 1609.

CHINESE MEDICINE.

A. D.

229. Of its ancient state but little is known. The Chinese pretend that its study was coeval with the foundation of their empire, and that their medical code was the production of Hoangti, B. C. 2000. (Grosier.) Before the Christian era there was a constant communication between China and India. (*Asiat. Journ.* July, 1836.)

Medical science commenced with Chang-ka; for all works before that (said to be dated B. C. 1105 & 189,) treat of medicine, without giving prescriptions. (*Trans. of Med. Soc. of Calc.* i. 146.) As the Chinese have retained their ancient manners and customs, we must judge of what their medicine was, by what it is.

Pun tsaou (or *Herbal,*) the most considerable Chinese work on materia medica, includes minerals, vegetables, and animals. (Davies. ii. 278.) [A copy in the British Museum.]

Ching che chun ching (Approved marked line of medi-

A. D. CHINESE MEDICINE—*Continued.*

cal practice,) a celebrated work in 40 vols.; of which, eight are devoted to *Luy-fang* (Pharmacology.) The articles of the materia medica are very numerous. Ginseng is their panacea. Aromatics and gums in apoplectic cases. Opium as an anodyne and in dysentery. Mercury both raw and oxidized. Musk, rhubarb, tea, camphor of the Dryobala-nops, assafœtida, spices, larvæ of the silkworm, bones of tigers and elephants, vegetable wax, horns, fins, &c. Moxa. Croton Tiglium.

Consult,—Du Halde (J. B.), "Descript. Geogr. et Hist. de la China," t. 3, p. 318, 1770; Grosier (L'Abbe), "Descript. Gen. de la China," t. ii. p. 466, 1817: Davies (F. J.), "The Chinese," vol. 2, p. 278; Gutzlaff, "Journ. of the Asiat. Soc.," vol iv. p. 154.

HINDOO MEDICINE.

B. C.

1. *Ancient Medical Authorities and their Works.*

Brahma the Hindoo Deity; author of the *Vedas*, the most ancient books of the Hindoos, and next in antiquity to those of Moses. (Sir W. Jones, *Disc.* ix.)

Ayur Veda, the oldest medical writing of the Hindoos, forms a part of the 4th or *Atharva Veda* (the least ancient Veda.) It is distributed into eight subdivisons. (See H. H. Wilson, *Calcutta Orient. Mag.* Feb. and March, 1823; and Royle, *Essay*, p. 57.)

Dachsa, the *Prajapati*, to whom Brahma communicated the Ayur Veda, instructed the two Aswins or Sons of Surya (the surgical attendants of the Gods.)

According to some the Aswins instructed Indra the preceptor of Dhanwantari (also styled *Kasiraja*, prince of Benares); but others make Atreya, Bharadwaja, and Charaka, prior to the latter.

A. D.

Date uncertain.—Cannot be later than the Ninth or Tenth Century, A. D., and probably much more ancient.

Charaka (*Sarac Scarac*, *Scirak* or *Xarac*) mentioned by Serapion, Avicenna, and Rhazes. His work is extant, but not translated.

Susruta, son of Viswamitra, was pupil of Dahnwantari and contemporary of Rama. Treats chiefly of *Salya* and *Salekya* or Surgery, and divides medicines into locomotive (animals both viviparous and oviparous, and produced in most places) and non-locomotive (plants and minerals). Gold, Silver, Arsenic, Mercury, Diamonds, Earths, and Pearls, are enumerated; also Heat and Cold, Light and Darkness, the increase and decrease of the Moon's age, as remedial means. Litho-

A. D. HINDOO MEDICINE—*Continued.*

tomy, the Extraction of the Fœtus, Venesection. 127 weapons and instruments. Actual cautery. Alkaline caustics. Heated metallic plates. Leeches. Gourds used as cupping glasses. Astringent and emolient applications. Leaves, pledgets, threads, and bandages. Drastic and mild purgatives, emetics, diaphoretics, baths, and aspersions of water, Stimulants, Sedatives, Narcotics, and Acrid poisons all employed. Datura, Nux Vomica, Croton Tiglium, Myrobalans, &c. were adopted by the Arabs.

Susruta (The); or System of Med. taught by Dhanwantari and composed by his disciple Susruta. Vol. i. 8vo. Calc. 1835.—For a list of Sanscrit medical and other works, see *Ainslie*, "Mat. Med." vol. ii. p. 491.

2. *Early Translations from Hindoo Works.*

B. C.

α. *Tamul*, by Maha Rishi Aghastier, who is named in the *Ramayana*, the oldest Hindoo profane work, and which is supposed to have been revised by the poet Calipas in the reign of Vikramaditya, whose era commences B. C. 57. (For a classification of drugs in a Tamul work called the *Kalpastanum*, see Royle's *Essay*, p. 54.)

β. *Cingalese.* (See a list in Ainslie's *Mat. Ind.* vol ii. p. 526; also Heyne's *Tracts on India*, p. 125–171.)

γ. *Tibetan* made in the eighth century. (See Csoma de Koros, in *Journ. Asiat. Soc.* iv. 1.) 715 substances are mentioned, most of which are indigenous to India.

3. *Antiquity of Hindoo Medicine,*

Cannot be determined by Hindoo chronology or authors; hence must be ascertained from other sources. The great antiquity of Hindoo Medicine is proved by the following circumstances:

α. *Indian products are mentioned in the Bible.* (Royle, p. 138.) In early times commerce was established between India and Persia, Syria, and Babylon; also, by the Persian and Arabian Gulfs, with Egypt, &c.

β. *At a very early period India was peopled and in a high state of civilization.* (For proofs, see Royle, p. 150 to 179.) As many chemical arts (e. g. distillation, bleaching, dyeing, calico printing, tanning, soap and glass making, manufacture of sugar and indigo)

B. C. HINDOO MEDICINE—*Continued.*

were practised by the Hindoos, who were acquainted with, and their country contains, all the chemical substances mentioned by Geber, it is not improbable that they, and not the Arabs, originated chemistry. The Grecian sages traveled in the East; hence the coincidences between the systems and discoveries of the Greeks and those recorded in Sanscrit works.

γ. *Indian products are mentioned by the Greeks and Romans* (e. g.) by Hippocrates, Theophrastus, Dioscorides, Pliny, Oribasius, Ætius, and Paulus.) They were doubtless employed in the countries where they were indigenous before they were exported.

δ. *Ancient inscriptions show the Antiquity of Hindoo Medicine.* A medical edict by King Piyadasi, directing the establishment of depots of medicine, and the planting of medicinal roots and herbs throughout his dominions, and in the countries where Antiochus and his generals commanded. This, therefore, must have been issued and cut in rocks and metal pillars as early as B. C. 220.

A. D.

ε. *The Persians translated Hindoo Works, A. D.* 531 *to* 579. (Royle's *Essay*, p. 68.)

ζ. *Hindoo physicians were in high repute at the Court of Harum Al-Rashid and Al-Mamoon, from* A. D. 786 to 850.

η. *The Arabian authors* (Rhazes, Serapion, Mesue, and Avicenna) *mention Charak, and quote from the Susruta.*

Consult,—*Wilson (H. H.)*, "Orint. Mag." Calc. 1823; and "Trans. Med. and Phys. Soc." Calc. vol. 1; Heyne (B.); "Tracts on India," Lond. 1814; *Ainslie (W.)*, "Mat. Ind." 2d vol. Lond. 1826; *Deitz (F. R.)*, "Analecta Med." Lips. 1834; *Royle (J. F.)*, "Essay on the Antiq. of Hindoo Med." 1837; *Geldemeister*, "Scriptorum Arabum de rebus indicis loci et opuscula inedita." 8vo. Bonn, 1838.

Taleef Shereef, or Indian Materia Medica. 8vo Calc. Eng. trans. by G. Playfair, 1833.

A. D.

4. *English Writers on Indian Materia Medica.*

1810. Fleming (Dr.) Catalogue of Indian Medicinal Plants and Drugs in the Asiatic Researches, vol. xi.

1813–26. Ainslie (Dr. W.) Materia Medica of Hindoostan, 4to. 1813—Materia Indica, 2 vols. 8vo. 1826.

1832. Royle (J. F.) List of Articles of Materia Medica obtained in the Bazaars of the Western and Northern Provinces of India. In the Journal of the Asiatic Society of Bengal. 1 vol. 1832.

A. D.

HINDOO MEDICINE—*Continued.*

1841. O'Shaughnessy (W. B.) The Bengal Dispensatory and Pharmacopœia. Chiefly compiled from the works Roxburgh, Wallich, Ainslie, Wright and Arnott, Royle, Pereira, Richard and Fee, and including the results of numerous special experiments. Published by order of Government. Calcutta. [Three parts, including pp. 622, have appeared.]

Much valuable information on Indian Materia Medica is contained in *Royle's* "Illustrations of Botany and other branches of the Natural History of the Himalayan Mountains. 4to, 1824–41. Several interesting papers on the same subjects have appeared in the Anglo-Indian Journals. See also the works of *Heyne*, *Buchanan*, *(Hamilton)*, and *Crawford*.

GREEK MEDICINE.

B. C.

1. *Before the time of Hippocrates.*

1398. Melampus, a soothsayer and physician. Cured impotence by iron wine, (Apollod *Bibl.* Fr. transl. lib. i. cap. ix. p. 75); and madness by Hellebore (Pliny, xxv. 21.)

1270. Chiron, a *Centaur*, a physician and surgeon. Was cured of a wound by the *Centaurea* Centaurium (Ibid. xxv. 30). Had several pupils, as Hercules (to whom the invention of the warm bath is ascribed) and Æsculapius.

1263. Æculapius or Asclepias, renowned for his medical and surgical skill. Employed amulets, incantations, charms, potions, incisions, and topical remedies [Le Clerc]. His sons Machaon and Podalirius also famous surgeons; the latter practiced venesection.

1184. Destruction of Troy.

1134. The first temple to Æsculapius founded.

Europhon, author of the Γνῶμαι Κνίδιαι or Cnidian Sentences.

968. } 907. } 884. } Homer mentions the Papaver somniferum, sulphur fumigations, νηπενθὲς (Cannabis Indica? Opium??), Moly(?), &c.

Aristæus discovered Silphium [see Pereire's "Elements of Mat. Med." vol. ii. p. 471].

Asclepiadeæ. Descendants and followers of Æsculapius and priests of his temples. Extended over 700 years, i. e. until Hippocrates. The temples became schools of medicine, the most celebrated of which were the Coan

B. C. GREEK MEDICINE—*Continued.*

617. PYTHAGORAS employed magic and Cnidian. The priests
Dietetics, Mustard, Anise, of the former attempted to
and Vinegar of Squills.— unite reasoning with expe-
580–500. (Pliny xix. 30). rience; those of the latter
attached themselves to ob-
servations and matters of
fact. The remedies used
were Cnidian berries, juice
of euphorbium, hellebore,
scammony, colocynth, bri-
ony, elaterium, mineral wa-
ters, &c. (Le Clerc, Spren-
gel, Bostock.) Votive tab-
lets were erected in the
temples.

2. *Hippocrates.*

460: to 360? HIPPOCRATES the "Father of Medicine." Born at Cos. The 18th by his father from Æsculapius. Ascribes diseases to the alterations of the humors (blood, pituita or phlegm, and yellow and black bile). An antipathic. Employed diet, baths, exercise, blood-letting (venesection, cupping, and scarification), the actual cautery, the knife, and a very extensive series of medicines. Alston found in the works which pass under the name of Hippocrates "about 36 mineral, 300 vegetable, and 150 animal substances," and he adds, "I cannot pretend to have overlooked none." The Hippocratean materia medica includes :

1st. *Minerals*,—sulphur, lime, carbonate of soda, alum, common salt, oxide and carbonate of lead, acetate (and sulphate ?) of copper, oxide of iron, and yellow and red sulphuret of arsenicum.

2dly. *Vegetables*,—acacia, allium, ammoniacum, anethum, anisum, cardamomum, cassia, cinnamon, colocynth, conium, coriandrum, crocus, cuminum, cydonia, elaterium (?), euphorbia, fœniculum, galbanum, gallæ, glycyrrhiza, gnidium, helleborus, hyocyamus, juniper, lactuca, laurus, linum, malva, marubium, mastic, mentha, morus, myrrha, olea, opium, opobalsamum, opoponax, origanum, piper, pix, pulagium, punica, quercus, rosa, rubia, rumex, ruta, sambucus, sagapenum, scamonia, scilla, silphium, sinapis, staphisagria, styrax, turpentine, and veratrum.

3dly. *Animals*, Κανθαρὶς (Mylabris Fusselini ?), castoreum, sepia, ova, cornua, mel, serum, lactis, and cera.

Dierbach (Dr. J. H.), "Die Arzneimittel des Hippokrates." Heidelb. 1824.

GREEK MEDICINE—*Continued.*

B. C.

3. *From Hippocrates to Galen.*

380. ANCIENT DOGMATIC *(or Hippocratean)* SCHOOL. *(Theory in Medicine.)* 380. Founded by THESSALUS and DRACO (sons of Hippocrates), in conjunction with POLYBIUS (their brother-in-law),——354.

341. DIOCLES CARYSTIUS (called the second Hippocrates) wrote on plants and dietetics. Gave a leaden bullet

336. in ileus.——341. PRAXAGORAS *of Cos* (the last of Asclepiadeæ); vegetable medicines.——336. CHRYSIPPUS of *Cnidus*, opposed bleeding and purging, and vegetable medicines.

304. *Alexandrian School.*——304. ERASISTRATUS (pupil of Chrysippus) opposed bleeding; used simple medicines.——307. HEROPHILUS *of Chalcedony*, a demi-empiric, used compound and specific medicines.——

285. 285. Medicine divided into *Dietetics*, *Pharmacy*, and *Surgery*.

384–322. NATURAL HISTORIANS. 384–322. ARISTOTLE; wrote

371–286. on animals (also on plants and and pharmacy.) 371–286. THEOPHRASTUS, the founder of botany.

290. EMPIRIC SECT *(Experience the sole guide)*--290 founded by PHILINUS *of Cos* (disciple of Herophilus).——

240. 240. SERAPION of Alexandria.——230. HERACLIDES

233. of *Tarentum* (*"Prince of Empirics"*) used conium,

140. opium, and hyoscyamus, as counter-poisons. NICANDER *of Colophon*, wrote on poisons and antidotes:

135—63. his Θηριακὰ Ἀλεξιφάρμακα, still extant.——135 to 63. MITHRIDATES; his supposed antidote *(Mithridatium*

160. *Damocratis)* contained 54 substances.——158. ZOPYRUS employed a general antidote *(Ambrosia)*; classified medicines according to their effects. CRATE-

138. VAS a botanist.——138. CLEOPHANTUS described medical plants.

168. *Gentian* first used by Gentius, king of Illyria.

100. METHODIC SECT.—100. ASCLEPIADES *of Bithynia* rejected all previous opinions, and termed the Hippocratean system *"a meditation on death."*——63. THEMISON *of Laodicea*, pupil of Asclepiades, founder of the sect. Explained all physiological and pathological doctrines by the *strictum* and *laxum* of the organic pores, and regarded all medicines as astringents or relaxants. Employed leeches.

A. D.

54? DIOSCORIDES (Pedacius). The most renowned of all the old writers on Materia Medica. His work is the best (of the ancient ones) on the subject, and for 1600 years was regarded as the first authority. "In him

A. D. GREEK MEDICINE—*Continued.*

I counted about 90 minerals, 700 plants, and 168 animal substances, that is 958 in all, without reckoning the different simples the same substance often affords." (Alston, *Lect.* i. 15.) Dr. Sibthorp visited Greece for the purpose of studying on the spot the Greek plants of Dioscorides, (*Flora Græca*; and *Prodr. Fl. Græcæ*, by Sir J. E. Smith.)

131—200 GALEN (Claudius) a brilliant genius of vast erudition and rare talents. Explained the operation of medicines by reference to their elementary qualities (heat, cold, dryness, and moisture), of each of which he admitted four degrees. This doctrine was held in the schools until the time of Paracelsus. Galen gives the names and virtues of 540 plants, 180 animal, and 100 mineral substances. (Alston.)

4. *From Galen to the fall of the Greek School.*

360 ORIBASIUS. Transcribes and abridges Dioscorides and Galen. Both he and Actius were called Simiæ Galeni. (Alston).

550 AETIUS. Employed musk medicinally.

560 ALEXANDER TRALLIANUS. First mentions rhubarb, which he states was used in diseases of the liver and in dysentery. Notices hermodactyl. Used mild laxatives. Is the first who speaks of the use of steel in substance.

600 } PAULUS ÆGINETA. First notices the purgative properties
700 } of rhubarb. Distinguishes between *Rha* and *Rheon*. Describes the effects of hermodactyl.

1034 SETH (Simeon). Notices camphor.

(Minor Greek Authors.)

1100 } ACTUARIUS (John.) Mentions capsicum (κάψικον). The
1300 } first Greek who mentions the milder purgatives (as cassia, manna, senna, myrobalans).

1300? MYREPSUS (Nicholas).

5. *Modern Greek Medicine.*

1837. Ελληνικη Φαρμακοποιια· Pharmacopœia Græca jussu Regio et approbatione Collegii Medici edita auctoribus Joanne Bairo, Xaverio Landerer, Josepho Sartori. pp. 542, 8vo. Athenis.

ROMANS OR ITALIANS.

A. D.

23 In the early periods of Roman history medicine was practised by slaves and freedmen. MENECRATES. Employed escharotics. Invented Diachylon plaster.

13—55 CELSUS (A. Cornelius). *De Medicina.* A methodist? An elegant writer. Lays down hygienic rules. Distinguishes foods according to the degree of their nutritive power and digestibility. His remarks on these subjects, as well as on the use of remedial agents generally, display great judgment. Speaks of the use of nourishing clysters, gestation, baths, frictions, &c. Employed in dropsy frictions with oil.

41 SCRIBONIUS LARGUS. An empiric. His work (Compositiones Medicæ) is the first pharmacopœia known.

23—79 PLINY the Elder (Caius). A natural historian. In his work (Historia Naturalis) he has collected all that was known in his time, of the arts, sciences, natural history, &c. He displays prodigious learning and a vast fund of erudition. In botany and materia medica he has copied almost verbatim the remarks of Theophrastus and Dioscorides.

230 CÆLIUS AURELIANUS. A methodist. The only one of this sect whose works have descended to us.

PERSIAN MEDICINE.

B. C.

1491 Must be very ancient, but its history scarcely known. Products of Persia (ex. galbanum, assafœtida, sagapenum, &c.) mentioned in the Bible or by Hippocrates: it is to be presumed that the Persians knew the medicinal qualities of their indigenous drugs previous to selling them.

400 Ctesias of Cnidus, physician for seventeen years to Artaxerxes Mnemon.

A. D.

272 Dschondisabar (Jondisabur of Nisabur) founded. Greek physicians sent by the Emperor Aurelian.

ALMANZOR, the second Caliph of the house of Abbas, a great encourager of the sciences and medicine.

1055 ABU MANSUR MOWAFIK. Liber fundam. Pharmacol. Lat. trans. by R. Seligmann Vindob. 1830—33.

1392 *Ikhtariat Buddee.* Said by Toohftul Moomineen to be the first work, in the order of time, written on medicines, in the Persian language (Royle, p. 27.)

A. D. PERSIAN MEDICINE—*Continued.*

Pharmacopœa Persica, ex idiomate Persico in Latinum conversa. Paris, 1681.

1528 Shirazy (Nouraddeen Mohammed Abdullah). Ulfaz Udwiyeh, or the Mat. Med. in the Arab. Pers. and Hindevy lang. Eng. transl. by F. Gladwin. Calc. 1793.

1669 Meer Mohummud Moomin. Toohft al Moomineen. The most esteemed of the Persian works. The author states that he is the third, in the order of time, who had written on medicines in the Persian languages. (Royle, p. 26.)

1769 *Mukhzun al Udwick* or *Storehouse of Medicines.* Hoogly. 1824. 2 vols. small fol. (Royle, p. 26.)

See also *Gladwin's* "Compendious Vocabulary, English and Persian, including all the Simples in the Materia Medica employed in Modern Practice," 4to. Malda, 1780; Dr. *R. Seligmann*, "Ueber drey hochtseltene Persiche Handschriften. Ein beytrag zur Literatur der Orientalischen Arzneymittellehre," Wien, 1833; *Royle*, op. supra cit. p. 26, and the list of Persian and Arabic Medical and Scientific Books in *Ainslie's* "Mat. Ind." vol. ii. p. 504.

Dr. Royle has suggested to me the propriety of making a distinction between the Materia Medica of the Persians previous and subsequent to that of the Arabs. But convenience and limited space have prevented me from adopting his suggestion.

ARABIANS.

A. D.

767 Bagdad built. The sciences munificently patronized by the Caliphs. A college formed. Hospitals and dispensaries established.

Schools of Damascus and Cordova.

The doctrines of Hippocrates and Galen taught. Mild laxatives (as cassia, tamarinds, manna, rhubarb, and senna) substituted for drastics. Chemical medicines mentioned. Various pharmaceutical preparations (syrups, juleps, conserves, loochs, robs, and distilled waters and oils) contrived. Dispensatories published.

622 Aaron or Ahron (The Pandects).

Died 872 Ebn-Sahel (Sabor) Krabadin, the first Dispensatory.

Died 880 Alkhende (J.) Wrote on the proportions and doses of medicines.

A. D. ARABIAN MEDICINE—*Continued.*

Born 702 GEBER, The Patriarch of Chemistry. Mentions nitric acid, vinegar, aqua regia, chloride of sodium, carbonates of potash and soda, caustic soda, nitrate of potash, sal ammoniac, alum, sulphate of iron, borax, nitrate of silver, bichloride and binoxide of mercury, cinnabar, litharge, and red lead. May have obtained his knowledge from the Hindoos. (See Hindoo Medicine.)

Died 846 / 865 / 900 MESUE (John). De simplicibus et de electuariis.

742 / 1066 SERAPION (John, jun.) De simplicibus medicinis.

ABN GUEFITH or ABHEN GNEFITH. De simplic. medicam. virtut.

852 to 932 RHAZES. De simplicibus medicinis. One of the most celebrated Arabians. Employed mercurial ointment.

978 to 1035 EBNSINA or AVICENNA, "The Prince of Physicians." His Canon Medicinæ is a compilation from Galen, Aetius, and Rhazes; for five centuries it was regarded as an infallible guide. Mentions croton tiglium, camphor, nux vomica, mace, nutmegs, &c.

680 HALY ABBAS. (Amalek or the Royal book).

1179? AVENZOAR at Seville in Andalusia.

Died 1198 / or 1199 / 1206 AVERRHOES, a native of Cordova.

12 or 13th century / 1085 ALBUCASIS or ALSAHARAVIUS. Mentions the preparation of rose water.

Died 1248 ABN BITAR or IBN-BEITAR. His works have not been printed, but they are constantly quoted by Persian authors on Materia Medica. (Royle, Essay, p. 28.) He has a most extensive influence in the East.

Consult,—*Amoreux (P. J.)*, "Essai Historique et Litter. sur la Medec. des Arabes." Montp. 1805, 8vo. *Reiske (J. J.)*, "Opusc. Med. ex. Monum. Arabum et Ebræorum." Halæ, 1776, 8vo.

In the "Pharmaceutisches Central-Blatt f. 1839," p. 313, is a notice, by Dr. A. Buchner, of a collection of Arabian medicines made by Dr. Schubert, in Arabia.

EARLY CHRISTIAN WRITERS ON MEDICINE.

A. D.

(Dark Ages.)

Medicine practiced by Monks. Magic and Astrology employed in medicine. The period of superstition and alchemy. The grossest impositions practised.

The Neapolitan Schools of Monte-Cassino and Salerno founded by Benedictine Monks.

Died 1107 CONSTANTINE the African. Wrote on diet, and simple and eye medicines.

1100 JOHN OF MILAN. The supposed author of the Regimen Sanitatis Salernitanum, a collection of dietetical precepts, in rhyming Latin verse, addressed, by the Medical School at Salerno, to Robert, son of William the Conqueror. Above 160 editions of this work have been published—(see Sir Alexander Croke's ed., Oxford, 1830, 8vo.

1110 NICHOLAS surnamed PRÆPOSITUS. Dispensatorium ad aromatarius; the first European pharmacopœia.

1150 MATTHEW PLATERIUS. 1169 ÆGIDIUS OF CORBEIL.

1180 HILDEGARD, Abbess of Bingen. Born 1098. Wrote on Medicines. Mentions Christiana (supposed to be Helleborus niger.)

1259 GILBERT, an Englishman. Prepared acetate of ammonia and oil of tartar *per deliquium*. Extinguished mercury by saliva.

1193–1282 ALBERTUS MAGNUS. An alchemist. Mentions zinc.

1260 JOHN OF ST. AMAND. Commented on the works of Nicholas.

1214–1284 ROGER BACON. The most Philosophical of the Alchemists.

1240–1313 ARNOLD OF VILLA NOVA. Wrote a commentary on the Regimen Salernitana. Prepared the oils of turpentine and rosemary.

1235–1315 RAYMOND LULLY. Prepared the oil of rosemary, acetate of lead, ammonio-chloride of mercury, nitric oxide of mercury, and spirit of wine.

1295 SIMON DE CORDO. 1317. MATTHEW SYLVATICUS. 1320. (death) PETER DE APONO. 1328. FRANCIS OF PIEDMONT. 1343. DONDIS, father and son.

Died 1320 PLATERIUS (John). Antidotarium Nicolai cum expositione.

1343 ST. ARDOUIN. Red oxide of mercury.

Born 1394 BASIL VALENTINE. Prepared chemical medicines. Introduced antimonials *(currus triumphalis antimonii)*. Was acquainted with the double chloride of iron and ammonia, and the acetates of lead.

1418 VALESCUS DE TARENTA.

1491 *Ortus sanitatis* (first bontanical figures).

EARLY CHRISTIAN WRITERS ON MEDICINE—*Continued.*

A. D.

1492 Columbus discovers America. Tobacco and its use for smoking first known.

1497 Mercury employed externally in syphilis.

1508 Guiacum introduced into Europe by the Spaniards.

1493–1541 Paracelsus. A vain, ignorant, arrogant, drunken quack, fanatic, and impostor. He burnt publicly the works of Galen and Avicenna, declaring that his shoe-strings possessed more knowledge than those two celebrated physicians, and asserted that he possessed the elixir of life! He was a cabalist, astrologer, and believer in the doctrine of signatures. He conferred several important benefits on medicine: he overturned Galenism, introduced chemical medicines (employed mercury in syphilis), and substituted tinctures, essences, and extracts, for various disgusting preparations. (A more favorable opinion of the character of Paracelsus is entertained by some writers.)

1505 Sarsaparilla first appeared in Europe.

1532–1542 Early *botanists* in whose works several medicinal plants are distinctly referred to, in some cases, for the first time. 1530. Brunfelsius; Cardamine pratensis; Scrophularia nodosa. 1532. Tragus; Foxglove (Campanula sylvestris); Belladonna (Solanum hortense nigrum), Dulcamara. 1542. Fuchsius; Stramonium; Digitalis.

GREAT BRITAIN.

A. D.

1579 Winter's Bark brought to Europe.

1633 Serpentary root noticed by Thomas Johnson.

1674 Willis (Dr. Thos.) Pharmaceutice Rationalis. 8vo.

1675 Sulphate of Magnesia obtained from the Epsom Waters by Dr. Grew.

1687 Floyer (Sir J. M. D.) Φαρμακο-Βασανος: or the Touchstone of Medicines. 2 vols. 8vo.

1691 Bate (Dr. G.) Pharmacopœia Bateana, by Fuller. 12mo.

1693 Dale (Dr. S.) Pharmacologia, *seu* Manuductio ad Mat. Med. 8vo. 1693.—3tia. ed. 4to. 1737.

1697 Sulphuric acid made from sulphur.

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A. D. 1. Denmark.

1640 Pauli (Simon) Quadripartitum botanicum de simplicium medicamentorum facultatibus. Rostochii 4to. Argent. 1667. 1668. 1675. 1708.

1658 Bartholinus (C. Th.) Dispensatorium Hafniense. Hafn. 4to.

1772–1840 Pharmacopœa Danica. Hafn. 1772. 1786. 1805. 1840.

1788 Bang (Fr. L.) Pharmacopœa in usum Nosocomii Fridericani. Hafn. 12mo.

1799 Mangor (C. E.) Pharmacopœa Pauperum Hafn. 4to.

1800 Mangor (C. E.) Armenapothek. Hafn.

1804 Tychsen (Nicolai). Theoretisk og praktisk Anviisning til Apothekerkuntesn. Udg. ved J. F. Bergsoe. Kbhn. 1 & 2 D. 8vo.

1809–10 Mynster (O. H.) Pharmacologie. Kbhn. 2 D. 8vo.

1810–12 Wendt (J. C. W.) Anviising til at samle, torre og conservere medicinske Planter og Plantedele. Kbhn. 8vo.

1811 Wendt (J. C. W.) Anviising til Recepteerkunsten. Kbhn, 8vo.

1813 Pharmacopœa militaris. Kbhn, 12mo.

1828 Pharmacop. in praxi publ. a med. Dan. sequenda. Hafn.

1834–5 Djorup (M.) Haandbog i Pharmacologien. Kbhn. 8vo. 2 D. 2 Udg. 1837–8.

1838 Otto (Carl.) Haandbog i Toxikologien. Kbhn. 8vo.

Many articles on Pharmacology will be found in the following Danish medical journals :

1. "Bibliothek for Læger." 1809–1839. Kbhn. 30 vols. 8vo.
2. "Hygæa." Udvigel vel Otto. 1826–7.
3. "Medicinsk-chirurgiske Tidskrift."
4. "Ugeskrift for Læger." 1839.

A. D. DENMARK—*Continued.*

For further information respecting Danish and Norwegian works on pharmacology consult: *Winther* (*M.*) "Bibliotheca Danorum Medica Hafniæ." 1832.

NORWAY.

The Danish and Norwegian literature was common to to both countries till their political separation in 1814, when Norway was united with Sweden. The language used in Norway in writing, and by all educated persons in speaking, is identical with the Danish. Hence, then, every medical work published in Denmark till 1814 may be considered as also belonging to Norwegian literature. Since that year no work on pharmacology has been published in Norway. The King has, however, appointed a committee to prepare a new pharmacopœia for that country. The Pharmacopœa Danica has hitherto been used there. Several articles on pharmacology have appeared in the following Norwegian periodical:—Eyr, et medicinsk Tidskrift. 11 vols. Commenced in 1826, and continued by Dr. Holst till 1837.

A. D. 3. SWEDEN.

1686 Pharmacopœa Holmiensis. Holmiæ, 4to.

1705—1817 Pharmacopœa Suecica. Holm. 1705. 1775. Alt. 1776. Holm. 1779. 1817. 4to. and 8vo.

1749 LINNE (C. A.) Materia Medica. Stockh. 8vo. ed. Schreb. 1772. 1782. 1787.

1735—1784 BERGMANN (T.) A distinguished chemist.

1769 RETZIUS (A. J.) Kort begrep af grunderne til Pharmacien. Stockh. 1769, 8vo.

1742—1786 SCHEELE (C. W.) Discovered Tartaric Acid in 1770, Chlorine in 1774, solid Citric Acid in 1781, and hydrous Prussic Acid.

1771 RETZIUS (A. J.) Primae linae Pharmaciae, suecico idiomate editae, jam Latine conversae. Gottingae. 8vo.

1776 BERGIUS (P. J.) Materia Medica e Regne Vegetabili. Ed. 2 t. 8vo. Stockh. 1782.

1789 Pharmacop. milit. nav. et eorum usui accommod., qui impensis publ. curantur. Holm 1789, 8vo.

1825—25 RONANDER (C. W. H.) System e Pharmacologien. Stockh. 1. Deel; 1; 2. Afdeling.

1834 Pharmacopœa in usum Nosoc. milit. Holm. 1834, 12mo. BERZELIUS.

A. D. SWEDEN—*Continued.*

Besides several pharmacological papers in the following Swedish journals:
"Svenska Lakare—Sallskapets Handlingar." Stockh. 1813—1833. 8vo. "Nija Handlingar." 1 Bd. 1837.
Svenska Lakare—Sallskapets Arsberattesser." Stockh. 1813—1838. 8vo. 20 vols.
"Tidskrift for Lakare och Pharmaceuter." Stockh. 1832—1838 8vo. 6 vols.
"Hygaea Medicinisk og Pharmaceutisk Monadskrift." Commenced April, 1839.

A. D. RUSSIA.

1534 Herbal in the Russian language with figures.
1588 Treatise on medicines in ditto.
1665 Apothecaries Garden at Moscow.
1778 Pharm. Rossica. Petropol. 4to.—1782. 8vo.
Pharm. castrens. Rossica. Petro pol. 4to.
1784 Bacherach (A.) Pharm. Rossica navalis. Petrop. 8vo.
1801 Grindel (D. H.) Grundriss d. Pharm. Riga.
1803—8 ———— Russiches Jahrbuch d. Pharm. Riga.
1806 Giese (F.) Lehrb. d. Pharm. Riga.
1807 Pharmacopeia in usum Nosocomii Paup. Petro Pol. 8vo.
1809—10 Giese (F.) and Grindel. (D. H.) Russ. Jahrb. d. Chem. und Pharm. 2 Bde. Riga. 1809.—Dorpat. 1810. 8vo.
1819 Grindel (D. H.) Med. pharm. Blatter. 8 Hefte. Riga. 1819 and 1820. 8vo.
1829 Horainow (P.) Systema Pharmacodynamicum. 8vo. Petrop.
1840 Wylie (Sir James.) Pharmacopoeia castrensis Ruthenica. Ed. 4to, Petropoli.

Further information on Russian medicine may be obtained in the following works: *Grahl* (J. F.) "Dies. Med. sistem quaedem medicam. Rossor. domest." Jenae. 1790. *Richter* (*W. M.*) "Geschichte d. Med. in Russl." Bd. 3. 1813—1817. Moskwa.

A. D. FINLAND.

1797 Bjornlund (B.) Mat. Med. Select. 8vo. Abo.
1819 Pharmacoea Fennica. Aboae.

A. D. ITALY.

1500—55 Brassavola (A. M.) Examen omnium simplicium.

A. D. ITALY—*Continued.*

1501—77 Matthiolus (P. A.) Commentarii in libros sex Discoridis.
1502—53 Serveto (M.)
1502 Valerian recommended in epilepsy by Columna.
1553–1616 Alpinus (Prosper.) On the medicine and plants of the Egyptians
1647 Sala (Ang.)
1707 Sugar of milk made known by Testi. (Beckmann, Hist. and Invent. iv. 602.)
1734 Mazini (J. B.) Mechanica Medicamentorum.
1791—5 Carminati (B.) Hygiene, Terapeutice et Materia Medica. 4 vols. 8vo. Papia.
1803 Brugnatelli (F.) Farmacopea ad Uso degli Speziali, e Medici moderni d'Italia. 8vo. Venez.—A French translation by Planche in 1811.
1808 Doctrine of contra-stimulus by Rasori and Borda.
1821 Targioni. Di Materia Medica Tozzeti Lezioni di Firenze. 8vo.
1824 Alberti (A.) Flora Medica. 6 vol. 8vo. Milan.
1824 Ambrosiani (P.) Manuale por Droghiere. Pavia, 2 vols. 8vo.
1825 Trattato delle Droghe semplici. 6 vols. Milan.
1825 Stellati (V.) Elementi di Mat. Med. 2 vols. 8vo. Napoli.
1826—7 Taddei. Farmocopea generale. 4 vols. 8vo. Firenze.
1827 Dizionnario de Medicamenti. Modena.
1827 Dizionnario farmaceutico galeno-chemico. Neapl.
1827 Barzelotti (I.) Epitome delle instruzioni theoretico-pratiche. 8vo. Pisa.
1828 Bruschi (D.) Institutioni di Materia Medica.
1830 Argenziano (P.) Elementi di Materia Medica. Napoli.
1833 Vigna (C.) Manuale di Mat. Med.
1833 Giacomini (G.) Trattato filosofico sperimentale dei Soccorosi Terapeutici. 4 vols. 8vo. Padova.
1833 Folchi (I.) Materiae Medicae compend. 2 vols. 8vo. Ad. Thermas Agrippae.
1837—40 Taddei (Dr. G.) Elementi di Farmacologia sulle bali deila chimca. Ediz. 2nda. 4 vols. 8vo. Firenze.

A. D. SPAIN.

1569 Monardez (Nic.) Historia medicinal de las cosas que se traen de nuestras Indias Occidentales que sirven en medicina. Sevil. 4to. Lat. transl. by Clusius 1574. Antw. Engl. Transl. by Frampton, Lond. 1580, Monardez mentions Cebadilla, Sarsaparilla (carcaparilla,) Sassafras, Balsam of Peru, Balsam of Tolu. Logwood, &c.

A. D. SPAIN—*Continued.*

1578 Acosta (Chr.) Drogas de las Indias. 4to. Burgos.

1615 Hernandez (Fr.) Nova plant. anim. min. Mexican. historia. Rom. 1651. Fol.—(A Spanish edit. by F. Ximenes in 1615.)

1632 Cinchona imported into Spain.

1729 Pharm. Madritensis, 4to. 1794. 8vo. 1798. Lips. 1822.

Ruiz (Don Hipp.) and Pavon (Don Jose.) Flora Peruviana. Cinchona, Krameria.

1786 Tavares (Fr.) De Pharmocoligia libellus. Coimbra. 8vo.

1787 Roderiguez y Salv. Soliva (J.) Des efficaces virtudes nuevamente descubiertas o comprob, en varias plantas. Madrid.

1789 Rance (J.) Tratado theor. prat. de Mat. Med. Barcelona. 1789.

1798 Hernandez de Gregorio (M.) Diccionario dem. de Farmacia. Madrid. 4to.

1800 Cyrbonel (F.) Pharmaciae elementa, chem. recent. fundament. innixa. Barcinon.—French transl. by J. H. Cloquet, from the 3d ed. Paris, 1821.

1841 Iimenez (Dr. M.) A work on pharmacy in 2 vols.; but I have not seen it.

A. D. PORTUGAL.

153€ Garcias ab Orta, Coloquios dos simples y droguas he cousas medicinais da India. Goa. 4to.—Lat. trans. by Clusius, 1567. Antw. 8vo.

1785 Henriquez de Paiva (J. J.) Pharm. Lisbonn. Lisb. 8vo.

1794 Pharmacopeia Geral para o Reino e Dominios de Portugal. 8vo. 2 vols. Lisbon.

1797 Pharmacopeia do pinto. Coimbra.

1800 Brotero described the Ipecacuanha plant.

1810 Gomes obtained crystallized Cinchonia.

1836 Albano (Dr) O Codigo Pharmoceutica on Tratado do Pharmacia. Coimbra.

A pharmaceutical journal is published at Lisbon, under the title of of "Jornal da Sociedade Pharmaceutica Lusitana." Of this I have seen one number only, viz. "Tomo II. 60 Anno Nnmero X." Lisboa, 1839. It is published monthly.

A. D. UNITED STATES OF AMERICA.

1768 Chair of Materia Medica and Botany in the University of Pennsylvania established. (Dr. Wood's Address, 1836.)

A. D. UNITED STATES OF AMERICA.—*Continued.*

1773	Lobelia discovered by the noted S. Thomson.
1782	Botany separated from Materia Medica in the University of Pennsylvania.
1801	Barton (Dr. B. S.) Collections for an Essay towards a Materia Medica of the United States, 3d ed. 1810.
1803	Chimaphila introduced by Dr. Mitchell.
1805	The virtues of Capsicum fully discovered by Dr. S. Thomson
1806	Coxe (Dr. J. R.) The American Dispensatory. 8vo. 8th ed. 1830.
1807	Ergot of Rye introduced by Dr. Stearns.
1807	Lobelia Inflata introduced to popular notice by Rev. Dr. Cutler.
1810	Thacher (Dr. I.) American New Dispensatory. 8vo. 2d ed 1813.
1813	The first effort at a new Vegetable Materia Medica, consisting of a collection of sixty articles, by Dr. S. Thomson.
1817	Chapman (Dr. N.) Elements of Therapeutics and Materia Medica. 2 vols. 8vo. 4th ed. 1825. Philada.
1817–18	Barton (Dr. W. P. C.) Vegetable Materia Medica of the United States. 2 vols. 4to. fig. 2d. ed. 1825. Philadel.
1817–20	Bigelow (Dr. J.) American Medical Botany. 3 vols. 8vo. Boston.
1818	Eberle (Dr. J.) Treatise on Materia Medica and Therapeutics, 8vo. 5th ed. 1841.
18:2	Bigelow (Dr J.) A Treatise on the Materia Medica intended as a sequel to the Pharmacopœia of the United States. Boston.
1825	Ellis (Dr. B.) Medical Formulary. 8vo. Philadelphia 6th ed. 1843, edited by S. G. Morton.
1827	Eclectic and General Dispensatory. 8vo. Philadelphia.
1828–30	Rafinesque (C. S.) Medical Botany of the United States of North America. 2 vols, 12mo. Phila.
1828	Barton (Dr. W. P. C.) Outlines of Lectures on Materia Medica and Botany delivered in Jefferson Medical College, 2 vols, 12mo. Phila.
1828	Togno & Durand. Manual of Materia Medica, by Edwards & Vavasseur. Translated, 8vo, Phila.
1830	Jalap plant. Ipomoea purga (Jalapa) described by Mr. Nuttall.
1830	Collection of Vegetable Materia Medica, with illustrations, by Dr. W. Beach.
1830–34	Journal of the Philadelphia College of Pharmacy, Ed. by Dr. B. Ellis, 1830 to 1834. 4 vols. 8vo.

A. D. UNITED STATES OF AMERICA.—*Continued.*

1831 The Pharmacopoeia of the United States of America. By authority of the National Medical Convention, held at Washington, A. D. 1830. 1st ed. 1820, Philadelphia.

1831 CARPENTER (G. W.) Essays on some of the most important Articles of the Materia Medica, 12 mo. Phila.

1831 WOOD (Dr. G B.) and BACHE (Dr. F.) The Dispensatory of the United States. 8vo. 4th ed. 1839, Phil.

1831 New Vegetable Materia Medica, enlarged to 156 articles, by Dr. H. Howard.

1835 American Journal of Pharmacy, a continuation of preceding. Edited by Dr. R. E. Griffith to 1837, and by Drs. Carson and Bridges to present time. 10 vols. 8vo.

1836 DUNGLISON (Dr. R.) General Therapeutics, or principles of Medical Practice, with Tables of the Chief Remedial Agents and their Preparations. 8vo.

1839 DUNGLISON (Dr. R.) New Remedies: the Method of preparing and administering them, their effects on the healthy and diseased economy. 8vo. Philadelphia, 4th ed. 1843.

1839 Chair of Materia Medica established by Dr. A Curtis, in the first Botanico-Medical College of the United States.

1841 Chair of Materia Medica established in the Botanico-Medical College of Forsyth Georgia.

1841 BELL. (Dr. John.) A Practical Dictionary of Materia Medica, including the composition, preparation, and uses of Medicines, and a large number of extemporaneous Formulae, together with important Toxicological Observations. On the basis of Brandes' Dictionary of Materia Medica and Practical Pharmacy. 8vo. Phila.

1841 PAINE (Dr. Martin. A Therapeutical Arrangement of the Materia Medica; or the Materia Medica arranged upon physiological principles, and in the order of general practical value that remedial agents hold under their several denominations, and in conformity with the physiological doctrines set forth in Medical and Physiological Commentaries. 12mo. New York.

1842 Pharmacopoeia of the United States, by authority of the the National Convention held at at Washington, 1840, 8vo. Philadelphia

1843 DUNGLISON (Dr. R.) General Therapeutics and Materia Medica. 2 vols. 8vo. Philadelphia.

A. D. UNITED STATES OF AMERICA.—*Continued.*

1845 Chair of Materia Medica established in the E. M. Institute, Cincinnati Ohio.

1845–6 Chairs of Materia Medica established, successively, in the Reformed Medical Colleges of Memphis, Tenn., Worcester, Mass, and Petersburg, Va.

1846 HARRISON (Dr. J. P.) Materia Medica, 2 vols, 8vo. Cin.

1847 GRIFFITH (Dr. R. E) Medical Botony, 8vo. Philada.

1849 KOST (Dr. J.) Elements of Materia Medica and Therapeutics, adapted to the new Physilogical system of Medicine, 8vo, Cincinnati.

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ELEMENTS

OF

MATERIA MEDICA

AND

THERAPEUTICS.

Materia Medica (*Medical Materials*) is a term used to designate the material substances employed in the treatment of disease, and it contributes happily to the formation of a title for a treatise upon them.

When the entire profession entertained the same medical views and all the doctrines taught in the science were comprised in a single system, then this deffinition of *Materia Medica* was sufficient, but now something more special is required. In endeavoring to avoid the errors of the old system, made so palpable in the present age of improvement, it is not strange that many, or even *opposite* theories should be adopted by different portions of the profession: thus the Homœopathic, Hydropathic Antipathic and new Physiological systems have gained their origin and have each a peculiar materia medica. But it is unnecessary for the purpose of this treatise, to investigate the remedies of any other system than the last named. This being considered the only true one, corresponding, as its name imports, in every part to the laws of nature. In this all substances intrinsically poisonous, whether *mineral vegetable or animal* are rejected. Organic agents are chiefly esteemed, because their action is most congenial to the animal economy, owing to the peculiar modifica-

tion of the affinities and the specific arrangement of the elements of organized substances.

THERAPEUTICS, (from θεραπευω, *to take care of* the sick,) in its most extended sense, would comprise the application of all means of cure, whether *somatical* or *psychical*; but the refinements of learning have restricted its latitude considerably, and when the term is associated with *materia medica* it is considered to contemplate only the application or *modus operandi* of *medicines* proper.

Thus *materia medica* furnishes the *implements* while *therapeutics* teaches their *use* in the practical operations of the profession.

A proper classification of the materia medica offers numerous facilities to the physician, but more especially to the young practitioner or student of medicine, and hence much labor has been bestowed upon this point. Numerous plans have been proposed and adopted by the schools, and the authors on materia medica, and still no classification has yet been made that has not met with many objections. When the idea of classification is presented, the mind is at once struck with the propriety of an arrangement contemplating the therpeutic properties of the different articles. Most authors however have adopted other plans, and have classified them according to their natural history or physical properties, comprising their botanical, zoological, and chemical characters, while others have simply adopted an alphabetical arrangement. All these classifications have their advantages and disadvantages. The first would seem to correspond more with the study of the natural sciences: the latter or alphabetical arrangement is most convenient for the apothecary or practical pharmaceutist. But the student of medicine, and the practicing physician are most interested in this subject, and have the best right to expect an accommodation in the premises; with them a physiological arrangement is of paramount importance. The author has therefore adopted this with the conviction that he could on no other plan do so much for this important department of medical science.

DIVISION I.

PHYSO-DYNAMIC REMEDIES.

This division of the Materia Medica is designed to embrace those remedies commonly called *physiological*, and which, in producing their effects on the system, do not depend on chemical or mechanical laws, or any other abstract physical powers. *Physiological action*, when spoken of in reference to remedies, is now, with doubtful propriety, understood in a more special sense, meaning the action of remedies on the system while in health alone.

The term physo-dynamic (from φνόις, 'nature,' and δνναμις, 'force'), literally means *natural force*, or *natural vital force;* hence physo-dynamic remedies are such as are dependent for their action upon the natural vital force of the system, and not upon chemical or mechanical laws. This division, therefore, embraces by far the larger portion of our remedies.

The articles embraced in this grand division, very naturally divide themselves into two sub-divisions, viz: *Evacuents* and *non-evacuents*.

Sub-Division.—First.

EVACUENTS.

The remedial action of *evacuents* involve the removal of various offensive agents, or abnormal accumulations in the system. They are among the most important agents we possess.

Among the evacuents are found the *Emetics*, *Cathartics*, *Diaphoretics*, *Diuretics*, *Expectorants*, *Emmenagogues*, *Anthelmintics*, *Sialagogues*, and *Errhines*. The two latter classes may, however, be very justly dispensed with, as the objects

to be accomplished by them may be very conveniently effected by some of the remedies of other classes, simply by means of their topical application. The more prominent or pungent stimulants, as *capsicum* and *zingiber*, as well as lobelia, will act promptly, both as errhines and sialagogues.

Class I.—EMETICS.

Emetics (from εμεω, I vomit), are substances which are used for the purpose of provoking vomiting, or evacuating the stomach upward. They are now defined to be such agents only as are capable of producing this effect, independently of any unpleasant taste or smell, or any particular quantity taken.

Physiology.—We perceive in the animal, as well as in the vegetable, that there are many organs and tissues which possess very peculiar endowments, that, in the higher order of animals, involve the singular means by which the intellectual faculties hold correspondence with external objects, and which evince, in all living bodies, a conservative power, which, under ordinary circumstances, maintains the normal standard of health. The manifestations of this power vary with the different tissues and organs of the body. In some instances, very obvious mechanical and chemical phenomena are developed; others involve various obscure vital actions. These different processes comprehend all the different natural indications of the restorative processes. Subservient to these purposes, we find the nerves of the various important organs to be endowed with peculiar sensibilities. Thus, when an irritating substance happens to get into the eye, the sensation produced, gives rise to a flow of tears; and in this way, the foreign substance is washed away. When a hard substance is thrust into the flesh, the part will take on inflammation—pus is secreted, and the obtruding substance is thus disengaged and removed. The same law obtains in regard to the stomach and other cavated organs. Irritating ingesta, or the presence of any substance or cause that may

excite the peculiar sensation of which this organ is susceptible, may give rise to emesis.

It may, however, be objected, that there are *many* substances which, on finding their way into the stomach, will produce unpleasant sensations that arise from an irritation, and yet, they do not excite emesis. But this position assumes that there can be no quality of impression; whereas we find that other organs are susceptible of an almost infinite variety of impressions, from the most pleasurable to the most painful. If it be feared that there is not a sufficient distinction maintained here between *irritation* and mere *sensation*, it may be remarked, that in reality these *two principles* should be regarded with discrimination only for *convenience* sake, as they are, emphatically, only different modifications of the same physiological endowment. The practice of recognizing irritation as essentially a pathological phenomenon, is very erroneous. We cannot conceive of a single reparatory process within the dominions of the *vis medicatrix natura*, that does not embrace irritation as a condition necessary to the reparation. Inflammation cannot exist without; nor yet is it an unnecessary consequence here; but, on the other hand, an indispensable attribute; and it may be added, that no wound or physical injury is ever healed without the phenomena involved in inflammation, however they may be developed.

The obvious fact is, therefore, here assumed, that the stomach, like other organs, is susceptible of certain specific impressions, that are dependent on the peculiar endowments of some of the nerves distributed upon it. Whenever, therefore, any substance or cause capable of inducing these impressions, is brought to act upon it, the legitimate effects, *nausea* and *vomiting*, must necessarily ensue.

This endowment of the nerves of the stomach is not in any respect more singular than those which characterize the gustatory, auditory, optic, and olfactory nerves, as well as the nerves of touch.

It is in vain to enquire after the *essence* of this peculiar faculty of the nerves. Like that of *electricity*, *magnetism*, and all the *physical elements*, it may ever remain among the unfathomable mysteries of nature, which are now, perhaps, known

alone to Deity, but may serve as future objects of investigation and pleasing contemplation, to the inhabitants of more exalted spheres. We must now be satisfied with a knowledge of their existence, an acquaintance with their effects, and the various purposes of their institution.

Emesis must, hence, be regarded, not only as a physiological function, but as involving one of the most important general indications of cure.

It is evident, however, that this, like any other healthy function of the system, may, under certain circumstances, assume all the characteristics of a pathological action, instead of a physiological. But the mere *susceptibility* of a function to become deranged, is no argument that it is essentially a pathological action.

Modus Operandi.—Different views have been entertained as to what part of the act of vomiting is dependent exclusively upon the stomach. Chirac, Majendie, and others, have alleged that they have ascertained, by numerous experiments, that the stomach is quiescent in the act of vomiting, and that being compressed between the diaphragm and abdominal muscles, its contents are thus ejected.

Majendie supposed, moreover, that the brain was the chief organ concerned in the process, and that the whole matter depended upon the direct agency of this organ over the abdominal muscles.

Haygarth, on the other hand, formerly supposed, that vomiting was effected, solely, by the contraction of the fibres of the stomach.

Physiologists, however, are now pretty generally satisfied, that all the organs above named are concerned in the act of vomiting. These all being supplied with the same nerves (*par vagum*, &c.), may act in concert with the same facility that either of them may act alone.

Emesis seems to be dependent upon a specific irritation of the gastric nerves, either direct, as in the case of certain ingesta, or it is transmitted by a reflex action from the sensorium commune, as in cases of vomiting from remote irritations, such as the irritation of the fauces mechanically produced, when the impression may be transmitted through the

naso-palatine branch of the fifth pair; or the irritation produced by the passage of calculi through the ureters or biliary ducts, in which cases, the impression may be conveyed by the connections of the pneumogastric nerve. In the same way the vomiting attending utero-gestation, or irritations in the intestines, may be transmitted through the spinal nerves, and thus reach the sensorium. It is supposed, that in cases dependent on cephalic irritation, the communication is made to the diaphragm and abdominal muscles, partly through the vagus nerve, and partly through the splanchnic and sympathetic nerves, while the spinal cord and spinal nerves are simultaneously employed in conducting the impression so as to produce the mechanical actions of the process. The vomiting produced by sea-sickness, or other motions of the body, as well as that arising from disgusting smells, or sights, or even the thought of some offensive object, is evidence in favor of these views.

Application.—During the last two centuries, emetics did not occupy a very prominent place in the Materia Medica. They were regarded rather as having a mere incidental application, as in cases of noxious accumulations in the stomach. It is not a little strange that their many well marked, remote influences, and constitutional effects, should have eluded the observations of the profession for so long a time. But it seems that Hippocrates, and many other ancient physicians, held emetics in high esteem. This renowned father of physic, recommended them to be used even in time of health, with a view to prevent disease.

Emetics evidently exert a very extensive influence over all the secretions and excretions of the body. They also tend, manifestly, to equalize the circulation, chiefly in virtue of the nausea attending their operation. The nervous system is also sanatively influenced by the operation of emetics. Again, we find that advantage is often derived from their mere mechanical effects: visceral obstructions are thus frequently removed, especially those of the liver and lungs.

The influence of emetics on neighboring viscera is well known. The appearance of bile among the ejecta is no uncommon circumstance; this bile, however, may, in some

instances, have been thrown into the stomach by a retroversive action of the duodenum from other causes. But it is evident that emetics, when pushed, will extend even their mechanical influence much lower than the stomach. It is improper, therefore, to push an emetic with the view of ridding the stomach of bile, seeing that its source is beyond this organ, and that the bile will not cease coming until the vomiting is discontinued.

From the extensive influence that this class of remedies exerts on the animal economy, it may be readily conceived that their remediate application is diversified and important. Indeed, in a great number of cases, emetics are indispensable, while, in many more, it is generally supposed, they are found among the most prominent means of cure.

Whenever a powerful constitutional impression is intended to be made, emetics are certainly the most available: hence, they are so commonly prescribed by Medical Reformers in violent attacks of disease, and in obstinate chronic affections. When all other remedies refuse to effect the object, emetics are resorted to with confidence. They are usually accompanied with a vapor bath or two, and thus constitute the popular "*Course of Medicine*," which, without doubt, admits of successful application, more generally, than any other single process of medication now known to the profession.

It is a matter of the greatest consequence, that the physician should know the relative importance of his remedies: and here it is, that some practitioners are so much more successful than others who use the same medicines. If, for instance, emetics should be regarded as admitting of incidental application only, and should, therefore, never be used except in cases of improper ingesta, &c., it cannot be presumed that the same success will follow, that attends the proper and thorough use of these potent agents.

In fevers and visceral inflammations, emetics seem to evince their different therapeutic effects in the most striking manner. By their use, the stomach is not only cleansed from the morbific matters, so commonly collected in this organ, in febrile diseases, but the nausea common to their operation, diminishes arterial excitement in a remarkable manner, while the

free perspiration which usually ensues, not only relieves the sanguiferous system from irritating and combustible matter, but moderates the temperature of the system by the phenomenon of evaporation.

In intermittents, vomits, with many judicious practitioners, are a very common remedy. They often put a stop to the disease without the employment of any other medicine, especially when exhibited at the commencement of a paroxysm. Independent of their constitutional impression, which, alone, is of no small advantage in breaking up the chain of morbid associations, they certainly make the stomach much more susceptible of the impression of other remedies, and thus, of course, give them a vast deal better chance of displaying their remedial influences.

Professor Eberle speaks very favorably of emetics in typhus fever; and to their utility in this affection, the author is very ready to offer his own evidence. They seem to do the work up with a promptness characteristic only of emetics. Their power to break up that tendency of the fluids to putrefaction, is much dependent on their activity in promoting all the several excretions of the body.

"In typhus pneumonia," says the same writer, "I have derived much advantage from emetics. They appeared to be particularly serviceable where much distress and pain in the thorax, with signs of internal congestion, were present. In such cases they promoted expectoration, and tended to re-establish the equilibrium of the circulation. They appeared, moreover, to render the system more susceptible of the operation of stimulants."

Professor Potter, who has fully realized the superiority of emetics, as a means of equalizing the circulation, over the old plan of bleeding, &c., remarks: "In typhoid and typhus pneumonia, that occasioned such lamentable mortality of late years, throughout the United States, emetics, judiciously employed, were more beneficial than any other remedy. It was, indeed, a novel spectacle to those who were accustomed to unsheath the lancet in almost every thoracic affection, to behold a pneumonic fever, perhaps a hœmoptoe, removed by the incantation of a single emetic."

Eberle speaks favorably of emetics in the exanthemata, especially in the early stage of scarlatina, both in its simple and malignant forms. He endorses the sentiments of Armstrong, who states that, when aided by the warm bath, they tend to "free the system from the pressure of the plethora of the internal blood-vessels, so frequently observed in the commencement of this disease, and by thus equalizing the whole circulation, to render the future case most commonly mild and manageable."*

In erysipelas, especially the bilious type (Desault Renauldin), in which there is a yellow fir on the tongue, nausea, and a bitter taste in the mouth, emetics are of great advantage.

In the first stages of measles and small-pox, attended with strong internal congestions, the operation of an emetic often proves decidedly beneficial. (Eberle.) "They are particularly useful in cases where, from great internal venous congestions, the appearance of the rash is retarded. In cases of this kind, that is, where the temperature of the skin is moderate, the pulse weak, and the animal functions depressed, about the period when the eruption of the exanthema may be expected, the operation of an emetic will often speedily develop the arterial excitement, and bring the measly rash. (Ib. Therapeu. p. 32.)

In the new practice, this class of remedies has been much more extensively tested in the exanthema, and their reputation, especially that of lobelia, has been fully established. In rubeola and scarlatina, they are best accompanied with the vapor bath, when they will be almost certain to bring out the eruption.

In no cases do we find emetics more useful than in pectoral affections. In asthma, especially, they seem to be peculiarly calculated to afford the most prompt relief. The lobelia emetic is, however, much the best in this variety of disease. The constriction in the chest, with the attendant dispnœa, will yield to no other known article of medicine so promptly. In those cases, the medicine should be given in nauseating

*Armstrong on Scarlet Fever, p. 35.

doses first, and afterward in quantities sufficient to provoke emesis, when relief will generally be experienced.

Anginose affections are alike under the control of emetics. Cynanche trachæalis, and C. laryngea, which have carried off so many children, find their cure in the proper use of our emetics. Prof. Eberle, who has not even had much experience with our best articles of this class, remarks as follows: "In the treatment of croup, emetics are of unquestionable advantage. They are, indeed, altogether indispensable in managing this formidable malady, and will often procure effectual relief without any other remedy. In slight attacks, vomits, assisted by the warm pediluvium, and the application of rubefacients to the throat, often suffice to put a speedy termination to the disease."

Vomits are also of great avail in spasmodic complaints. Spasms are incompatible with the nausea and relaxation, caused by emetics. Hence, the most distressing convulsions are at once relieved by their administration.

Emetics promote absorption in a remarkable manner. The principle on which this effect takes place, is explained elsewhere.* This class of remedies is, hence, quite available in dropsies. The author, from his own experience, feels confident in adding his testimony in favor of emetics, in these complaints, having cured some of the most difficult cases, with their occasional use, often after other prominent remedies had failed to afford relief.

For some time after an emetic is given, the stomach usually remains undisturbed. But, in ten, to fifteen or twenty minutes, an uneasy sensation, with nausea supervenes, which continues increasing until vomiting takes place. Then an interval of ease is commonly experienced, for a longer or shorter time, generally for ten or fifteen minutes, when the nausea again sets in, and the vomiting ensues. On taking an ordinary emetic, there are usually about three turns at vomiting. While the nausea only is present, the contenance is pale, the system relaxed, the pulse feeble, quick, and irregular, and there is a sensation of coldness; but during the act of vomiting, the face becomes flushed, the pulse is quickened,

* See article on Cathartics.

but still irregular, and the patient feels warm and often perspires freely. During the intervals at vomiting, and after it is over, the patient feels languid and inclines to sleep; but a reaction soon comes on, when he will feel revived, his pulse is full, his mind free, and his spirits revived; but what is the most remarkable, if the emetic has been a proper or harmless one, the patient will generally feel a pressing sensation of hunger, very soon after he is done vomiting, and will relish a hearty meal. It is best to give him some porridge or soup, in suitable quantities.

There is much difference among individuals, in regard to the facility with which they are made to vomit. This difference also obtains with the same individual, at different times. Certain morbid conditions, also affect the susceptibility of persons to the impression of emetics. In most nervous affections, as mania, melancholiæ, hypochondriasis, and in cases of narcotic poisoning, it is difficult to excite emesis. On the other hand, in cases of fever, the patient is, usually, easily vomited.

Persons are more easily vomited, as they become accustomed to the use of emetics. In this respect, this class of medical agents, differs much from every other kind, as we find that the susceptibility of persons to the impression of medicines, commonly diminishes, as their application is continued.

As the susceptibility of persons, to the impression of these agents, differs so much, it is difficult to regulate the quantity of the dose. It is best, therefore, to divide emetics into under doses, to from two to three portions, giving one of these every ten or fifteen minutes, until the desired effect is produced.

To promote the operation of an emetic, it is common to take freely, of any suitable liquids, as tepid water, medical teas, &c. Astringent and stimulant infusions, are rather the most prompt to excite vomiting. Sometimes vomiting is retarded by an acid condition of the stomach, when an alkali will be found serviceable. A half a drachm of soda or sub. carb. of potash, dissolved in a half pint of warm water, will be found to obviate the acidity, and to excite emesis.

When there is a high fever or much congestion present, emetics should never be given in full doses at the onset, but should be either premised by some sudorifics or relaxants, or the emetic should first be given in very small but frequently repeated doses, so as to prepare the system for the operation. If this precaution is not observed the mechanical force attending the operation may produce unpleasant effects.

Order I.—SPECIFIC EMETICS.

Every observing practitioner has discovered a marked difference in the operation of the different articles of the class of remedies called *emetics*. Some produce their emetic effect specifically; that is, they occasion emesis without being necessarily taken into the stomach. They depend, in producing this operation, upon their absorption into the circulation, and then acting through the nervous system, first upon the brain, and then, by a reflex action, upon the stomach and its associate organs, emesis is occasioned. It is known, that lobelia and ipicacuanha will operate as an emetic, when injected into the bowels, or veins, and that the oleo-resinous extract of the former, or even the watery infusion, or alcoholic tincture of either of these articles, when freely applied to the epigastrium, or the surface generally will excite, vomiting.

There are other medical substances that will excite emesis when taken into the stomach, but will have no such effect when taken into the system in any other way. These have been denominated *topical* emetics and constitute a separate order.

Specific emetics possess a very extensive influence over the general system, and it is this order that is always used when remote effects are designed to be produced. Their operation is attended with much nausea and sickness, as well as relaxation of the general system. Hence, their adaptation to the treatment of febrile and inflammatory affections. But as what is said of the application of *emetics* in the fore-

going article is chiefly applicable to this order, it is unnecessary to enlarge here.

LOBELIA INFLATA.—The Seeds, Leaves and Capsules.

Synonymes.—Lobelia, *L., E., U. S.;* Lobelia Enflee, *Fr.;* Emetic Herb, Indian Tobacco, Bladder-podded Lobelia, Eye-bright, &c., *Vul.*

History.—The genus *Lobelia* was dedicated to Lobel, an early botanist; it contains many species,—according to Rafinesque, fifteen are found in the United States. Except the lobelia inflata, there are no species, however, that have, as yet, gained much character, only as ornamental plants. Shoepf was the first writer that noticed the officinal lobelia, but he had only a vague idea of its virtues, as he considered it an astringent. This notion is, perhaps, chiefly owing to the fact that it was very early used by the natives in opthalmia. It is said that the Indians, also, used the plant in the preparations for their great ceremonies and councils.

It is certain, however, that not only the honor of its introduction into the Materia Medica, but its present popularity, very justly belongs to the memory of Dr. Thomson, who brought the plant into notice through the severest persecutions, and even *prosecutions* both *civil* and *criminal.** This remarkable man seems to have discovered its virtues by accident, as early as 1790, and to have commenced using it extensively in practice in 1805.

In reference to the history of lobelia, Dr. W. P. C. Barton, in his Medical Botany, makes the following remarks: "The first notice I can find in print, of the medical virtues of Indian tobacco, is simply a brief remark by Shoepf, that the 'root is astringent, and used in opthalmia.' He seems to have had little knowledge on the subject, and from the manner in which the plant is mentioned by him, it may reasonably be suspected that a vague rumor only of its medical properties had reached him. The next accounts we hear of it, as

* For an account of his prosecution, for the alleged murder of Ezra Lovett, jr., the reader is referred to Thomson's Narrative, and Barton's Medical Botany, second edition, vol. i, p. 188, where a full report of the trial will we found.



Lobelia Inflata.

a medicine, are by the Rev. Dr. Cutler, [who gained his knowledge of it from Dr. Thomson,] and the late Professor Barton. The latter does not speak from experience, but remarks, that it has been found useful in leucorrhœa; and that it will probably be found diuretic. He is altogether silent respecting its emetic power, though he seems to have suspected that this was the species of lobelia, called in New England emetic weed, [the name by which Dr. Thomson called it]. Since the accounts of these gentlemen were published, the lobelia has gained admittance into our dispensatories, and Dr. Thatcher has given a long and satisfactory [?] history of its virtues."

The medical histories of this plant, especially so far as they relate to the physiological effects, given by writers of the old school, are, in the main, very erroneous. It was, from the first, classed among the deadly acro-narcotic poisons. This was, perhaps, principally owing to a prejudice the profession held against those concerned in the innovation upon the old practice.

Description and Preservation.—The herb prepared by the Shakers, is put up in oblong cakes, closely pressed; it is generally of a good quality, being clean, and clear from the stalks and larger branches; and it is also collected in good season.

In this country, lobelia is collected in large quantities, by farmers, and other persons, who make a business of collecting medical plants. They usually cut it during the first of November, and placing it upon sheets, dry it, and after threshing it on a tight floor, shake out the seed, which is further cleaned from the dust and the leaves, by sifting in a current of air. This seed, when quite clean, is sold to the manufacturing houses, or physicians, at from fifty cents to a dollar per pound. In some sections several barrels of seed are collected, by a single individual, in a good season. After the seed is obtained, the herb is further threshed, with a view of separating the pods and leaves, which are preserved together, under the appelation of *lobelia herb*. When this is purchased, that should be selected which is the most fresh, and green in its color. When the herb is more than one year of age, its virtues may be more or less impaired. The herb, in its crude

state, is sold by its collectors, for from twelve-and-a-half cents to twenty-five cents per pound. The entire plant is medical, in any stage of its growth.

The seed of lobelia, when pulverized, has a dark brown appearance, and an oily consistence. Its taste is exceedingly acrid and nauseous; the smell is not unpleasant. That of the herb is slightly irritating, but not offensive. The latter, when chewed, will, like the seed, produce a peculiarly acrid and lasting impression upon the mouth and fauces.

ANALYSIS.—Lobelia contains 1, a *volatile oil;* 2, a *fixed oil;* 3, *lobelina;* 4, an *acid;* 5, *gum;* 6, *resin;* 7, *chlorophylle;* 8, *lignin;* 9, *salts of lime* and *potassa;* 10, *oxide of iron.*

1. VOLATILE OIL.—This is contained in but very small quantities, and is not easily collected. When distilled with water, however, the plant will yield traces of such an oil, possessing its peculiar odor, but not its acrid taste or medical properties.

2. FIXED OIL.—This may be obtained by bruising the seed between heated rollers, and pressing, while hot, in a strong linen cloth, between proper iron plates. This oil is of a consistence nearly like that of linseed oil, and possesses the drying qualities common to the fixed oils. Its specific gravity is 940. It possesses all the medical properties of the seed; but, although it constitutes about twenty per cent. of the latter, yet, as in a therapeutic point of view, the oil does not possess many advantages over the seed itself, and as our means for obtaining it, have not yet proved very successful, it has never obtained the character of an independent therapeutic agent.

3. LOBELINA.—This substance may be obtained in the following way: Take of lobelia seed, lb. j; alcohol, O viij; acetic acid, O j, bruise the seed in a mortar, and add the liquors, digest in the sun heat, for five or seven days, and strain. Evaporate this tincture, to two pints, and filter; then evaporate to an extract, using the water bath when the liquor thickens, so as to prevent burning it. The extract is then to be triturated with magnesia and water, and after repeated agitation for several hours, is strained through calico, and then filtered. This liquor which holds the lobelina in solution, is then shaken repeatedly with fresh portions of sulphuric ether, until the water, settling below, is deprived of its acrimony. The etherial solution must now be drawn off, with a syphon, or carefully decanted, and then left to evaporate spontaneously. This process furnishes an impure article of lobelina, having a reddish-brown color, and

a consistence like that of honey. It may be obtained more pure, by treating this article with a sufficient quantity of water and acetic acid, mixed in the same proportion as the alcohol and acetic acid, first used, and boiling this with animal charcoal, saturating with magnesia, filtering, agitating repeatedly, with fresh portions of ether, till the aqueous portion is deprived of acrimony, then decanting carefully, or drawing off with a syphon as before, and allowing the ether to evaporate again, spontaneously.

Lobelina, thus prepared, is a yellowish liquid, lighter than water, rather of an aromatic odor, and of an extremely acrid and durable taste. It is very soluble, in ether or alcohol, but less so in water. Ether will remove it, from its aqueous solution, and upon evaporation, the lobelina may be again produced. It has, decidedly, an alkaline reaction, and will form soluble and chrystallizable salts with the mineral acids, and a soluble, but not chrystallizable salt, with acetic, and perhaps, citric acid. With tannic acid, it forms an insoluble compound, which is constantly precipitated from its solution. A boiling heat will entirely decompose it, unless combined with an acid.

Lobelina possesses the active medical properties of the plant, in a highly concentrated form, and if sufficiently diluted with water, may be used as an emetic. From three to ten drops will generally operate. With good vinegar, or citric acid and honey, the lobelina will form an oxymel of lobelina, that is very available in bronchitis and cynanche trachealis.

4. Resin.—On evaporating gently, the tincture of lobelia, prepared with proof-spirits, a resinous principle may be collected from the surface of the liquid; this has an exceedingly acrid taste, and contains most of the active properties of the plant. By conducting the process of evaporation far enough, an *olco-resinous* extract may be prepared, which is exceedingly valuable, as a therapeutic agent. This, however, will be treated of in another place.

5. Acid.—An acid, supposed to be peculiar, and called *lobelic acid*, by Pereira, may be obtained by washing the precipitate resulting from the addition of sulphate of copper to a concentrated decoction of lobelia until it ceases to effect litmus, and then suspending it in water, and precipitating the copper by a current of hydrosulphuric acid. Now, by filtration and evaporation, the acid is obtained, in an impure state. By treating this acid with ether, and then evaporating, it may be procured in a yellowish semi-chrystalline mass.

This acid reddens litmus, and, on the addition of sesquichloride of iron, becomes of a dark olive-brown, and, in a short time, a precipitate will be formed, (Lobeliate of Iron? Pereria.) A solution of isinglass, produces no obvious change in the decoction, showing the absence of tannic acid. Sulphate of copper produces a green precipitate, (Lobeliate of Copper, Pereira,) Acetate of lead occasions a precipitate (Lobeliate? of Plumbium.)

Physiological Effects.—When first taken, lobelia produces a very acrid and peculiar impression upon the mouth and fauces, which is quite durable. If the dose be enough, this will be followed, in from one to fifteen minutes with nausea and vomiting, and general relaxation of the system. It was contended by the early followers of Dr. Thomson, (who had the honor of introducing the lobelia into medical use), that on persons in perfect health, lobelia will not produce either nausea or vomiting; but this was certainly a mistaken notion. Lobelia also promotes the secretions and excretions, especially those of the lungs, parotids, skin, and mucous membranes, generally. Under certain circumstances, it produces a laxative effect upon the bowels; but it cannot be said to be cathartic. One of its most prominent physiological effects is that of a stimulant, which is very diffusible. It also produces quite an impression upon the nervous system, which is sometimes characterized by a very singular prickling sensation. Its effects upon the nervous system differ in different individuals: on some, it produces a species of intoxication and delirium; but it has never been observed to be followed with any permanently bad effects. Its effects upon the nervous system somewhat resemble those of tobacco, especially in the relaxation produced: there is, however, not a corresponding dilatation of the pupils, nor so marked a disposition to coma. It must be remembered, too, that much of the mental excitement that the lobelia produces, is occasion ed purely by its stimulating power. The disposition to sleep that sometimes attends it effects, is, moreover, often the result of the extreme relaxation and fatigue produced by its nauseating and emetic virtues; and there is, usually, a correspondence between the extent of the nausea and distress it occasions, and the inclination to sleep that follows.

It has been asserted that lobelia is an acro-narcotic poison. This originated with Dr. Thatcher, who, in his Dispensatory, states: "The melancholy consequences resulting from the use of lobelia inflata, as lately administered by the adventurous hand of a noted empyric, have justly excited considerable interest, and furnished alarming examples of its deleterious properties and fatal effects. The dose in which he is said usually to prescribe it, and frequently with impugnity, is a common tea-spoonful of the powdered seeds or leaves, and often repeated. If the medicine does not puke or evacuate powerfully, it frequently destroys the patient; and, sometimes, in five or six hours." Wood, in the United States Dispensatory, states, that it produces "extreme prostration, great anxiety and distress, and, ultimately death, preceded by convulsions." These statements have been copied from one book into another, until, at the present time, almost every work on therapeutics, medical botany, or even the medical journals, have either quoted the same language, or endorsed the same sentiments, without making the least effort to ascertain their correctness. These statements are not a little amusing to the experienced medical reformer, who has used the medicine thousands of times, without any bad results whatever, and hundreds of times, without any emetic or evacuating effect at all, except, perhaps, a copious diaphoresis. Cases are recorded, in which several pints of the strong tincture have been given in the course of a single day, and that, with decided benefit. Lobelia has now become a common nauseant in the treatment of continued fever, and thus, sixty to eighty grains are often taken, without occasioning emesis, once in forty-eight hours.

It is nevertheless, true, that lobelia sometimes occcasions a great deal of distress and excitement in the system, for a short time. But, this is not owing to any poisonous effect of the medicine, but, rather to the idiosyncrasy or peculiar nervous susceptibility of the patient, as well as various obstructions in the circulation of the blood and nervous fluid. This is evident, from the fact, that sometimes, most of the force of the medicine is directed to a single organ or appa-

ratus. Thus, it sometimes happens, that its specific effect does not take place at all; and, that a remarkable excitement of the brain, uterus, intestines, or even the genital organs, will follow. Sometimes the most intolerable priapism is produced, which may last for fifteen or twenty minutes, when the patient may either vomit or gradually get over its effects.

In reference to the power of lobelia to produce emesis, there is nothing very peculiar. All is dependent on the specific susceptibility of the stomach; hence, this becomes a subject of physiological investigation rather than therapeutic detail.

The singular effect that lobelia sometimes produces on the mind, is dependent upon two causes; 1st, a congestion to the brain, depending upon local obstruction in the sanguiferous circulation; and, 2d, upon a termination of nervous stimuli to the cerebrum. When it arises from nervous excitement, it may be relieved by the use of diluted vinegar, or citric acid, taken freely. On the other hand, the cold dousch to the head is most available, when it arises from sanguineous congestion.

Distress is, also, sometimes occasioned in other parts of the body, by the taking of lobelia. This, also, arises from obstructions in those parts; and any means calculated to detract the circulation from those parts, will give relief. Thus, proper traction, or manipulation, will sometimes afford great relief.

The wonderful relaxing power of lobelia is, also, occasionally so displayed, as to alarm persons not acquainted with the operation of the medicine. This effect of the lobelia is dependent upon its influence upon the nervous system, and is, consequently, much modified, also, by the idiosyncrasy of the subject. The phenomenon consists in a modification of the tonic power of the system, and may be obviated by the use of active stimulants, and astringents conjoined.

Those effects here referred to, are all transient, and never permanently mischievous.

Therapeutic Properties.—Lobelia is decidedly the most certain and efficient emetic known, and is at the same time

safe in its use. Unlike most emetics from the mineral kingdom, it produces its specific effect without corroding the stomach, or producing morbid irritation and inflammation of the mucus membrane of this organ, which are so common to the use of antimony, zinc, and the sulphate of copper. Lobelia may, emphatically, be said to "operate in unison with the laws of life."

In addition to its emetic properties, lobelia possesses many others, which will be noticed under their respective heads. But there are some that seem to be simultaneous, and very closely allied with its specific effect, that may merit attention here, although the same may be noticed elsewhere. It may be proper to remark, *first*, that in cases of high febrile excitement and violent congestions, emetics are justly considered objectionable. Lobelia, however, which is one of the most nauseating emetics we possess, is even eminently adapted to those cases. The nausea it occasions obviates the congestion and fever, by equalizing the circulation and provoking diaphoresis. Hence, the medicine is usually given in under doses, until these effects are produced, when more is given to excite emesis. This course is remarkably successful, and is, generally, followed in the synochal grade of fever, and in violent inflammatory affections. No one need apprehend any mischief in the application of lobelia in this way, as the system will always be found relaxed, and the arterial excitement modified, before the violent mechanical movements take place. Therefore, as an emetic in fevers, lobelia should always be preferred.

This singular combination of medical properties, not only eminently adapts this article to the treatment of febrile and inflammatory affections, but we find that in many other varieties of disease, it is equally available. In spasmodic disease, no remedy is more effectual. Spasmodic movement is incompatible with nervous relaxation. Hence, the lobelia emetic is usually invoked in all cases of violent spasms, or cramps. Epilepsy, hysteria, and other convulsions, and even apoplexy, are all relieved with remarkable promptness, by the exhibition of lobelia in sufficient doses to excite emesis, after sufficient nausea is provoked.

Hæmorrhages, of every kind, are, also, stopped by instituting emesis with lobelia. This doctrine may seem like heterodoxy to some of our old-school friends, but it is in good keeping with many facts that have been forced upon them by their own observation, and which they have been compelled to admit, although inexplicable to them, and absolutely in opposition to some of their most cherished and prominent principles. For instance: Ipicacuanha is, by them, acknowledged one of the best remedies, even in *active hæmorrhages*. Professor Chapman, of Philadelphia, says, on this head: "Ipicacuanha is an exceedingly important article in hæmorrhage. Many physicians, of respectability, bear testimony to its good effects in hæmoptysis, though it is in uterine hæmorrhage that it displays its best powers. In these cases, I really think it is quite equal to the saccharum saturni, and, sometimes, superior to that useful article."*

In dyspepsia, lobelia emetics are, also, quite available, and should never be neglected, especially when other, and more mild articles, do not give satisfaction.

As an emetic, lobelia admits of a more general application than any other article of this class. But it is unnecessary here to enlarge on this subject; and the reader is referred to the general application of emetics, for a notice of the indications they are capable of fulfilling.

Lobelia, when administered as an emetic, is generally given in divided doses. A portion, that may be considered sufficient to produce the effect desired, is prepared for taking, and then divided into, say three parts, and given at intervals of from ten to fifteen minutes, till emesis takes place. In the mean time, the operation is promoted by the free use of astringent, stimulating, and alkaline drinks, according to the circumstances. The latter are, generally, necessary, where there is much free acid in the stomach.

Pharmacutic Prep.—It is proper to remark here, that the virtues of lobelia are impaired by heat, unless united with an acid. In all its preparations, therefore, this fact should be remembered. The plant, itself, contains an acid, but it is not sufficient to prevent the decomposition of the lobelina at

* Therapeutics, vol. i, p. 181.

the temperature of 212°, F. Acetic, citric, or some other free vegetable acid, will answer to be combined with the lobelia, for the purpose here expressed. Care should also be taken, not to expose lobelia, even to a moderate heat, in combination with a salifiable base, as potash, soda, &c., as the specific virtues of the medicine are most easily eliminated when thus combined. This circumstance readily explains the important facts, so often observed in the exhibition of lobelia as an emetic, that the acids tend to restrain its effects on the nervous system, while the alkalies promote its emetic power.

INFUSUM LOBELIÆ: *Infusion of Lobelia.*—℞. Lobelia (the entire plant, if fresh), pods and leaves, in coarse powder, ʒj. Warm water, Oj. Infuse for an hour, and strain.

Action: use.—This is the mildest preparation of lobelia that can be made, and is, therefore, preferred as an emetic for children and delicate females. This is, also, the most eligible form of preparation, when the medicine is used by enema. *Dose*, fʒj—fʒiij., repeated, if necessary.

PULVIS LOBELIÆ: *Lobelia Powder.*—The seed, or herb, is simply pulverized and exhibited in substance. The powder, prepared from the seed, is termed *brown lobelia:* and that made from the herb, or pods and leaves, is called *green lobelia.* The pulverized lobelia should be kept in close vessels, excluded from the light, and should never be compounded with any other substance, except it is immediately used. Some articles, as above discovered, will impair it, and others may, perhaps, be contra-indicated in some cases in which the medicine may be used. The dose of the powdered seed, for an emetic, is from gr. x to gr. xxx; that of the herb is about twice the quantity; but much more is often given; still, however, it is not certain that more than this would be ever required, if properly administered. The usual way of taking it, is in warm water, or some astringent, or stimulating infusion.

TINCTURA LOBELIÆ: *Tincture of Lobelia.*—℞. lobelia seed bruised, ʒiij, or of the herb, in coarse powder, ʒiv. Dilute alcohol Oij. Digest for seven days, and strain.

Dose.—As an emetic for a child, fʒj—fʒj; that, for an adult, fʒj—fʒiij.

TINCTURA LOBELÆ ACIDUM: *Acid Tincture of Lobelia.*—℞. Lobelia, green herb, bruised, any quantity. Good vinegar, q. s. to cover the herb. Digest in a glass jar for ten days, and strain. This preparation is sometimes called *vinegar of lobelia.*

Action: use.—An excellent emetie in asthmatic affections, whooping cough, and pectoral diseases generally. *Dose*, same as that of the alcoholic tincture.

OXYMEL LOBELIÆ: *Oxymel of lobelia.*—℞. Vinegar of lobelia, Oij; clarified honey, lb. iij. Mix them, and evaporate by means of a water bath, to the proper consistence.

Application.—Oxymel of lobelia is an excellent preparation in anginose affections generally, as well as pectoral diseases. It is much preferable to the spirituous tincture in inflammatory attacks, such as cynanche trachæalis, humoral asthma, bronchitis, and the sequalæ of scarlatina and rubaola. The *dose* is gr. x to 3j, or more.

SYRUPUS LOBELIÆ: *Syrup of Lobelia.*—℞. Lobelia herb, in coarse powder, ℥viij; Havana, or moist sugar, lb. vj; water, a little below the boiling point, Oiij. Macerate the lobelia in the water in the sun, or other warm place, for twelve hours, strain and press the dregs. Add the sugar to the liquid, and dissolve it. This may be improved in flavor by adding one ounce of the oil of anise.

Application.—This is the best preparation of lobelia for spasmodic pectoral diseases among children, as pertussis, chronic dyspnoea, &c. It, also, constitutes an excellent medicine for adults, in all affections in which expectorants are required. As an emetic for infants and small children, the dose is from half a tea-spoonful to two tea-spoonfuls, in warm water, or tea.

IPECACUANHA.—The Root.

SYNONYMES.—CEPHAELIS IPECACUANHA, *L., E., D.;* IPECACUANHA, *U. S.;* Ipecacuanha, *Fr;* Breckwurzel, Ipecacuanha, *Ger.;* Ipecacuanha, *Ital., Span.;* Ipecac, *Vul.*

HISTORY.—Ipecacuanha is first mentioned by Michael Tristram, (*Purchas, Pilgrimes, Vol. iv, fol.* 1311), who calls it *Ighpecaya* or *Pigaya.* In 1684 it was described and figured by Piso.—(*Hist. Nat. Brazil*, 101). In 1686 it was celebrated

in Paris as a remedy for dysentery. It appears that Jean-Adrian Helvetius, (then a young man), attended with Afforty, a member of the faculty, a merchant, named Grenier or Garnier, who, when he recovered from his illness, gave to his physician, as a testimony of his gratitude, some of this root as a valuable remedy for dysentery. Afforty attached very little importance to it, but gave it to his pupil, Helvetius, who tried it, and thought he had found in it a specific against dysentery. Numerous placards were placed about the streets of Paris, announcing to the public, the virtues of the new medicine, which Helvetius sold, without discovering its nature. Luckily for him, some of the gentlemen of the court, and even the dauphin, the son of the king, (Louis XIV), were at this time afflicted with the dysentery. Being informed, by his minister, Colbert, of the secret possessed by Helvetius, the king deputed his physician, Aquin, and his confessor, Le P. de Chaise, to arrange with Helvetius, for the publication of the remedy. One thousand louis d'ors was the price which was paid, after some trials had been made with it at the Hôtel Dieu, and which were crowned with the most brilliant success. Granier now put in his claim for a part of the reward; saying, that he, properly speaking, was the discoverer of the medicine; but, the claim was not allowed. Subsequently, Helvetius obtained the first medical honors of France. He wrote a treatise describing the use of Ipecacuanha in diarrhœa and dysentery.—(K. Springel, Hist. de la Med., tom. v., p. 468.)

Great confusion existed, for a long time, respecting the plant yielding the Ipecacuanha. The name of the medicine, which was derived from the aborigines of Brazil, seems to have been applied to various emetic roots of South American origin. It is now evident, however, that most of the drug brought to this market, is produced by the cephaëlis ipecacuanha.

Botany. *Sex. Syst.*—Pendantra Monogynia.—*Nat. Ord.* Rubiaceæ, Cinchonaceæ. *Lind.*

Gen. Char.—Tube of the *calyx* obovate; limb very short, five-toothed. *Corolla* somewhat funnel shaped; its lobes five, small, rather obtuse. *Anthers* inclosed. *Stigma* bifid,

usually exerted. *Berry* obovate-oblong, crowned with the remains of the calyx, two-celled, two-seeded. *De Cand.*

Spec. Char.—*Stem* ascending, at length erect, somewhat pubescent at the apex. *Leaves* oblong-ovate, rough above, finely pubescent beneath. *Stipules* cleft into setaceous segments. *Heads* terminal, erect, at length pendulous. *Bracts* four, somewhat cordate.—*De Cand.*

Root perrennial, annulated, simple, or dividing into a few diverging branches, flexuous, from four to six inches long; when fresh, plain brown externally. *Stem* somewhat shrubby, two or three feet long, emitting runners. *Leaves* rarely more than four or six, placed at the end of the stem and branches; *Petioles* pubescent, which are connected to each by the erect stipules. *Stipules* membranous at their base. *Peduncles* solitary, erect when in flower, reflexed when in fruit. *Head* semiglobose, eight to ten flowered. *Involucre* one-leafed, spreading, deeply four to six-parted, segments obovate. *Bracts* acute pubescent; a single one to each flower. *Calyx* minute. *Corolla* white. *Stamens* five. *Ovary* obovate; *style* filiform, white; *segments* linear, spreading. *Berry* soft, fleshy, violet-black; *seeds*, (nuculus), pale, plane-convex; *albumen* horny. (Condensed by Pereira from Martius, *Spec. Mat. Med. Brazil*, p. 5; 1824). Grows in Brazil, in shady or moist situations from 8° to 20° South latitude, in the provinces of Rio Janeiro, Espirito Santo, Balia, and Pernambuco.

Description.—There are several varieties of ipecacuanha found in the market, which, perhaps, are best noticed separately; but, all the varieties found in the drug-stores of this country agree in most particulars, both as regards their description and medical properties. The principle varieties are, 1, the *Brown*, 2, the *Red*, and 3, the *Grey*. Dr. Pereira thinks that the age of the root, the nature of the soil, and the mode of drying are, perhaps, the cause of the difference in the root, and that the same species produces the whole.

α. Brown Ipecacuanha.—This is the best kind, and the greater part of the ipecacuanha brought to this country, consists of this variety. It is a round, annulated root, about the thickness of a crow's quill. Its epidermis is more or less deeply brown, some-

times even blackish; its fracture is grey, or brownish, and its powder grey. The cortical portion has a horny appearance. It has an aro-aromatic taste, and a very peculiar nauseous odor, which, in some persons, excites violent sneezing, and in others dispnœa resembling an attack of asthma.

β. Red Ipecacuanha.—This variety differs from the preceding, by the lighter and reddish color of its epidermis, by its less powerful odor, and its want of aromatic taste. Sometimes it has, when broken, the same horny and semi-transparent quality of the brown ipecacuanha; but, more frequently, it is opaque, dull, and farinacious; in which case it is generally less active.

γ. Gray Ipecacuanha.—The color of this variety is greyish-white. It occurs in pieces of larger diameter than those of either the red or brown varieties, and has also fewer, more regular, and less prominent rings. The size of the root is also somewhat larger.

Analysis.—The following table exhibits the results of the analyses of Pelletier and Bucholtz, whose results have generally been considered the most important.

PELLETIER'S ANALYSIS.			BUCHOLTZ'S ANALYSIS.	
Bark of Brown Ip.		*Bark of Red do.*	Emetic extractive, [emetina,]	4·13
			Soft resin,	2·43
Emetina,	16	14	Wax,	0·75
Odorous fatty matter,	2	2	Gum,	25·17
Wax,	6		Starch,	9·00
Gum,	10	16	Woody fibre,	10·80
Starch,	42	18	Bitter extractive,	10·12
Ligneous matter,	20	48	Sugar,	2·00
Loss,	4	2	Exractive gum, and starch, extracted by potash	34·80
			Loss,	0·80
Ipecacuanha, cort.,	100	100	Ipecacuanha,	100·00

Of the above constituents of ipecacuanha, none are of much value, in a medical point of view, unless it be the emetina, which contains the active properties of the ipecac. This, however, has not, as yet, been admitted into our Materia Medica; as it has been regarded too violent in its effects. It has not, however, yet been proven that it possesses intrinsic poisonous properties: the mischief being always traceable to the circumstances of its use, and not to the essence of the medicine. It contains no properties that are more violent than those of lobelina. These alkaloids contain the active properties of several ounces of the seed or root of the articles from which they are prepared, in as many scruples of the former.

Now, it is known, that the volume that the emetic substances possess, has much to do in modifying their operation. Hence, unless the alkaloids are suspended, in an equal bulk, by their solution in some liquid, as water, or some infusion, they may not be expected to operate with the same mildness. Moreover, those alkaloids are generally given in over doses, and then, when the smallness of the bulk prevents the medicine from operating, these excessive doses are retained, and prove mischievous; whereas, if the bulk had been large, they would not have been retained. Hence, it is, that excessive doses of bulky substances, are not so likely to do mischief, as those of a small compass.

Emetina may be prepared in the following way. ℞. Digest powdered ipecaçuanah, with ether, at 60° to dissolve the fatty matter, whence it derives its disagreeable odor, and which possesses no emetic virtue. When the powder yields nothing more to ether, it is treated with alcohol, and the latter, when filtered, evaporated in a water bath, and the residue, dissolved in water. It thus looses some of its wax, and a little of the fatty matter which eluded the ether. The gallic acid of its extractive, is now to be removed by triturating the watery solution, with magnesia. After subsiding, the water, containing the emetina, in solution, is to be filtered, and then evaporated. This produces, what is called, *impure emetina*, which is in transparent scales, of a brownish-red color, almost inodorous, of a biterish, acrid taste, deliquescent, very soluble in water and alcohol, insoluble in ether, and is precipitated from its solutions, by gallic acid, and the acetates of lead.

Pure emetina may be prepared by substituting calcined magnesia for the carbonate of this article, used in the process above described, in such quantity that the acid existing in the liquid, may be neutralized, und that which is associated with the emetina, be separated from it. The salt being decomposed, and the organic alkali being insoluble, is precipitated with the excess of the magnesia. This precipitate is now to be washed with cold water, and digested in alcohol, which dissolves the emetina; then, on evaporation of the alcohol, the residue is to be re-dissolved in a dilute acid, boiled

with animal charcoal, and then, after filtration, the emetina must be precipitated by a salifiable base.

Thus obtained, emetina has a white, and frequently a somewhat yellowish appearance. It does not deliquesce in the air, like the former. Its taste is feebly bitter, and somewhat nauseous. Its incompatibles are gallic acid, or the vegetables containing it. These arrest its effects.

"Magendie recommends the administration of the colored emetina—as the pure is much too dear—in every case where it is desirable to excite vomiting, and especially where ipecacuanha is indicated. It has not, however, been much used, except by Magendie himself. Lerminier, who prescribed it, says that one or two grains of colored emetina are equal, in strength, to from ten to twenty of ipecacuanha; but that he observed no difference in their operation, and Dr. Domeier appears to have arrived at the same results. The obvious advantages it possesses, are, the convenient form under which it may be administered, and the circumstance, that several spurious sorts of ipecacuanha are frequently passed off in commerce, and occasion, in consequence, a considerable disappointment in the mind of the practitioner. The employment of the active principle, of course, precludes these inconveniences."—*Dunglison*.

Physiological Effects.—The dust of ipecacuanha, applied to the delicate parts of the skin, or to the eyes, produces great irritation, and when inhaled into the lungs, it causes irritation of the respiratory passages, and in some, great dispnœa.

On the mucous membranes, its effects are different. "How singular it is," says M. Hall, "that ipecacuanha taken into the bronchia should excite asthma, and taken into the stomach should induce another effect." i. e., vomiting and expectoration, and consequent relief to asthmatic habits. In the full dose, ipecacuanha acts as a pretty certain emetic, but is very mild and harmless as such. Dr. Pereira (*Ther.*, *Vol.* ii, *p.* 452) says, "its operation as an emetic is exceedingly safe, since inflammation is not produced by it, even when an overdose has been swallowed.

THERAPEUTIC PROPERTIES.—Ipecacuanha ranks next to lobelia as an emetic; it is, perhaps, equally mild and much less nauseating; and is, hence, much better adapted to delicate females, children, and even nervous males, on whom that article would be likely to induce unnecessary nervous excitement. It is, however, much less thorough in its effects, than the lobelia, and should, hence, not be so much depended on in violent cases of disease.

Without going into details, it must suffice to remark, that ipecacuanha is generally applicable in all cases in which emetics are indicated, but especially in diseases affecting the mucous membranes, such as dysentery; indeed, it has been considered, a specific for this affection, by very many respectable gentlemen of the profession. Its power in dysentery, as noticed in its history, was the incident that first gained for it, popular favor.

Ipecacuanha is also, an excellent remedy in narcotic poisoning, if taken before the poison escapes from the stomach.

United with lobelia, it forms an excellent compound to be used as a common emetic. It modifies the constitutional effect of that article, which is sometimes a desideratum, when it is desired only to evacuate the stomach.

Ipecacuanha, like lobelia, is also useful in pectoral and bronchial affections. In those cases, it may be used in doses large enough to excite emesis, or just sufficient to produce nausea.

The usual dose of ipecacuanha, in powder, as an emetic, is grs. xv., but much less will sometimes do.

INCOMPATIBLES.—Gallic and Tannic acids, or any of the barks, or other vegetable substances that contain it in large quantities, will modify its effects on the constitution, although by their use, the mechanical phrenomena of vomiting, are generally promoted. These acids form a partially insoluble compound, (*tannate or gallate of emetina*) with the active principles of the medicine.

PHARMACEUTIC PREPARATIONS.—Besides the powdered root, there are only two preparations of much importance; these are the *Vinum Ipecacuanhæ*, and *Syrupus Ipecacuanhæ*.

VINUM IPECACUANHÆ; *Wine of Ipecacuanha.*—℞ Ipecacuanha, bruised, ʒij.; Wine, Oij. Macerate for fourteen days, and strain. *Dose*, as an emetic, for a child, from ♏xx, to fʒj, according to the age.

SYRUPUS IPECACUANHÆ, E.; *Syrup of Ipecacuanha.*—℞ *Ipecacuanha*, in coarse powder, ʒiv.; *Rectified Spirit*, Oj.; *Proof Spirit* and *Aq. dest.* aa fʒxiv.; *Syrup*, Ovij. Digest the *Ipecacuanha* in *Rect. Sp.* fʒxv., at a gentle heat for twenty-four hours; strain, squeeze the residue, and filter. Repeat this process with the residue and proof spirit, and again with the water. Unite the fluids and distil off the spirit, till the residuum amount to ʒxij. Add to the residuum *Rect. Sp.* fʒv., and then the Syrup. "Dr. Christison says this process is unnecessarily complex, and that a syrup made from the alcoholic extract, as directed in the Parisian codex, is probably as good." *Dose*, as an emetic for infants, fʒss.—fʒj. As an expectorant, fʒj—fʒij.

EUPHORBIA IPECACUANHA.—The Root.

Synonymes.—Euphorbia Protulacoides; Brechenmachende Wolfsmilch, *Ger.*; American Ipecacuanha, Ipecacuanha Spurge, Wild Ipecac, *Vul.*

History.—The Euphorbia Ipecacuanha, is spoken of as being emetic, by Schœpf, Puihn, Dr. B. S. Barton, and others; but it seems not to have attracted much notice until Dr. W. P. C. Barton announced it as an emetic, "equal in importance, if not, on some accounts, superior to the common ipecacuanha of the shops." It has since found a place in the secondary list of the U. S. Pharmacopia, and in treatises on materia medica, and medical botany generally.

Botany.—*Sex. Syst.* Dodecandria Trigynia, *Linn.* Monœcia, Monadelphia, *Michoux.*—*Nat. Ord.* Euphorbacæ.

Gen. Char.—*Involucrum* caliciform, eight to ten-toothed, exterior alternate dentures glanduloid, or petioloid. *Stamens* indefinite, twelve or more, rarely less; *filaments* articulated. *Receptacle* squamose. *Female flower* solitary, stipitate, naked. *Capsule* three-grained. *Nuttall.*

Spec. Char.—This is a very singular species, being extremely amorphous. The shape and color of its leaves, and, indeed, its entire aspect changes so that some varieties might readily be taken for distinct species. The *root* is perennial, of a yel-

lowish color, irregular, and very large, penetrating, sometimes, to the depth of even six or seven feet in the sand, and its thickest part measuring from three-fourths of an inch to an inch and a half in diameter. The stems are numerous, dichotomous, and of a reddish yellow, or pale green color. The *stipules* are cordate and small. The *leaves* are opposite, sessile, and, generally, oval, but varying from this even to a linear shape; they are always entire on their margins, but sometimes, when ob-ovate, are emarginated, or notched at the apex. While the plant is in bloom, in May, the leaves are small; but when mature, they are, often, three inches in length, and one or more in breadth. The flowers are small, and situated on solitary, one-flowered, axillary peduncles. The seeds, three in number, are enclosed in a triangular-like capsule. The plant is found in the middle states, growing in sandy soil.

Analysis.—Among the constituents of the dried root of this plant, we find *mucilage*, *sugar*, *starch*, *caoutchouc*, *resin*, an *essential oil*, *tannin*, and a *peculiar principle*, similar to emetina, which is soluble in alcohol, but is insoluble in water. The plant yields its virtues to alcohol, sparingly to water, but, perhaps, as freely to dilute as to pure alcohol.

Physiological Effects.—Taken in doses of from ten to fifteen grains, the root will occasion emesis, and in a few hours, catharsis, attended with diaphoresis. In excessive doses, it is said to act violently, producing excessive vomiting, with alarming prostration and hypercatharsis.

Therapeutic Properties.—The author has not had much experience with this article, and cannot, therefore, judge from his own observation, what its therapeutic merits are. Dr. W. P. C. Barton, however, speaks in the highest terms of its medical virtues. In his Medical Botany, he introduces his account of them in the following language: "It is not without great satisfaction, that I now present the medical profession with a figure and history of an indiginous plant, which promises to yield a medicine equal in importance, if not on some accounts superior, to the common ipecacuanha of the shops. That the Euphorbia Ipecacuanha is possessed of virtues entitling it to supersede the use of the imported ipeca-

cuanha, my own extensive experience with it, coroborated by the numerous trials of the medicine by Prof. Hewson, my brother, Dr. John Rhea Barton, of the Pennsylvania Hospital, and others, all embolden me to declare. * * * I last year determined to give a fair and extensive trial to the medical virtues of this species of spurge. A portion of the root was finely pulverized, and administered with caution to various patients. I at first commenced with small doses of three, four, and five grains. In this quantity the powder nauseated, and produced a determination to the skin, as small doses of ipecacuanha do. On increasing the number of grains to ten, vomiting was produced, with occasionally an operation on the bowels. Fifteen grains I found sufficient to produce full vomiting in most cases." But, he adds, that in one instance, the powder given to the extent of twenty-five grains, he had reason to be alarmed at the violent cathartic effect which ensued, and continued for fourteen hours, attended by distressing sickness at the stomach.

This author further states, that he used the article in various combinations, in the place of the imported ipecacuanha, and confidently asserts, that in all the instances, it has been equal, if not superior, to that article. "It has, indeed, some advantages, which the imported article does not possess. It is not unpleasant, either in taste or smell." He closes his remarks as follows: "Upon the whole, the attention of physicians may be confidently called to our native ipecacuanha, as possessed of virtues equal, and in some respects superior to the imported ipecacuanha. Its occasional cathartic effect is no more than what follows the use of the foreign medicine, on some occasions. This view of the subject derives peculiar importance, from the well-known fact, that the ipecacuanha of the shops, at least in this country, is rarely good; perhaps, seldom genuine."

Pharmaceutic Preparations.—There are no preparations of this article, that have, as yet, become officinal. The extract, prepared by evaporating the tincture, made by digesting sixteen ounces of the coarsely powdered root, in a gallon of alcohol, contain all the active properties of the medicine.

Of this, five grains is a proper dose, as an emetic; and, three, as a diaphoretic and nauseant expectorant.

This extract, no doubt, will prove servicable, as a remedy in intermittents, especially, those obstinate varieties common in northern Indiana, and some portions of Illinois.

EUPHORBIA COROLLATA.—The Root.

Synonymes.—Blum Wolfsmilch, *Ger.;* Tithymale Fleuri, *Fr.;* Blooming Spurge, Milkweed, etc., *Vul.*

History.—The *euphorbia corollata* has received attention by some of the members of the profession, particularly by Barton, Bigelow, and Zollickoffer. It has generally been regarded as an equivalent, or, at least, a substitute for the imported ipecacuanha, as well as for jallapa. It has not, however, gained much reputation, except with individuals, the profession, generally, not having given it much investigation. It has gained admission into our Dispensatories, and works on Medical Botany, generally.

Botany.—*Sex. Syst.* Dodecendria Trigynia., *Linn.;* Monæcia Monadelphia, *Michoux.*—*Nat. Ord.* Euphorbaceæ.

Gen. Char.—Same as Euphorbia Ipecacuanha.

Spec. Char.—*Root* perennial, irregular, of a yellowish color, branched, from a half inch to an inch in diameter, and sometimes several feet in length. *Stems* several, erect, round, generally simple, from two to five feet in height. *Leaves* sessile, alternate or irregular, flat or revolute at the margin, smooth in some varieties, and hairy in others; they are entire, oblong-cuneate, obtuse. *Flowers* unbeliferous, with a five-leaved involucrum, and five trifid and dichotomous rays, at each fork of which are two large bractes; *calyx* large, rotate, white, with five segments, resembling a corolla, and hence, the name of this species.

The entire plant abounds in a milky juice, and, yields it freely when wounded. It is found in various parts of the United States, particularly on the Atlantic coasts, and other sandy places and barrens; seldom growing in fertile, shady or moist places. Its flowering time is in July and August.

Analysis.—Among the most important organic constituents of this plant are, *a peculiar principle*, (*euphorbin*)—by some called *emeta—mucilage*, *sugar*, *starch*, *caoutchouc*, *resin*, an *essential oil*, *gum* and *tannin*.

Physiological Effects.—In large portions, the root of the euphorbia corollata is capable of producing unpleasant, if not mischievous effects; as excessive vomiting, and hypocatharsis generally result from over doses. The milky juice is acrid, producing vessication, when applied to the skin. It has been used successfully to remove warts, and to cure herpes.

Therapeutic Properties, etc.—The root of the euphorbia corollata is a pretty active emetic, and is likewise cathartic and antiscorbutic. But, as its action on the system is so harsh, it has generally been regarded unsafe, and has consequently not been introduced into general practice, among our botanic practitioners. It is still more violent in its operations than the E. ipecacuanha; and while we have enough safe and efficient articles, it is hardly necessary to extend the list of this order of emetics. Nevertheless, it has been argued that the article now under consideration, is specifically adapted to the successful treatment of different varieties of disease, as jaundice, etc. The dose of the powder is from *gr.* x, to *gr.* xx.

Pharmaceutic Preparation.—Like the foreging article, this has not yet furnished many pharmaceutic preparations. A wine is sometimes prepared from the bark of the root in the same way in which the officinal *vinum ipecacuanha* is made.

An extract is also prepared by evaporating a solution, made by digesting the root, coarsely powdered, in equal parts of alcohol and water. The dose of this is from *gr.* iij to *gr.* v.

Order II.—TOPICAL EMETICS.

The larger proportion of emetics prove *such* only when taken into the stomach, and do not, therefore, possess a specific emetic power. They seem to be, in their essence,

obnoxious to the stomach, and provoke an irritation sufficient to give rise to emesis. This is the principle on which most of the articles used by the allopaths operate; and it is questionable whether this order should at all be admitted into our Materia Medica. It is nevertheless true, that none of the articles contemplated in it, can reasonably be said to be poisonous, unless, indeed, it be the *sinapis*, which, when mixed with water, as stated elsewhere, will produce a substance that will, if sufficiently concentrated, or taken in doses large enough, act mischievously. But, this is a product of the substance rather than an educt.

Topical emetics cause but little nausea or sickness, and, produce but little effect in the general system, other than that effected through their operation on the stomach. They have their application, in cases in which an evacuation of the contents of the stomach alone is necessary, as in cases of excessive ingestion, or the taking of poisonous substances, or such as are difficult to digest. In these cases, topical emetics seem better adapted than the specific, as they are much more prompt in their operation, and produce so much less nausea and sickness.

This order, however, is comparatively, very little used among practitioners of the new school; those articles of the first order being generally preferred, as they are supposed to act more in accordance with the physiological laws.

SINAPIS.—The Seeds.

Synonymes.—*Ναπυ, Gr.;* Senfsamen, *Ger.;* Moutarde, *Fr.;* Senapa, *Ital.;* Mostaza, *Span.;* Mustard, *Vul.*

History.—Mustard was known at a very early period of history. Hippocrates used it under the name of *ναπυ*, and the Romans under *sinipi*. Although a native of Europe, it is indiginous to almost every country.

Botany.—*Sex. Syst.* Tetradynamia Siliquosa.—*Nat. Ord.* Brasicacæ, or Cruciferæ.

Gen. Char.—*Calyx* spreading. *Corolla* with straight claws. *Glands* between the shorter stamens and pistil, and between the longer stamens and calyx.

Spec. Char.—There are three species of the mustard genus that yield the mustard of commerce, the *S. nigra*, *S. alba*, and the *S. arvensis*. The *silique* of the first is glabrous, four-angled, pressed to the stem; *leaves* at the top lance-linear, entire, smooth; the *seed* is blackish, and smaller than that of the alba.

The *S. alba*, or white mustard, has bristly *siliques*, which are shorter than their two-edged beaks. The *leaves* are pinnatifid; upper ones sub-lyrate, all irregularly toothed; *seeds* largest of all the species, of a yellowish white, but sometimes they become a little dark.

The *S. arvensis*, like the first, has glabrous *siliques*, which are many-winged, tortose, beaks sword-like; *valves* three-nerved. The *stem* and *leaves* are more or less hairy.

Description. *α.* Sinapis Alba: *White Mustard.*—This consists of globular seeds, which are about half a line in diameter, of a yellowish white color, and an acrid fragrant taste, resembling that of a horse radish.

β. Sinapis Nigrum: *Black Mustard.*—This is a smaller seed than that just spoken of. Its exterior is of a reddish brown or black, and sometimes beautifully veined. The black mustard is not so acrid to the taste as the white.

γ. The S. arvensis, usually called *Wild Mustard*, produces a seed that is sometimes substituted for the black variety, but it is not very common in this country. It is, perhaps, somewhat inferior to the latter.

The ground mustard is prepared from either kinds of mustard, but most commonly from the black, or from a mixture of this and the white. It consists of the powder of the seeds ground between rollers, and divested of their fixed oil by pressure, and of their hulls by sifting. It is stated that flour is often added to improve its color; and then, to compensate for the loss of strength, ginger or capsicum is added. Ground mustard, when mixed with water, is much more acrid than the seed; which circumstance arises from a chemical change produced by the action of the latter upon some of the constituents of the mustard, as shown elsewhere.

Analysis.—Although both the white and black mustard have been minutely examined by several chemists, they still require further investigation. The black contains a *fixed oil*, *gummy matter*, *sugar*, a *coloring*, and a *peculiar green matter*, a *fatty, pearly matter; myronic acid*, in combination with *potash*, or *Myronate of Potash* (the *Sulpho-Sinapisin* of Henry and Garot,) *Myrosyne*, *Sinapisin*, and some salts. "The fixed oil of

Mustard constitutes 28 per cent. It is mild in taste, with little odor, of a yellow color, Sp. Gr. 0·917, thicker than olive oil, does not readily become rancid, makes an excellent soap, is sometimes used instead of rape oil, and has been employed as a purgative. (*Bussy.*) *Sinapisin* of Simon is in white, brilliant, micaceous, and volatile crystals, soluble in alcohol, ether, and oils, insoluble in acids and alkalies. *Myrosyne* is a substance analogous to vegetable albumen, or the emulsin of bitter almonds. *Myronic acid*, composed of Carbon, Hydrogen, Oxygen, Nitrogen, and Sulphur, is bitter, without odor, uncrystallizable, and may be separated in an impure state by alcohol, when the fixed oil has already been removed by expression or by ether."—*r*.

"It is curious that we do not find, among the above products, the acrid principle for which Mustard is so remarkable. In fact, it is not contained in the seeds; the acrimony is due to what is called *Volatile Oil of Mustard*, which is the result of the action of some of the constituents of the seed, that is, of the Myrosyne and Sinapisin, on one another, when water is added under 200° F. Bussy is of opinion that the Myronic acid, on the contact of Myrosyne and water, yields the volatile oil of Mustard. When flour of Mustard is exposed to dry heat, or acted upon by alcohol, no acridity is observed; but if water be added first, the pure volatile oil is obtained, which may be separated by distillation. The mineral acids check the formation of this volatile oil, so does the Carbonate of Potash, and also the vegetable acids when they are of the Sp. Gr. of at least 1022."—*r*.

"White Mustard seeds yield about 36 per cent. of *fixed oil*, and when macerated in water, a thick, mucilaginous, almost insipid liquor, while Black Mustard seeds give little mucilage, but a pungent taste to the water. According to the analysis of John, these seeds contain: 1. An *acrid volatile oil*. 2. A *yellow fixed oil*. 3. *Brown resin*. 4. A very little *extractive*. 5. A little *gum*. 6. *Lignin*. 7. *Albumen*. 8. *Phosphoric acid*, and *salts*. Henry and Garot ascertained the presence of Sulphosinapisin,—a name which Berzelius has contracted into Sinapin. This is white and light, without odor, at first bitter in taste, but then like mustard; soluble in water, alcohol,

and ether, and crystallizable. It consists of C 57·92, H 7·79, N 4·9, O 19·68, and of Sulphur 9·65. 'Acted on by acids, oxides, and salts, readily yields Sulphocyanic acid' (*p*), which strikes a red color with the persalts, as, for instance, the Sesquichlor. Iron, and produces a white precipitate in a solution of Sulphate of Copper containing Iron. White Mustard does not furnish volatile oil; but, in certain circumstances similar to those with Black Mustard seed, a fixed acrid principle is produced, which, like the volatile oil of Black Mustard, did not previously exist."—*r*.

"The *fixed acrid principle* is an unctuous liquid of a reddish color, without odor, but having a biting acrid taste, analogous to that of Horse-radish root. It contains Sulphur. M. Faure states that this same principle is formed in small quantity when Black Mustard is treated with water. *Erucin*, which does not redden the salts of Iron, and contains no Sulphur, is another principle found by Simon."—*r*.

Physiological Effects.—In small doses, mustard is an acrid stimulant, holding an intermediate rank between horse radish and pepper. In large doses, it proves actively emetic. Its topical action is that of a powerful acrid agent, producing vessication. But this effect is only produced when combined with water. In moderate doses, it promotes the appetite, and assists digestion.

Therapeutic Properties and Use.—In doses of from ʒj to ʒij, mustard powder acts very promptly as an emetic, and has, generally, been used for this purpose, when a topical emetic is indicated. It has been regarded of eminent service in dyspepsia, and in cases of narcotic poisoning, when other emetics are less available. It is also recommended by Dr. Pereira, in cases of malignant cholera, and some forms of paralysis.

The volatile oil, prepared from the mustard, by the addition of water, although used by the German physicians, in colic and other violent diseases, is much too harsh and violent to be used. Three drops have occasioned the most distressing symptoms and death.

Pharmaceutic Preparations.—Mustard has not yet furnished many pharmaceutic preparations. The most important we

have, is the *cataplasma sinapis*, and *mustard whey* is also sometimes made.

SANGUINARIA CANADENSIS.

The powdered root of this article, which is described under another head, in doses of from *gr.* xv. to *gr.* xxx., constitutes an active topical emetic, and is much used by some practitioners, but it is rather too severe to be used alone. Combined with lobelia or ipecacuanha, however, it will answer very well.

SODII CHLORIDUM.

Synonymes.—Muriate of Soda, Sodæ Murias, *E. D.*—Chlorure de sodium Hydrochlorate de soude, Sel narin, *Fr.;* Chlornatrium, Kochsalz, *Ger.;* Salt, *Dan., Swed.;* Chloruro di sodio, Sal commune, *Ital.;* Sal, *Span.;* Salt, *Vul.*

History.—Salt is abundantly diffused in nature, and being so much used in the preparation and preservation of food, must have been known from the earliest ages. It is found in many animal solids and fluids, and in the juice of some vegetables. It exists in the earth, in the solid form, as rock salt, or in solution, in some springs, and every where in sea water.

This very common article, needs no description here.

Properties.—Chloride of sodium, is a white chrystaline substance, without odor, but of a peculiar taste, called *saline*. Its chrystals usually form in cubes, but by hasty evaporation, they often assume a hollow, quadrangular pyrimidical shape. When pure, salt undergoes no change in the air, but when contaminated with magnesia, as is often the case, it is deliquescent. It is soluble in a little less than three times its weight of cold or boiling water. Pure spirit dissolves it but sparingly, but when diluted with water, it dissolvs it freely. When heated, salt decrepitates; at a red heat, it fuses, and sublimes without decomposition. Sulphuric and nitric acids, decompose it, and give rise to fumes of muriatic acid. Its sp. grav. is 2·17, and its formula Na 40 $\dashv$ – Cl 60 = 100.

Physiological Effects.—The almost universal animal appetency for salt, would seem to indicate its adaptation to the purposes of the animal economy. Certain it is, that in the

blood, and most of the glandular secretions, the saline property necessarily predominates.

Chloride of soda, is, then, an example of the applicability, or occasional use of inorganic substances, to the animal economy; but this is no argument against the general doctrine, that *poisons* are unnecessary and pernicious, nor does it agree that *inorganic* substances are as well adapted to the purposes of the economy as *organic*.

When taken in small portions, salt is a gentle stimulant, and promoter of digestion. It is a powerful antiseptic, as is shown by the preservation of flesh in the hottest weather, when pickled in water saturated with it.

Therapeutic Properties and Use.—In small doses, salt is stimulant, tonic, and anthelmintic, and in larger ones, say ʒiv to ʒj, it is cathartic, and when from ʒjss to ʒij, dissolved in warm water, is given, it proves emetic.

By some, chloride of soda is regarded as the best topical emetic that we possess, operating with great promptness, although very mildly. As an emetic, it is said to be particularly adapted to cases of narcotic poisoning, but in this application the experience of the author does not enable him to decide on its merits.

Pharmaceutic Preparations.—Various useful preparations are made, into which this article enters as an important ingredient. Among the most important of these that are medical, are *Aqua Chlorinii*, *Enemata Salina*, and the *Solutio Salina Compositus*.

EUPATORIUM PERFOLIATUM.

This article, (described among the nauseating diaphoretics,) is a good topical emetic, especially when taken freely with warm water. It is usually prepared in decoction, or watery infusion, when designed for this purpose.

Eupatorium perfoliatum is the article most commonly selected by country practitioners, when they wish to exhibit a topical emetic. The decoction is also generally preferred, as a drink, when other emetics are taken, to promote their operation. Several objects are accomplished in its use in this way;

it keeps the system relaxed, and the perspiration free. The dose as an emetic is 3i—3ij, or O ss of the strong decoction.

VERBENA HASTATA.

Verbena Hastata (described under the head of Bit: Tonics,) when taken freely in strong decoction, is a good emetic, and has been highly esteemed, particularly by some of the early Thomsonians, in intermittents and remittents. The decoction is usually taken at short intervals, in portions of f 3j—f 3ij, until the patient shall have vomited some two or three times. The root is mostly used, but the tops or herb is also medicinal.

APOCYNUM.

Both the *A. androsæmifolium*, and the *A. canabinum*, which are described elsewhere, are active emetics, and may be used in doses of gr. v—gr. x, of the extract or O ss of the strong decoction. As an emetic, both these species of *apocynum* are very applicable in low fevers, when it is designed only to evacuate the stomach from putrid accumulation, and when the specific or relaxing emetics are less applicable. In intermittents, they have been used with complete success, having been known to break up the disease entirely by a simple operation. The bark of the root is the officinal portion.

ERYTHRONIUM AMERICANUM.

E. Americanum (described among the emollients,) in its recent state, will prove emetic in doses of gr. xx—gr. xxx, bruised up in warm water. It is very mild, but somewhat uncertain. The root and top are both medical.

ANTHEMIS.

The *A. nobilis*, as well as the *A. cotula*, when used in strong decoction, will operate as an emetic, when taken in doses of Oss. They are both very applicable in intermittents and remittents, but are usually given as adjuncts to other more powerful articles, to facilitate and modify their effects.

They tend to make the specific emetics more topical in their action.

ROBINA PSEUDO-ACACIA.

Description.—The locust tree belongs to Diadelphia Decandria, and *Nat. Ord.* Leguminosæ. It is cultivated in this country, both as an ornamental tree, and on account of the durability of its timber, which is mostly used for fencing purposes. The inner bark of the root and trunk is medicinal. It is considered by some, to be one of the mildest emetics that we possess. Professor Eberle states that "An infusion, made of an ounce of the bark to a pint of water, may be taken in doses of a small wine glass full every ten minutes, until vomiting is produced. I have known it to be employed with as much advantage as is usually obtained from the ipecacuanha. It is said to be particularly useful in the early stages of dysentery, when given in under doses, so as merely to excite nausea, or but slight vomiting."* Its virtues are yielded to water and alcohol.

MYRICA CERIFERA.

Bayberry (described in the order stim. astringents,) in very large doses, will excite vomiting with so much certainty as to entitle it a place in this order. It should, however, rather be regarded as an adjunct, to be given either in combination with, or subsequently to, the exhibition of the more powerful emetics, as lobelia. In the form of the common diaphoretic powder, or that of the astringent tonic compound, this article is most generally exhibited during the operation of other emetics. Its active astringent and stimulating power is well calculated to sustain the functions of the stomach. The dose of the powdered bayberry, as an emetic, is from 3ij to 3iv, taken in warm water.

* Therapeutics, p. 78.

Class II.—CATHARTICS.

Definition.—Cathartics, (*Catharticus;* from καθαιρω, *to purge*, constitutes a class of agents which, in their action on the system, have a specific tendency to evacuate the contents of the intestines, downwards; or which, when given in proper doses, will excite purging.

As the direction of the intestinal canal, from the stomach downwards, is not, in every part, of a course that will favor the exit of its contents by the laws of gravitation, it is evident that a power separate from this must ever be exerted, when these move forward in their course. The manifestation of this force is called the *peristaltic motion*, from περιστελλω, *to contract*); which, in the mean, produces about one alvine evacuation per day. Those agents, therefore, that have the power to increase the activity of this motion of the intestines, are called laxatives or cathartics.

Antiquity.—Cathartics have been in use from the remotest periods of antiquity.* Thout, the Egyptian Hermes, or Mercury, (*always regarded as the founder of medicine*), seems to have practiced their use. Purges, vomits, and clysters were used by the Egyptians, for three days successively in every month; and the Assyrians, Hebrews, Greeks, Romans, Persians, Chinese, Hindoos, and Arabians, all ranked purges among their prominent medicaments.

The antiquity and general popularity of a medicine, is, however, not always an evidence of its importance or general utility. Mercury, antimony, and arsenic, have now been popular remedies, for rising of two hundred years, and yet it is evident, that they have done infinitely more mischief than good.

Abuse.—There is, perhaps, no class of medical agents that has been the cause of more mischief than cathartics. This is chiefly owing to their *popularity*, which insures them their indiscriminate and general use. Whenever a prescription is made for any case, not fully understood, it is almost certain that some cathartic or other will be given; and when the diagnosis is *clear*, and general evacuents are

* Strabo.

required, these agents are sure to be invoked. They are conveniently prescribed, and, commonly, very easily taken; and, as their perncious effects are not very apparent at first, and thus overlooked, they have become a fashionable medicine.

Cathartics are very indiscriminately used for habitual costiveness. When the bowels are confined they are moved by a physic, and then suffered to remain, until they again become constipated, when they are moved as before. This practice is pursued, until the tone of the bowels is so impaired, as scarcely to admit of cure. But, what is most *unfortunate*, these very cases, thus produced, are but too frequently attempted to be relieved by the use of still more *powerful purges*, until the patient dies, a victim to quackery. Unlike emetics, these agents produce their effects at the expense of the irritability of the organs on which they operate, hence, the frequent repetition of them, must, of necessity, prove mischievous. Torpor of the intestines is dependent upon a want of their irritability. Therefore, any agent tending to diminish this principle, or its manifestations, must, in a corresponding degree, serve to promote constipation of the bowels.

Purgative medicines influence the general functions of the system very extensively. Almost any of the vital processes may be influenced, to some extent, by inducing an irritation in the gastro-enteric mucous membrane. Thus the vis conservatrix may often be diverted from very remote parts of the intestines. In numerous instances, therefore, we find that the use of purgative medicines, detract the determination of the available vital forces from the fulfilment of important indications of cure—perhaps, they may be diverted from the defence of parts much exposed to morbific influences, and they, in consequence, may suffer *irretrievable injury*.

Some very intelligent practitioners, are often misled by the appearance of the *discharges* produced by their cathartics. Should these assume an unhealthy appearance, or become offensive, they take it as indubitable evidence of the utility of the medicine, and thus continue it on, until some incidental change occurs, or, perhaps, until the patient betrays unmis-

taken evidences of the approaching mischiefs. It is certain that the irritation produced by the long-continued use of even the most *mild cathartic* may occasion green and offensive stools, having all the appearance of being the consequence of a diseased condition of the intestines; and this is, indeed, the case, for the prolonged irritation set up by the continued physic, has induced disease of the mucous coat of the bowels, perhaps of the *illeum* or *jejunum*, which is attended with inflammation. When mercury is taken in this way, the inflammation generally implicates the stomach, liver, and other adjacent organs, and the article is a fruitful source of incurable dyspepsia.

Modus Operandi.—Cathartics seem to involve different principles in their operation. Some articles appear to augment the peristaltic motion by a specific stimulant effect upon the muscular fibres of the intestines, thus, by occasioning their contraction, they move their contents, without materially changing the latter in consistence. Rheubarb is a good example of this kind. Others, it would seem, excite the motion of the intestines by a mere mechanical agency over the nerves; and it would not be difficult to find many illustrations of this fact, in the history of various species of animals, especially that of the herbivorous quadrupeds. Professor Paris (*Pharmacologia*,) remarks on this subject, that he is disposed to consider the harsh and coarse texture which certain grasses assume in moist situations, as "a wise provision in nature to furnish an increased stimulus to the intestines of the animals who feed upon them, at a time when their diminished nutritive qualities must render such a result desirable." A more familiar example of the operation of a mechanical laxative is furnished in the use of *brown bread*, which produces its loosening effects merely by the friction its rough particles, or scales of the bran, occasion upon the inner coats of the intestines, as it is known that the flour without the bran will not have this effect.

Other articles, again, occasion catharsis by stimulating the exhalent vessels, terminating in the inner coat of the intestines, and by exciting the mouths of the excretory ducts of the mucous glands, by which an increased flow of serous

fluids takes place from the former, and a more copious discharge of mucus from the latter; the effect of which will be an increased activity of the peristaltic motion, attended with more thin, or watery, evacuations. The cathartics operating in this way are denominated *Hydragogues*.

Finally, we discover still another order of purgatives, which, produce their effect, upon the intestines by first stimulating some of the neighboring viscera, as the *liver* and *pancreas*, so as to excite a more copious flow of their secretions into the former; the consequence of which is an increased action of the peristaltic motion. Those thus operating upon the liver are called *Cholagogues* (from χολη, "bile," and αγω, "I expel.")

Physiology.—It has been contended that catharsis is not a *physiological* function, but is rather a *pathological* action. But it is not a little *strange* that the same individuals recognize every other evacuent process of the system, through any of the natural emunctaries, as being fully within the range of the physiological laws. Nay, more, almost *every degree of activity* of the other emunctories is admitted as being natural. Thus, the action of the kidneys may be promoted to the production of even *twice* or *thrice* the usual quantity of urine. Diaphoresis may likewise be *pushed to almost any extent;* and all this is considered not only in accordance with the physiological laws, but that it may contribute to the accomplishment of very important ends in the recuperative economy, or in many therapeutic intentions.

But, in reference to the *peristaltic* motion, according to the notions of some *ultra* medical philosophers, the order of nature is reversed. This function, they think, cannot with safety be *promoted*. When obstructed, it must either *remain* so, or the difficulty must be obviated in some other more *indirect* way. Dr. Blackburn remarks, that Dr. Withering's fear of purging was so great that he suffered one of his patients to remain costive *eight days*. * A number of instances of the same kind have occurred under the author's own observation. Various instances might here be related, in which

* Good's Study of Medicine, VI Amer. Ed. vol. I. p. 600.

enemas, warm baths, anti-spasmodics, emetics, and different other means have failed to relieve, when one or two little pills of beef's gall (*a cathartic,*) accomplished the object in twenty or thirty minutes after they were taken. It is not to be understood, however, that the indiscriminate use of cathartics, in constipation, is here advocated. It has already been stated that this is an exceedingly mischievous practice.

Application.—Besides their immediate operation in evacuating the contents of the bowels, purgatives possess many very important remote influences. Almost every movement of the entire economy is influenced or modified, by their action, to some extent.

The importance of cathartics in all cases of morbific accumulations in the intestinal canal, cannot well be overlooked. No one can help observing the remarkable sympathy existing between the organs of the first passages, and almost every other part of the body, especially between these and the brain, as well as the nervous system, generally.

The symptomatic head-ache, in constipation of the bowels, and the convulsive movement of the entire system, that attends intestinal irritations, are examples of the extent of this influence.

Now this difficulty, though generally within the control of other appropriate means, such as enemas and anti-spasmodics, is sometimes completely *beyond* their influence, as is the fact in some cases of bilious colic, ileus, enteretis, &c., in which a simple cathartic, as *olea ricini, or fel bovis,* has often afforded complete relief in a very short time.

We have a striking example of the *utility* of cathartics, in the proper treatment of typhus fever. Here, in this disease, it is evident that the characteristic debility, and the depression of the vital functions, are very much dependent on the irritation kept up by the morbific contents of the bowels. The brain is affected by direct sympathy, and the *consequence is delirium, coma, subsultus tendinum,* and *universal prostration of the nervous system.*

As soon as the irritating cause is removed from the intestines, these symptoms are obviated. To effect this object, cathartics of the proper kind, alone can be depended on, as

when the normal sensibility of the intestines is so much overcome, stimulants, relaxants, and counter-irritations, are of little avail; and, even *enemas* are inefficient, in many cases; as their influence will often not extend to the small intestines. Besides all this, it must reasonably be expected that there will be more or less *absorption* of the morbific contents of the intestines into the general circulation, and which will thus occasion still more mischief. Their early evacuations therefore, become a desideratum.

In febrile disease generally, and more especially, in the synochal grade, proper cathartics are of incalculable advantage. The pathologoy of fever comprises the increased or supernatural *combustion* or *chemical metamorphosis* of the elements of the blood, as well as those of the tissues. *Hence*, the evacuation of the carbonaceous or combustible materials, will, to a corresponding extent, *restrain* the combustion, or *obviate the cause of the fever*.

Depletion, in the *common acceptation of the term*, is not here advocated, as this practice must ever be *deprecated as mischievous*. There is much difference between the promotion of a natural physiological function, (as is that of the normal motion of the intestines), and ostensible depletion. The object of the *latter* is to diminish the living energies;* that of the *former*, to obviate the pathological *consequences* of such diminution.

Abnormal congestions, when attending fever, are also obviated by the operation of purgatives. The head may thus be relieved with remarkable promptness, from congestion and general hyperæmia.

In inflammation, no matter what tissue may be implicated, the same facts obtain, that have been noticed in the application of cathartics in fever. It is hence, unnecessary, to advert particulary to their use, in inflammatory diseases.

Chronic affections present a large field for the display of this class of remedies.

Among the diversified phenomena of the animal economy,

* The idea of general depletion originated in the mistaken notion that the vital principle may be abnormally exalted, and thus become the proximate cause of disease.

no one is more remarkable, than the peculiar relation existing between the vascular system and the function of absorption. It is a curious fact, that the general absorption goes on, always in an indirect ratio with the fulness of the vessels; e. g.; when the veins are *replete*, absorption is always *slow*, or entirely *suspended;* and, on the other hand, when *depleted*, this function is always increased, in a ratio corresponding with the emptiness of these vessels. This fact gathers *importance* when viewed in relation to the remediate or therapeutic action of purgatives.

When, therefore, in any part of our curative or remedial intentions, it becomes an object to excite the absorbents, we will find all those agents that draw upon the circulation, as cathartics, diaphoretics, etc., of *great* avail. *But does not this doctrine encourage blood-letting?* the reader may object:—*By no means.* An idea of evacuation, in this part of special therapeutics, does not contemplate the *ways and means* by which the end is to be accomplished, any more than in any other. For illustration, we may suppose the idea of the removal of gravel or calculi, from the bladder. Does this idea necessarily involve the painful operation of lithotomy? and may not these substances, sometimes be removed by various other and more natural means, as by *dissolving* them or *crushing* them with the lithontriptor, if necessary, and then removing them *via*, the urethra, or natural outlet? Thus the means employed to effect given objects, may differ very much.

But, when we speak of the use of cathartics and diaphoretics, in evacuating the *blood-vessels*, we do not contemplate the absolute removal of the *blood*, but only some of its superabundant constituents, that is, its serous portion. This is often an important desideratum, as in the treatment of dropsy, &c. The principle of the operation of these agents must not, therefore, be confounded with that on which phlebotomy is instituted.

We often have occasion to promote absorption in the treatment of various *scrofulous* and *tuberculous* affections, as well as in the different cases of *deposition*, besides dropsy; and here cathartics are of incomparable service. Many practitioners have been led, by observation, into the practice of their

use, without at all apprehending the principle of their action. Having thus noticed the general character of cathartics, and the principles that should govern their use, it may be more convenient to notice their many different applications in treating of the several *orders* of this class of remedies.

Order I.—ESCULENT LAXATIVES.

Laxatives constitute several important orders of cathartics, which, although generally arranged indiscriminately together, evince some difference in their therapeutic power, and still more in the convenience with which they are taken.

The medical influence of the *esculent* laxatives is chiefly confined to the alimentary canal, while the laxative bitters sometimes effect some important remote objects.

Laxatives are applicable in many cases in which the more active cathartics are objectionable. In chronic disease, when there is a tendency to constipation of the bowels, and in which the frequent repetition of active cathartics would only serve to aggravate the difficulty, laxatives are generally available. Convalescence, too, is often accompanied with torpor of the bowels; and here the esculent laxatives are *particularly* applicable, as they produce little disturbance in the general system, and may, moreover, be used for almost any length of time without becoming offensive to the taste or stomach.

The esculent laxatives are eminently calculated for the use of children and females, whose tastes are so delicate as not to admit of the taking of medicines so unpleasant as the bitter laxatives.

MANNA.

Synonymes.—Succus concretus, *L.*; Concrete juice of Ornus Europæa, *U. S.*; Manne, *Fr.*; Manna, *Ger.*, *Ital.*; Mana, *Span.*; Manna, *Vul.*

History.—"Actuarius is believed to be the earliest writer who mentions our manna. (Friend,—*Hist. of Physic*, i, 271.) The nature of the substance called manna (*Manhu*, Heb., *what is it?* Engl.,) in our translation of the Old Testament (*Exod.* ch. xvi, v. 14,) is quite unknown. (Carpenter, *Script. Nat.*

Hist., p. 514, 1829; *Pictorial Bible.*) Under the names *Honey-dew, aerial honey,* and *honey-oil* (δροσόμελι, and ἀιρόμελι, Galen; ελαιόμελι, Dioscor.; elæomeli, Pliny,) the ancients have been supposed to include our manna; for it is difficult to believe they were unacquainted with it, since Theophrastus (*Hist. Plant.* lib. iii, cap. xi) speaks of two kinds of ash (*Μελια, Fraxinus,*) one of which (ταπεινοτέρα, humilior,) is supposed to be *Ornus europæa* (Sprengel, *Hist. Rei. Herb.* i, p. 76.)" *

Botany.—*Sex. Syst.* Diandria Monogynia.—*Nat. Ord.* Oleaceæ.

Gen. Char.—*Calyx* very small, four-cleft. *Corolla* divided to the base into linear segments. *Pericarp,* a winged key, not dehiscing.—*Lind.*

Spec. Char.—A small *tree.* *Leaves* opposite, large, pinnated in three or four pairs; *leaflets* ovate-oblong, pointed, large, irregularly toothed. *Panicles* large, and many-flowered. *Flowers* small and polygamous. *Corolla* yellowish or greenish white. *Fruit* flat, wedge-shaped, smooth, winged.—*Pereira.*

Description.—Manna is obtained chiefly by making incisions into the bark of the tree and sticking leaves below them, in the middle of summer and in early autumn. The juice flows out as a clear liquid, and soon concretes on the stem and the leaves, as well as on straws stuck into them, forming stalactitical, or *Flake Manna.* Some falls on leaves, or into vessels placed for receiving it. Several kinds are known in commerce. *Manna in tears* is a pure kind, in bright and roundish white grains; but *Flake Manna* is chiefly valued, and mostly met with in this country. It is in light and porous pieces, 5 or 6 inches in length, mostly stalactitical in nature, often hollowed on one side, of a pale yellowish-white color, easily broken. The odor is faintish, the taste mawkishly sweet, followed by acridity. Its color changes to a yellowish red when long kept. Inferior kinds are in smaller pieces, irregular in form, soft and sticky, of a yellowish red or brownish color, of an unpleasant sweetness, and often intermixed with impurities. These are called *Manna in sorts, Fat Manna, Tolfa Manna,* &c. Another set of Mannas are produced in Syria, Persia, and Arabia (*v.* Manna, *Penny Cycl.*); but these are

* Pereira.—*Therapeutics,* vol. ii, p. 371.

never met with in European commerce. Manna melts with heat, and burns with a bluish flame. When pure, it is soluble in three parts of cold and in its own weight of boiling water. It is also dissolved by alcohol. Manna consists of about 60 per cent. of a peculiar principle called *Mannite*, but which varies in different varieties of Manna, Sugar, of which some is crystallizable (*Thenard*) and some uncrystallizable, a little Gum, with some yellow nauseous Extractive, which is supposed by some to be the purgative principle. *Mannite* is in acicular four-sided crystals, sweet, without smell, soluble in water, less so in alcohol, incapable of undergoing fermentation.—*r*.

Physiological Effects.—Manna is nutritive in small quantities, but when the does is increased, it proves laxative. Sometimes it occasions flatulency and colicky pains in adults, but, with children, it is usually agreeable.

Therapeutic Properties and Use.—This is a mild laxative, well suited to children, no matter how young. Dr. Burns (*Principles of Midwifery*) recommends it for recently-born infants, when the meconium does not readily come away. The dose for an adult is ʒj to ʒij; for children, from ʒj to ʒiij. It may be taken in substance, or dissolved in warm milk or water.

CASSIA PULPA.—The Pulp of the Cassia Fistula.

Description and Preparation.—This is the fleshy portion of the pods of the *cassia fistula*, a native of Upper Egypt and India. To prepare it, the pods are bruised, and then are left to stand in boiling water until the pulp is softened. The mass is now strained, first through a coarse sieve, and then a fine one, to separate the pulp with the water; this is then to be evaporated, by means of a water-bath, to the proper consistence. The pulp has a slight and rather sickly odor, but a sweet and mucilaginous taste. It is apt to become sour by exposure.

Analysis.—Cassia pulp, it appears from the analysis of M. Henry, contains *sugar*, *gum*, a *substance analogous to tannin*, a *coloring matter* soluble in ether, *traces of a principle resembling gluten*, and a small quantity of *water*.

THERAPEUTIC PROPERTIES AND USES.—The cassia pulp is, perhaps, the most laxative of all the esculents of the kind, but is somewhat objectionable on account of the flatulence and griping, as well as *nausea* it sometimes produces. It is recommended as a laxative in habitual costiveness, but is not much used by reformers, except in confections, as that of senna, which is much esteemed by many practitioners. The dose of cassia pulp is ʒj—ʒij.

TAMARINDI PULPA.—Pulp of Tamarinds.

DESCRIPTION AND PREPARATION.—The pulp of tamarinds consists of the fleshy portion of the pod of the *Tamarindus Indica*, a native tree of the East and West Indies, of Egypt and Arabia. The fruit is brought to us, preserved in sugar, constituting a dark-colored, adhesive mass of syrup, mixed with the pulp, membrane, strings, and seeds of the pod. That should be selected whose seeds are hard, clean, and not swollen, and the strings of which are tough and entire, and which has no musty smell. The pulp is prepared by digesting the preserved tamarinds with a little water, in an unglazed crock, over a sand bath or hot ashes, until it is rendered soft and of a uniform consistence, when the pulp is pressed out through a hair sieve.

ANALYSIS.—According to the analysis of Vauquelin, the pulp of tamarinds, independently of the sugar with which they are preserved, contains, in one hundred parts, 9·40 parts of *citric acid*, 1·55 *tartaric acid*, 0·45 of *malic acid*, 3·25 of *bitartrate* of *potassa*, 4·70 of *gum*, 6·25 of *jelly*, 34·35 of *parenchymatous matter*, and 27·55 of *water*.

THERAPEUTIC PROPERTIES AND USE.—The pulp of tamarinds is a very agreeable and delicious laxative; very useful in fevers, and during slow convalescence, when the appetite is poor and the bowels costive. It serves as an excellent adjunct to other and less pleasant cathartics. The dose is from ʒj to ʒj.

PRUNI PULPA.—Pulp of Prunes.

Description and Preparation.—This is prepared from plums or prunes, of which the best varieties are generally selected. The French prunes are the dried fruit of the St. Catharine and the Green-gage varieties. In Germany, a variety, called *Quetsche*, is dried for market. The "*dits a medecine*," or Black Plums, are prepared from the small black Damascus Plums; they are more acid and laxative than the others.

When the pulp is prepared from the fresh fruit, it is only necessary to bruise it and press the pulp through a fine sieve, when it is to be carefully dried to a proper consistence. The dried plums are exposed to a hot vapor, until softened, when the stones are taken out, and the remainder bruised and pressed, as before. This pulp may be either preserved with clarified sugar, or syrup. Thus prepared, the pulp contains a large quantity of *sugar*, some *gum*, *malic acid*, *azotized matter*, *pectin*, and *ligneous fibre*.

Therapeutic Properties and Use.—Pulp of prunes is a very agreeable laxative, to be used by convalescent fever-patients, when the appetite does not readily return, and the bowels incline to constipation. It also forms an important constituent of various laxative confections, as the confection of senna, &c. The dose is not regulated; the patient being allowed to eat as much as is agreeable to the stomach.

AMYGDALA PERSICA PULPA.—Pulp of Peaches.

The peach, which is such a palatable fruit to the healthy, is also of equal value to the sick. The pulp is laxative and nutritive; and though not always relished by those in ill health, is seldom offensive.

To prepare the pulp from the fresh fruit, the peaches are divested of their skins and stones, and then simmered in a proper vessel, over a slow fire, hot ashes, or sand-bath, until of a proper consistence. To preserve the pulp, an equal weight of clarified sugar is generally added.

Usually, the peaches, which are dried in great abundance,

as an article of diet, are simply stewed in water, and the juice, thus prepared, is drank by sick persons, as well for its nutritive properties, as its medical virtues.

The juices and pulps of various other domestic fruits, as *apples*, *pears*, *strawberries*, &c., are, also, very useful in a domestico-medical point of view.

MEL.—Honey.

This article (*elsewhere described*) is occasionally used as a laxative esculent; but it is apt to occasion flatulence. Nevertheless, it sometimes happens that patients take an abiding notion for honey, and it generally agrees with *such*, like many other articles that are thus especially craved. An ounce will generally prove laxative.

SACCHARUM.—Sugar.

Sugar is described in the class *demulcents*, but its laxative qualities, it is thought, entitle it to a place here. It is generally palatable, especially to children; yet it is not applicable in febrile and inflammatory diseases, but is, perhaps, most useful in habits of constipation, unattended with much other derangement. It has occasionally proved very serviceable in *dyspepsia*—having cured persons that had resorted in vain to many more active medical prescriptions. With *dyspeptics*, however, sugar will favor the generation of acids, and it, hence, has been considered objectionable in weak stomachs. From ʒj to ʒij, will generally prove laxative. When used as a laxative, sugar is best taken in the form of candy. But the most extensive use of this article, as an aperient, is in the form of syrups, with other articles.

Order II.—BITTER LAXATIVES: LAXATIVE BITTERS.

Some articles in the cathartic class have their purgative power very intimately associated with a bitter principle; and

it seems that, by virtue of this combination, they become possessed of rather a peculiar therapeutic power. We have a striking example of this in the bile of animals, which constitutes the natural and peculiar excitant of the peristaltic motion. Many vegetables also possess a very similar combination of their virtues, and are marked by a corresponding physiological effect.

In the classification of medical agents, respect has always been paid to the *degrees*, as well as to the *qualities* of their impression upon the economy. Hence, purgatives have been divided into *laxatives*, *cathartics*, *hydragogues*, &c. But in some articles of this class, the specific quality of their impression has been too much overlooked. Bitter laxatives are certainly entitled to a separate consideration. It would be better, however, if the name of this order were as much expressive of the peculiar therapeutic quality of its agents, as it is of their more obvious properties.

Laxative bitters, as this order are commonly called, may be used a long time without occasioning debility, from their cathartic power. This is dependant upon the intimate relation existing between their *tonic* and cathartic virtues. In this respect, as already hinted, they are very analagous to animal bile.

This order of cathartics is particularly applicable in all cases where a habit of constipation is attended by general debility, feeble digestion, and a sluggish circulation; and when cathartics are required, during *convalescence*, or in the treatment of *nervous diseases*, *dyspepsia*, *inflammations of the liver*, and other important viscera, laxative bitters, tempered with more active agents, according to circumstances, will be found very available. They are also of eminent service when used in the form of enemas.

MENISPERMUM CANADENSE.—The Root.

Synonymes.—Yellow Parilla, Sarsaparilla, Moonseed, Vine Maple, *Vul.*

History.—This very important medical plant is unknown to the old school medical profession generally; it has never been made officinal, nor received any attention by them

whatever. Indeed, it would seem from the total silence of botanists, in reference to its medical virtues, that these have been entirely unknown. The late Dr. Howard spoke of it in his "*Botanic Medicine*," and states that Dr. Gunn, of Kentucky, in speaking of the indiginous sarsaparilla, probably had reference to this article. The medicine has of late, however, been much used by our reformed practitioners, and has established a reputation commanded by few new remedies.

Botany.—*Sex Syst.* Diœcia Polyandria.—*Nat. Ord.* Menispermaceæ.

Gen. Char—Staminate Flowers—*Calyx* six-sepalled, somewhat two-bracted caducous; *petals* six to nine, glandular, minute, retuse; *stamens* sixteen to twenty-four; *anthers* four-lobed, two-celled, adnate to the filaments. Pistillate Flowers—*Calyx* and *corol* like the staminate; *germs* and *styles* three to six; *drupes* or *berries* mostly solitary, one-seeded; *nut* woolly, lunate, compressed.—*Eaton.*

Spec. Char.—*Root* perennial, horizontal, very long, woody, of a beautiful yellow color externally. *Stem* climbing, twenty to thirty feet long, of a greenish-yellow color, when young. *Leaves* sub-cordate, peltate, five-angled, four to five inches in diameter, with the petiole near the base, and white lines radiating from this, on the upper surface, on to each angle; they are entire, smooth, glaucous, green above, paler below. *Flowers* in axillary clusters, small, yellow. "*Drupes* about four lines in diameter, black, resembling grapes," (*A. Wood,*) *Seeds* crescent.

Analysis.—The author regrets his want of time to analyze the root of this plant. But it is evident that its medical virtues reside mostly in a gum or extractive, and perhaps to a very small extent in a resin. Water and alcohol are the proper menstruums.

Physiological Effects.—When taken into the mouth the root gives out an extremely bitter but not unpleasant taste, which is quite durable. In small doses no obvious effects are produced on the general system. But in larger doses, a slight increase of the volume of the pulse may be perceived, as well as an increase of the appetite, and the action of the



Triosteum Perfoliatum

bowels. In excessive doses vomiting and purging will follow. But no other unpleasant effects have been observed.

THERAPEUTIC PROPERTIES AND USE.—Menispermum canadense is laxative, tonic, and alterative. As a laxative bitter there is, perhaps, none other known of equal value. It is applicable in all cases in which other articles of the kind are indicated, and has never been known to be disagreeable to the stomach, when taken in proper doses. It has been regarded a specific for syphilis, and is properly much esteemed as a remedy in scrofulous affections, and diseases of the skin generally. In the mercurial disease it has also proved serviceable. Dyspepsia and general debility, attended with nervous prostration, are well calculated to evince its remedial powers. In chronic inflammation of the viscera, it admits of beneficial application. Some also have esteemed it much, as an anthelmintic. The dose is gr. iij.—gr. v. of the extract, or about a wine-glassful of the infusion. As it is difficult to pulverize, it is usually taken in the form of an infusion, tincture, or syrup.

TRIOSTEUM PERFOLIATUM.—The Bark of the Root.

SYNONYMES.—Breitblattrige Dreistein, *Ger.*; Fever-root, Gentian, Horse-gentian, &c., *Vul.*

HISTORY.—This article is spoken of, by some of the medical profession, as a *valuable medicine*. It has found a place in the secondary list of the U. S. Pharmacopea, and Dr. W. P. C. Barton, in his Medical Botany, has given a very accurate drawing and description of the plant, as well as an account of its medical virtues. Other authors, as Raffinesque, Griffith, Dunglison, &c., have also noticed it. The late Dr. Howard * has also described it, and spoken of it as a tonic, stimulant, and cathartic; useful in intermittents, &c.

Among the country physicians generally, this article has usually been known by the name of *gentian* or *genson*, and the author, in his Family Medicine, improperly confounds the *gentian* and *triosteum* genuses. This was the result of his participation in the popular error of regarding the vulgar names of plants. Since the preparation of the manuscripts

* Botanic Medicine, third Ed., Vol. ii, p. 296.

of the above named work, he has devoted several years to botanical investigations and has made some important corrections in the accounts and descriptions of a number of indiginous medical plants, which have not yet been made officinal.

Botany.—*Sex. Syst.* Pentandria Monogynia.—*Nat. Ord.* Caprifoliaceæ.

Gen. Char.—*Calyx* five-cleft, persistent; segments linear, about three fourths of an inch in length. *Corolla* tubular, five-lobed, sub-equal; base gibbous, nectiferous. *Stigmas* rather five-lobed, capitate. Fruit or berry drupaceous, somewhat dry, three-celled, three-seeded.

Spec. Char.—*Root* perennial, horizontal, branched, about eighteen inches long, diverging, caudaceous at the base, of a dirty yellow brown color without, whitish within, thick fleshy bark, woody centre. *Stems*, many from the same root, from two to four feet high, from a quarter to half an inch in diameter, round, simple, somewhat hairy, slightly grooved. *Leaves* large, opposite, in some varieties connate, especially the lower ones; in others, amplexicaule, or simply clasping, never petoliate, narrow at the base, oblong, lanceolate, eliptical, entire, somewhat rough, prominently veined, smooth margins, somewhat woolly to the touch. *Flowers* axillary, sessile, and arranged in triplets around the stem; the *corolla* is reddish-purple above, striated with lake, blended with white below, and covered with a dense pubescence. Its form is tubular, widest at the top, where it is divided into five lobes; at the bottom, it is terminated abruptly, in a gibbous articulation with the germ. *Berries* oblong, smooth, about three-fourths of an inch in length, and half an inch in diameter, of an orange-red or purple color when ripe; crowned by the persistent calyx; they are situated close in the axils of the leaves, generally one, but sometimes, more, to each axil. Dr. Barton states, that he has seen as many as nine at a whorl. These berries have three very hard or bony seeds, whence the generic name *triosteum*. The plant is found in most parts of the United States, growing in rich soil and rocky places. The Triosteum Augustifolium is an equivalent for this species.



Apocynum Androsæmifolium

THERAPEUTIC PROPERTIES AND USE.—The bark of the root of this plant is an invaluable laxative bitter, but when fresh or when taken in large doses, will occasion nausea and vomiting. It is eminently adapted to the treatment of autumnal fevers, and has been used specifically as a *fever powder* by some western practitioners and the aborigines. Some practitioners have also held it in high estimation as a remedy in dyspepsia. It is said to have given complete satisfaction, even in some desperate cases.

PHARMACEUTIC PREPARATIONS.—The only preparations yet made of this plant, are the *extract* and the *tincture*. It forms an ingredient, however, in several valuable compounds.

TINCTURÆ TRIOSTEUM: *Tincture of Triosteum.* ℞. Rad. Triosteum, in coarse powder, ʒxvj. Alcohol. Oiv. Digest in the sun seven days, and filter.

Use.—A laxative tonic, valuable in hysteria, hypochondriasis, and tedious convalescence after fever. *Dose*, fʒij—fʒiv.

EXTRACTUM TRIOSTEUM: ℞. Take of the root of the Triosteum, a suitable quantity. Water sufficient to cover the whole in a convenient vessel; simmer over a slow fire for six hours; then strain, and evaporate to the proper consistence.

Use.—This is applicable for all the general purposes for which the root is used. The dose is gr. v—gr. x.

APOCYNUM ANDROSÆMIOFOLIUM.—The Bark of the Root.

SYNONYMES.—Apocin gobe-mouche, *Fr.;* Bitter Root; Dog's Bane; Wandering Milk-weed, *Vul.*

HISTORY.—Both the *A. androsæmifolium,* and the *A. canabinun*, are noticed for their emetic properties, in most of the popular treatises on Materia Medica. They have gained admission into the secondary list of the U. S. Pharmacopea, but never have received the attention they merit, especially the plant here under consideration. Our Botanic physicians, however, have used the A. androsæmiofolium, pretty extensively, as a laxative bitter, and tonic, in intermittents.

Botany.—*Sex. Syst.* Pentandria Digynia.—*Nat. Ord.* Apocynaceæ.

Gen. Char.—*Calyx* very small, five-cleft, persistant. *Corolla* companulate, half five-cleft, lobes revolute, furnished at the base with five dentoid glands, alternating with the stamens. *Anthers* connivent, saggitate, cohering to the stigma by the middle. *Style* obsolete, *Stigma* thick and acute, *Follicles* long and linear. *Seed* comose.

Spec. Char.—*Root* perennial, creeping, very long, dark brown externally, whitish within, with a thick fleshy bark. *Stems* several, upright, branched, smooth, of a beautiful brown, or reddish-brown color. *Leaves* opposite, petiolate, ovate, acute, entire, smooth on both sides, two or three inches long. *Flowers* white, tinged with lake, disposed in terminal, or axillary, loose cymes. *Corolla* campanulate, with a spreading border. *Fruit* a pair of long linear, tapering, acute follicles, containing the seed, and silky seed-down; they are about four inches long, and from two to four lines thick, in the middle.

The entire plant, when wounded, emits a milky juice. It grows in meadows, and other rich grounds, in open places, in most parts of the United States. Flowers in June and July.

Analysis.—Dr. Bigelow says, that the root, according to his experiments, contains a *volatile oil*, *bitter extractive*, a *red coloring matter*, soluble in water, and not soluble in alcohol, and *caoutchouc*.

The medical virtues reside in the *bitter extractive matter*, and are imparted readily to water, but sparingly to alcohol.

Physiological Effects.—The bark of the root is extremely bitter to the taste, as much so as quinia. In small portions no very visible effect is produced, except its use is long continued, when it promotes the appetite, assists digestion, and relaxes the bowels. In very large quantities, it occasions nausea, vomiting, and purging.

Therapeutic Properties.—Apocynum is an excellent bitter laxative, and detergent; very valuable in the treatment of many varieties of chronic disease, especially liver affections, lues venerea, and scrofulous disease.

It has been highly prized as a remedy in intermittents, and

it is certainly equal with any of the common tonics in these cases.

The author has long been in the habit of combining this article with *menispermum*, in the proportion of two parts of the latter, and one of the former, as a prescription for some varieties of dyspepsia, and is prepared to report favorably, of the remedy. The same preparation is also valuable, as a laxative tonic, in amenorrhœa, and will prepare the way for the successful administration of the emmenagogues. The medicine may be given in the form of syrup or decoction, with sugar. Age impairs the virtues of the medicine.

Pharmaceutic Preparations.—Infusum Apocynum Andro.:—*Infusion of Apocynum, Andro.* ℞ Apocynum ʒj. Boiling water Oj. Digest for an hour and strain. *Dose*, a wine glass full, three times a day, as a laxative tonic.

EXTRACTUM APOCYNUM ANDROS.: *Extract of Apocynum Andros.* ℞ Root of Apocynum lb. iij. Aq. Cong. iij. Acetic acid or Vinegar, Oj. Boil together, over a slow fire, for three hours and strain. Evaporate slowly, in a water bath, to the proper consistence. *Dose*, gr. v.—gr. x.

This is the best form in which to exhibit the Apocynum, for, as the extract can be formed into pills, or can be easily enveloped in some pulpy substance, it can be much more conveniently taken than any other preparation of the medicine. Great care must, however, be taken, not to burn the medicine. To avoid injury from this accident, the process of making it, should always be conducted by means of the water bath.

AMYGDALUS PERSICA.—The Bark, Leaves, Blossoms, and Kernels.

Synonymes.—*Περσικον μηλον, Gr.;* Pfirsichbaum, *Ger.;* Pecher, *Fr;* Persico, *Ital.;* Alberchigo, *Span.;* Peach tree, *Vul.*

History.—The peach tree was known at a very early age. Dioscorides and Pliny, both speak of it. It is a native of Persia, but is now cultivated in every civilized country, where the climate is not too cold.

Botany.—*Sex. Syst.* Icosandria Monogynia.—*Nat. Ord.* Amygdalia.

Gen. Char.—*Calyx* five-cleft, inferior. *Petals* five. *Droops* with a nut perforated with pores.—*Will'd.*

Spec. Char.—A domesticated tree, too well known to need description.

Physiological Effects.—It is stated that the blossoms, bark, and leaves of the peach tree, have been known to be poisonous. It has been contended, that they contain *Hydrocyanic Acid*, but the reports of the poisonous effects that they are said to have produced, do not at all correspond with the symptoms of poisoning from prussic acid. The pernicious effects of all these parts of the peach tree, are said to be violent vomiting, purging, giddiness, convulsions, and stupor. The author, not having used much of any part of the peach tree, or its production, except the pulp or fleshy part of the fruit, is not prepared to judge properly as to their physiological effects. The kernels, however, have been considerably used by many that make it a point to reject poisons from their practice. Nevertheless, if it should be established that the peach tree is really poisonous, there is no reason why we should not totally expunge it from our Materia Medica.

Therapeutic Properties and Use.—All the medical parts of the peach tree, and its productions, except the pulp, are laxative bitters, and have been used, very profitably, it is said, in dysenteries, nephretis, ischuria, hæmaturia, and for the removal or prevention of worms. But for these purposes, the non-ligneous portions of the twigs, and the leaves are much the best.

Administration.—The dose of *peach blossoms* is the tea of half an ounce of the fresh, or a drachm of the dried flowers infused in water. That of the infusion of *peach leaves*, prepared by digesting ʒss of the dried leaves in Oj of boiling water, is fʒss. three times a day for a child. The bark of the root, and the kernels, is taken in the form of a tincture or syrup.

Pharmaceutic Preparations.—The bark, leaves, and kernels, alone, have entered into preparations that have inherited the name of this article.

TINCTURÆ PERSICÆ CORT. VEL FOLIA: *Tincture of Peach Bark or Leaves.* ℞. Bark or leaves of the peach tree, in coarse

powder, ʒiv. Alcohol Ojss. Digest in the sun for seven days, and filter. Dose, f ʒj—f ʒiij.

SYRUPUS PERSICÆ SEMINA COMPOSITA; *Compound Syrup of Peach Kernels.*—℞. Peach kernels, finely bruised, ʒviij. Rheubarb, in coarse powder, ʒvj. Scutellaria ʒiv. White sugar, ℔ iij. Compound tincture of myrrh, ʒiv. Water, O iv. Boil the rheubarb and scutellaria in the water, down to three pints; strain, and add the sugar, peach kernels, and tincture of myrrh, and simmer until the sugar is dissolved.

Use.—This is an excellent article in dysentery, and summer-complaints of children. Dose, from f ʒj—f ʒiij, to a child three years old.

EUONYMUS ATROPURPUREUS.

This article (described in the first order of *Tonics*) is an excellent laxative bitter, and is very highly esteemed by some of the Western practitioners. A friend of the author, Dr. J. Overholt, of Wooster, O., has long been in the practice of using this article, as a laxative bitter, in convalescence from fever, especially when of an intermittent or remittent type; and he regards it as decidedly the best article of this order he has ever used. There are many others that bear testimony to the same purport. The dose is gr. x—gr. xx, of the powder, and gr. v of the extract.

BERBERIS VULGARIS.

Barberry (described under the head of tonics) is a laxative bitter, eminently adapted to the treatment of dysentery, cholera infantum, cholera morbus, diarrhœa, and dyspepsia. The dose is gr. j—gr. x of the extract, and gr. x—gr. xx of the powder. The best way to exhibit it in those affections, is in the form of a syrup. This may be made by making a strong decoction, and adding an equal weight of the latter, of white sugar, on every pound of which two ounces of the essence of winter-green is previously dropped. The dose of this syrup is a small wine-glass full.

ASCLEPIAS TUBEROSA.

This species of asclepias (described under the head diaphoretics) is a very pleasant and mild laxative bitter, very serviceable as a collateral means in the treatment of visceral inflammation. In pneumonia, it is quite available, and its utility in pleuritis is such as has entailed on the plant one of its vulgar names, *pleurisy-root*.

CONVOLVULUS PANDURATUS.

This article (described in the class Lythontriptics,) although not very prominently bitter, is still thought to merit a place here. Its cathartic power is well marked, and its adaptation, as a laxative in chronic visceral inflammation, is rather peculiar, especially when the disease implicates the lungs, liver, or kidneys. It is best taken in extract. The dose of this is from gr. v—gr. x.

FRASERA CAROLINENSIS.

The American columbo (described among the tonics) is a laxative bitter of some value, but is most laxative only when quite fresh. When the medicine has been kept two or three years, its laxative properties become nearly extinct. The medicine has, however, generally, been favorably regarded as a laxative tonic. The dose is gr. xx to ʒj of the powdered root.

SYRUPUS TONICA LAXATIVÆ: *Laxative Tonic Syrup.*—

℞	Asclepias Tub.,	ʒxvj.
	Menisper. Canaden.,	ʒxvj.
	Triosteum Perfol.,	ʒviij.
	Apoc. Andros.,	ʒ vj.
	Saccharum purif.,	℔viij.
	Aqua font.,	Cong. ijss.

Boil the four first articles in the water for three hours, and strain. Boil down to five pints, strain while hot, and add the sugar.

Use.—This is an excellent laxative tonic, applicable in

most cases in which any of the foregoing articles are indicated. It is very agreeable to the stomach, and not unpleasant to the taste. *Dose* from f3ij to f3j.

Order III.—COMMON CATHARTICS.

The terms "*common cathartic*," are here designed to be understood as meaning that order of cathartics which possess no very specific action upon any of the neighboring organs, and whose primary action is principally confined to the intestines. Indirectly, however, they produce many very important effects in almost every part of the system. The evacuations produced by them, consist mostly of the simple contents of the bowels.

When cathartics are spoken of in an unqualified sense, the articles of this order are generally meant. When any other kind are intended, they are designated by the names indicating their qualities, as *laxatives*, *hydragogues*, &c.

The articles of this order, are generally *mild* or *easy* in their operation, although some of them are very *prompt* or *quick* in their effects. As to their application, it is not necessary to say much, as the indications to be fulfilled by them are easily understood. They may be stated as follows: 1st. To evacuate the contents of the intestines. 2d. To obviate remote sympathies, as headache, &c. 3d. To restrain or obviate the causes of febrile and inflammatory action. 4th. To change the terminations.

RHEUM.—The Root.

Synonymes.—*Ρηον, Gr.;* Rabarbaro, *Ital.;* Ruibarbo, *Span.;* Hai-houng, *Chinese;* Schara-modo, *Thibet;* Rhubarbe, *Fr.;* Rhabarber, *Ger.;* Rhubarb, *Vul.*

History.—It is supposed that Dioscorides, in speaking of '*ῥα*,' ('Rha,') and '*ῥηον*,' ('Rheon,') has reference to our Rhubarb. Dr. Pereira, however, thinks that the description given by

him * as well as that of Pliny,† does not answer to our drug. But P. Alpinus was of opinion, that the ῥα of Dioscorides was the root of *Rheum Rhaponticum*, which he (*Alpinus*) obtained from Thracia, in A. D., 1608, and cultivated at Pavia. It is pretty evident, however, that the late Greek writers were acquainted with our rhubarb. Alexander, of Tralles, speaks of it as a remedy in weakness of the liver and dysentery. According to Adam's translation, Paulus, in noticing the practice of the ancients, says, "Alvine discharges they promoted, by giving turpentine to the extent of an olive, when going to rest; or, when they wished to *purge* more effectually, by adding a little *Rheon*.

The Arabs were acquainted with several kinds, as the *Indian*, (Khorassanee,) and the *Chinese*, (Rewund sini.) The Persians, it is said, give *reon* as the Greek synonyme, of their *rawund*, (Rhubarb,) and of which, the plant producing it, they say is named *ribas*.

Botany.—*Sex. Syst.* Eneandria Trigynia.—*Nat. Ord.* Polygonaceæ.

Gen. Char.—*Calyx* petaloid, six-parted, withering. *Stamens*, about nine, inserted into the base of the calyx. *Styles* three, reflexed. *Stigmas* peltate, entire. *Achenium* three-cornered, winged, with the withered calyx at the base. *Embryo* in the centre of the albumen.—*Lindley*.

Spec. Char.—It is not a little singular, that long as rhubarb has been in use, and great as has been the attention given it by naturalists, the precise species yielding the different sorts of the drug, are not yet satisfactorily ascertained. This is to be accounted for by the remoteness of the region whence it is derived, and the jealous care with which the monopoly of its trade is guarded. "All that science has accomplished," says Dr. Griffith, "is rather to have ascertained by what species it is *not* afforded, than to point out those that *do*."

* "*Rha*, Dioscorides says, by some called *Rheon*, grows in those countries which are beyond the Bosphorus, and from which it is brought. It is a root which is black externally, like to great centaury but smaller, and redder, odorless, loose or spongy, and somewhat smooth externally."

† "*Rhacoma*," says Pliny, "comes from the countries beyond Pontus, resembles the black costus, is odorless, and has a hot astringent taste."

The species inhabit the extensive plains of Tartary, the stepps of Siberia, and the great mountains laying between these and the northern parts of India.

The species agree in being perennial, wild, thrifty, herbaceous plants, with perennial and branching *root-stocks*, which are thick and suculent. The *stems* of most of them attain the height of four to ten feet. The *leaves* are large, more or less cordate, wavy at the margin, shething at the base, either all *radical*, or where *cauline*, *alternate*. The inflorescence is paniculate, or spica-to-racemose.

The following synoptical arrangement, drawn up from the accounts of Drs. Lindley, Royle, Pereira, Guibert, and others, embraces most that is known of the species, that are supposed to yield the commercial rhubarb. They are divided into two classes, viz: *those with compound racemes*, and *those having close* or *spike-like-racemes*.

I. *Species with Compound Racemes.*

1. Rheum Palmatum, *Linn.*—"*Leaves* roundish cordate, half palmate; the lobes pinnatifid, accuminate, deep dull green, not wavy, but uneven and very much wrinkled on the upper side, hardly scabrous at the edge, minutely downy on the under side, sinus completely closed; the lobes of the leaf standing forwards beyond it. *Petioles* pale green, marked with short purple lines, terete, obscurely channelled quite at the upper end. *Flowering stems* taller than those of any other species."—*Lindley.*

This species grows spontaneously in the Mongolian empire, on the confines of China, and is extensively cultivated near Banbury, in Oxfordshire, for the supply of *English Rhubarb* to the London market. In 1750, Kauw Boerhaave, physician to the Emperor of Russia, obtained the seeds of two species from a Tartarian merchant, and on growing them, they proved to be the *R. Palmatum* and the *R. Undulatum*, but as cultivated by the Russian government, it never produced as good rhubarb as is produced from this species in England and France.

2. Rheum Compactum, *Linn.*—"*Leaves* heart-shaped, obtuse, wavy, deep green, of a thick texture, scabrous at the margin, quite smooth on both sides, glossy and even on the upper side; sinus nearly closed by the parenchyma. *Petiole* green, hardly tinged with red, except at the base, semi-cylindrical, a little compressed at the sides, with the upper side broad, flat, bordered by elevated edges, and of equal breadth at each end."—*Lindley.*

This is a native of Chinese Tartary, but is cultivated in France, and affords part of the *French Rhubarb*. Guibourt says, this is a pretty good imitation of the Chinese, but when cleared of the yellow powder, its different color and close radi-

ated marbling distinguish it; it does not crepitate under the teeth, nor stain the saliva of as deep a yellow. It is said, this is one of the species principally grown on account of its stalks.

3. Rheum Undulatum, *Linn*—"*Leaves* oval, obtuse, extremely wavy, deep green, with veins purple at the base, often shorter than the petiole, distinctly and copiously downy on each side, looking as if frosted when young, scabrous at the edge; sinus open, wedge-shaped, with the lower lobes of the leaves turned upwards. *Petiole* downy, blooded, semi-cylindrical, with elevated edges to the upper side, which is narrower at the upper than the lower end."—*Lindley.*

The R. Undulatum grows in Asiatic Russia, and probably in Chinese Tartary. It was formerly cultivated in Siberia, as the real officinal plant; but as the genuine rhubarb could not be procured from it, its cultivation has been given up.—*Guibourt.*

As already stated, K. Boerhaave obtained the seed from Tartary, and its cultivation then tried by the Russian government, but without satisfactory results. It is now raised in France, and constitutes a part of the *French Rhubarb.*

4. Rheum Emodi, *Wallich.*—*Leaves* cordate, acute, dull-green, but little wavy, flattish, very much wrinkled, distinctly rough, with coarse, short hairs on each side; sinus of the base distinctly open, not wedge-shaped, but diverging at an obtuse angle, with the lobes nearly turned upwards. *Petioles* very rough, rounded, angular, furrowed; with the upper side depressed, bordered by an elevated edge and very much narrower at the upper than the lower end.—*Lindley.*

The *emodi* grows on the Himalayas. It is supposed to be the best species known to the profession, and was at first considered, and especially by Mr. Don, as the species affording the Russian and Turkey rhubarbs. But Dr. Pereira received some specimens of the Himalayan rhubarb from Dr. Wallich himself, who obtained them from the inhabitants of the Himalayas, who had strung the pieces around the necks of their mules. These specimens, says Dr. Pereira, had scarcely any resemblance to the officinal rhubarb.

5. Rheum Raponticum, *Linn.*—" *Leaves* roundish, ovate, cordate, obtuse, pale-green, but little wavy, very concave, even, very slightly downy on the under side, especially near the edge itself; scabrous at the margin, sinus quite open, large, and cuneate. Petioles depressed, channelled on the upper side, with the edges regularly rounded off, pale-green, striated, scarcely scabrous."—*g.*

The raponticum grows in Thrace; on the borders of the Euxine Sea; north of the Caspian, Siberia, &c. It is cultivated in England for the leaf-stalks, which are used for tarts and puddings; also cultivated in France, and yields a part of the *French rhubarb.* This species, it is supposed, yielded the rhabarbarum of the ancients.

6. Rheum Leucorrhizum, *Pallas.*—*Radical leaves* about three, short-stalked, coriaceous, transversely elliptical, scarcely hollowed out at the base; with three thick branched nerves, projecting very much beneath, smooth on both sides, denticulate at the edge, with here and there a few scattered, roughish warts; no cauline leaves, or scarcely ever one. *Petioles* about an inch long, compressed, solid, with a narrow channel on the upper side."—*g*



Rheum Palmatum.



Rheum Emodi.



Rheum Compactum.

This species is found in the deserts of the Kirghis, and south of Siberia, and Altai Mountains. It is said to yield the *White* or *Imperial rhubarb.*

7. Rheum Crassinervium, *Fischer.*—*Leaves* heart-shaped, accuminate, wavy, very bullate, deep-green, quite smooth on both sides, rather glossy on the upper; scabrous at the edge; the ribs of a slight red color, and the central ones very thick at the base; sinus open, cuneate, with the lobes inflected. *Petioles* dull-red, rounded, rather angular, with the upper side narrow and flattened, the edges raised, narrower at point than at base.—*Lindley.*

The nativity of this species is unknown. It was sent from St. Petersburg under this name, and is now said to be growing at the Apothecaries' Garden, at Chelsea, near London. Dr. Lindley says that roots of it, of only three years of age, were as thick as the wrist, and, when examined at Apothecaries' Hall, were found to possess the color and peculiar odor of the best *Turkey Rhubarb.*

8. Rheum Capsicum, *Fischer.*—*Leaves* ovate, acuminate, cordate, and inflexed at base, very wavy, of a deep green, thick texture, glossy and somewhat even on the upper side, scabrous at the edge, a little downy on the under surface; sinus somewhat open, rolling, inwards; *Petioles* pale green, with scarcely a tinge of red, minutely downy, semi-cylindrical, with elevated edges to the flat upper side, which is of equal breadth at both ends.—*Lindley.*

Found on the shores of the Caspian, and on the Altai Mountains. Nothing is known of its roots.

9. Rheum Webbianum, *Royle.*—*Radical Leaves* large, long-stalked, cordate, acute; cauline ones obtuse, rather downy above, veiny beneath, and margin hairy, *Petioles* hairy."

This grows on the Choor and Himalaya mountains. The root is said to possess the same properties as R. Emodia.—*Griffith.*

10. Rheum Ribes, *Linn.*—This is a species given by Dr. Royle, as being the *Ribas* and *Rivash* of the Affghans and Persians, celebrated among them, and much esteemed on account of the agreeable acid of its leaf-stalks. "The root is said to be *rawund.*" "It is the *Riwas* of Serapion, who mentions it as making a good sherbet."—*Royle.* It is reported to grow on the mountains of Syria.

11. Rheum Hybridum, *Murray.*—This, says Royle, is a doubtful species, but is remarkable for the great size of its roots, as cultivated both on the Continent and in England.

II. Species with Close or Spike-Like Racemes.

12. Rheum Spiciforme, *Royle*—"*Leaves* thick, *leathery*, cordate, blunt, red, and reticulated beneath, and covered with stellate down on each side. *Petioles* and peduncles smooth. *Racemes* arising from the root, spicate."—*g.*

The R. Spiciforme is an inhabitant of the northern face of the Himalayas and of Thibet. Royle says that rhubarb, sent Mr. Moorcroft, from near Ludak, was of excellent quality; and it is suggested, by Dr. Lindley, that it is not improbable that it may have been furnished by this species.

13. Rheum Moorcroftianum, *Royle*—"*Petioles* deeply furrowed, with stipules as long as the petioles, and much more membranous. The imperfect rudiments

of leaves (scales) at the base are even longer than the stipules, and are very thin and much torn. *Leaves* clothed with a short scabrous pubescence."—*g*.

It is found at the Niti Pass, in the Himalayas, and in Thibet. This is considered to afford good Rhubarb.

DESCRIPTION.—There are a number of different sorts of Rhubarb in market, affording some variety in their physical properties, and still more in their virtues or medical activity. They are best described separately.

α. RUSSIAN RHUBARB.—This article, which, in Russia is called *Chinese Rhubarb*, in this country, is also sometimes called *Turkey Rhubarb*, owing to the fact that it was formerly brought by way of Natolia, or some other Turkish ports. This is imported from Tartary into the frontier town of Kiachta, and thence sent to Moscow and St. Petersburgh, whence it is carried to the rest of Europe. This drug, by the express stipulations of a contract, undergoes a peculiar preparation before it is shipped; and then is again subjected to a rigid inspection at Kiachta, by an official apothecary, from the Russian government.

The pieces of Russian Rhubarb vary in shape, being irregularly roundish and angular, the bark having been shaved off with a knife. Many pieces have holes in them, made by the inspector. They have a clean and fresh appearance, and lively yellow color. Internally, the texture is rather dense; the fracture is uneven, irregularly marbled with white and red veins, having a strong and peculiar, slightly aromatic, odor; a bitter, rather astringent, taste; feels gritty, when chewed; tinges the saliva, yellow; and produces a powder of a bright yellow color. The grittiness on chewing, is owing to the existence of raphides, or chrystals of oxalate of lime, which are situated within the cells.

β. CHINESE, or EAST INDIA RHUBARB.—This may be said to consist of two or three varieties, as: "1st, One which is called by Dr. Pereira, the *Dutch Trimmed*, or *Batavian Rhubarb;* and, according to the shape, called *Flats* or *Rounds* in the trade, is closely allied to, and is derived, with very little doubt, from the same sources as the Russian Rhubarb; some of which passes through Canton into Europe, or first into one of the Indian ports, and thence re-exported to Europe. It resembles the above in appearance, as the cortical portion appears to have been sliced off, and not scraped. The holes with which the pieces are perforated are smaller than those of the Russian, and often contain within them pieces of the string by which they have been strung together. 2d. Another variety, which is more particularly called *Chinese Rhubarb*, also *half-trimmed*, is distinguished from that called Russian, as being irregular in shape, never angular, but the edges rounded, as if the bark, instead of being sliced, had been scraped off; often some of it still remains adherent; the roots are, besides, of less uniform good quality than the Russian. Externally, of a dull yellow; many of the pieces heavier from being more compact, the reticulation less reg-

ular, and of a yellowish-brown color. 3d. A third variety has lately been described by Dr. Pereira, under the name of *Canton Stick Rhubarb*. This is in *cylindrical* pieces, about two inches long, and from half to three-quarters of an inch in diameter. These are probably produced in the mountains which bound China, as those of the province of Sechuen, and perhaps of Cansu."

γ. Himalaya Rhubarb.—This is supposed to be the product of different species, and is of different qualities. That yielded, as is thought by the R. Moorcroftianum, is of a bright and lively color, and is, as supposed by some, equal to the best Rhubarb. The variety afforded by the R. Webbianum was experimented with by Dr. Royle at the hospitals of Saharunpore, and found of good quality. Some of it was also submitted by the Medical Board to Mr. Twining, for experiment in the hospital at Calcutta. "After trial in forty-three cases, he reported, that in doses of ℈j. or 3ss. it has a good purgative effect--nearly equal to the best Turkey Rhubarb; in small doses, was tonic, astringent, and highly useful in diarrhœa." This kind of Rhubarb is not generally divested of its bark, which is of a brownish color. The texture is radiated and somewhat spongy. The color is of a brownish yellow, and the powder produced by the root, of a dull yellowish brown, with but little aroma.

δ. Siberian Rhubarb.—"Small quantities of this kind have been imported [into England] by Mr. Faber, and have been proved to be those called by Grassman and others *Siberian Rhapontic Root*. This occurs in long, thin, almost cylindrical, or spindle-shaped pieces, decorticated and perforated by a hole. Color, externally, pale yellow; internally, brownish-yellow or reddish white. Odor and taste of good Rhubarb, but weaker; does not feel gritty. Dr. Pereira compares it with English *Stick Rhubarb*. It has since been proved, that the Rhubarb cultivated at Banbury is yielded by the same species, that is *Rheum Raponticum*."—Royle.

ε. English Rhubarb.—This is said to be cultivated at Banbury, in Oxfordshire, to the extent of twenty tons annually, and is supposed to be the produce of *Rheum Rhaponticum*. "It is the kind frequently sold by men dressed up as Turks, as Turkey Rhubarb. The pieces vary in shape, some being ovoid, others cylindrical (*English Stick Rhubarb*), smoothed externally, and rubbed with a yellow powder; light, rather spongy, with a reddish hue. It is rather mucilagenous in taste, and a little astringent. Its odor feeble, but unpleasant. It is supposed that much of this is employed for adulterating the Asiatic Rhubarb, when in a powdered state."

ζ. French Rhubarb.—The French Rhubarb is produced chiefly from the R. Rhaponticum, R. Undulatum, and R. Compactum. That produced by the R. Palmatum, it is said, most closely resembles the Asiatic, but by cultivation in Europe seems invariably liable to degenerate. Some of its products are almost worthless. That produced by the R. Rhaponticum, which is cultivated in the gardens in the environs of Paris, is in pieces of various sizes, which are ligneous in their appearance, of a reddish-gray color on the outside, marbled inter-

nally with red and white arranged in the form of crowded rays, proceeding from the centre to the circumference. It has a mucilaginous and astringent taste, and rather a disagreeable odor, and when chewed does not crackle under the teeth. Considerable quantities of French Rhubarb are imported into the United States, under the name of *Krimea Rhubarb*, and it is supposed that it is often employed in the adulteration of the better kinds, as the Russian and Chinese. This is to be inferred from the quantity imported, and the fact that but little, comparatively, is used under its proper name.

Choice of Rhubarb.—In the selection of Rhubarb, the Russian is preferable, not so much on account of the superiority of the *kind*, as the *care* with which it is prepared, and the close *inspection* it undergoes. Next to this, in value, is the Chinese Rhubarb.

When the drug is selected without reference to the commercial variety, those pieces should be preferred which are moderately heavy and compact, of a fresh or lively color, brittle, and which, when fractured, present a lively fresh appearance, marbled with reddish and yellowish veins blended with white, and whose odor is aromatic and agreeable, possessing a bitter and moderately astringent, but not mucilaginous taste, and which feel gritty under the teeth, and stain the saliva yellow when chewed. The powder should be of a bright or lively yellow, or but slightly tinged with a reddish brown color. When too light, Rhubarb may be suspected as being worm-eaten or rotten; and when too heavy, it may be of an inferior sort, or contaminated by foreign substances; the coloring may also be artificial.

Analysis.—Many analyses have been made of Rhubarb with variable results. The most recent is that of Brande, who found in one hundred parts of Chinese Rhubarb, 2 of *rhabarbaric acid*, 7·5 of the *same acid impure*, 2·5 of *gallic acid*, 9·0 of *tannin*, 3·5 of *coloring extractive*, 11·0 of *uncrystalizable sugar with tannin*, 4·0 of *starch*, 14·4 of *gummy extractive*, 4·0 of *pectic acid*, 1·1 of *mallate* and *gallate of lime*, 11·0 of *oxalate of lime*, 1·5 of *sulphate potassa* and *chloride* of *potassium*, 1·0 of *silica*, 0·5 of *phosphate of lime* and *oxide of iron*, 25·0 of *lignin*, and 2·0 of *water*.

It seems that Rhubarb, as regards its therapeutic and chemical properties is a compound of resin, extractive matter,

and various acids, as the chrysophanic. Dr. Royle makes the following remarks on these substances:—

"The Chrysophanic acid of parmelia parietina, is identical with the pure yellow chrystalline obtained from Rhubarb, which has been described, in its impure state, as *yellow principle of Rhubarb*, *rhein* or *rhababarainas*, by Geiger: the *rhabarbaric acid*, by Brandes.

Resins are among the chief constituents of Rhubarb, although their presence is denied by Dulk; they are, by the intermedium of other substances, as the so-called extractive matter, etc., partially soluble in water.

The three chief resins, are aphoretine, phæoretine, and erythreortine; the two former appear isomeric; but all three are chiefly characterized by their different degrees of solubility.

The taste, odor, the relation to chemical reagents, and the therapeutic action of Rhubarb, appear to be modified essentially by the joint coöperation of the *resins*, the *coloring matter*, and the *extractive matter;* and probably, also, in a less degree by the tannin, gallic acid, sugar, pectine, and the copious salts of lime which it contains."—(Ann. der Chemie und Pharmacie, May, 1844, Phar. Jour., iv, 322.)

The medical virtues of Rhubarb are taken up by water, cold or hot, and by alcohol. Gelatine produces a precipitate in its infusion, (*tannate of gelatine*).

Physiological Effects.—In small doses, as three to five grains, it acts on the system as an astringent tonic. When the dose is increased to that of a scruple or a drachm, it purges slowly and mildly. It imparts its color to the urine and sweat, and, if long continued, also to the tissues, as the mesentery intestines, and even the bones. It is also perceptible in the milk of nurses. When potash is given in connection with the Rhubarb, the stain produced by it will be red.

Rhubarb is perfectly innocent in its action on the system, having never been known to produce any inconvenience when properly administered.

Therapeutic Properties and Use.—Rheubarb may justly be considered at the head of our cathartic class of medicines.

It is perfectly mild and safe in its use, and yet certain in its operation. The gallic acid that it possesses renders it somewhat astringent, and, when not taken in doses large enough to exhibit its cathartic power, it will usually act as an astringent tonic. This property eminently adapts the medicine to the treatment of diarrhœa and dysentery. The cathartic power is generally developed first, so that the bowels are always cleansed of their irritating contents, before the astringent produces its effects. It will seldom fail to relieve tenesmus, and soon to remove all the urgent symptoms of dysentery, whatever its type may be. Its properties are improved for some varieties of dysentery, as when the acids prevail, by the addition of the bi-carbonate of potash. But, when the potash is not indicated, it should not be given with the Rhubarb, when the latter is used in dysentery; for, by it, its astringent property is impaired, as this is dependent on the tannic acid that the medicine contains. In choleras and typhoid fever, as well as in typhus, the medicine may also be expected to be beneficial.

The purgative properties of Rhubarb seem to expend their force chiefly on the muscular coats of the bowels, as the discharges it produces are chiefly fæcal, and not watery.

The medicine, sometimes, is roasted, when intended as a remedy in dysentery. By this process, its purgative properties, which are dependent, in part, on a volatile principle, are driven off, while its astringent power remains unimpaired. But this is an unnecessary process, seeing that the astringent power may be so easily improved by the addition of other articles while all the cathartic virtues may be made available.

The dose of Rhubarb as a cathartic, is gr. xx—gr. xxx; as a remedy, in dysentery, the dose is gr. v to gr. x. Taken once an hour, until a good effect is produced.

Therapeutic Preparations.—Rhubarb has been the subject of many pharmaceutic preparations. This has been partly owing to the great therapeutic value of the medicine, and partly to the object of rendering its administration more pleasant—the drug being very unpleasant to the taste.

PULVIS RHEI COMPOSITUS: *Compound Powder of Rhubarb, or Neutratizing Mixture.*—℞ Turkey Rhubarb; Bicarbonate of Potassa; Mentha Piperita, equal parts; White Sugar, equal to the whole. Pulverize and mix.

Use.—One of the best preparations in cholera complaints that we possess. *Dose.*—Gr. xx to gr. xxx, with f℥ij of good brandy. Take once in 10 or 20 minutes, until relief is obtained.

PILULÆ RHEI, E., U. S.: *Rhubarb Pills.*—℞ Beat into a proper mass, finely powdered Rhubarb, 9 parts. Acet. Potash, 1 part. Conserve of Red Rose, 5 parts. Divide into 5 gr. pills.

℞ Rhubarb powd., ℥vj. Soap, ℥ij. Make a mass with water, and divide into 120 pills. (U. S.)

Action. Use.—Aperient in doses of gr. x—gr. xv.

PILULÆ RHEI COMPOSITÆ, L. E., U. S.: *Comp. Rhubarb Pills.*—℞ Mix powdered Rhubarb, ℥j, (12 parts, E.) Powdered Aloes, ℥vj, (9 parts). Powdered Myrrh, ℥ss., (6 parts, E.) Then rub into a proper mass with Soap, ℥j, (Castile, 6 parts, E.) Oil of Caraway, f℥ss. L. (Oil of Peppermint, 1 part, E.) Syrup, q. s. L. (Conserve of Red Roses, 5 parts, E.), till thoroughly mixed. (Divide into 5 gr. pills: or, if preferred, omit the Oil of Peppermint, E.)

℞ Rhubarb powd., ℥j. Aloes powd., ℥vj. Myrrh powd., ℥ss. Oil of Peppermint, f℥ss. Syrup of Orange Peel, q. s. Beat the whole together to form a mass. To be divided into 240 pills.

Action. Use.—Cathartic in doses of gr. x—ʒj. Well suited to a sluggish state of the bowels.

EXTRATUM RHEI, L. E. D.: *Extract of Rhubarb.* ℞ L. D. Macerate for four days, (with a gentle heat, L.),—Powdered Rhubarb, ℥xv, (℔j. D.), in Proof Spirit, Oj, (℔j. D.), and Aq. dest., Ovij. (℔ij. D.) Strain. Set by, for the dregs to subside. Pour off the liquor, and evaporate to the proper consistence.

℞ Cut Rhubarb ℔j, into small pieces. Macerate in Aq. Oiij, for 24 hours; filter through cloth, express moderately, macerate the residuum with Aq. Oij for at least 12 hours, filter through the same cloth, and express strongly. Filter again, if necessary, and evaporate to the due consistence in the vapor-bath. The extract may be obtained, of fine quality, by evaporation, in vacuo, with a gentle heat.

Action. Use.—Cathartic in doses of gr. x—℥ss. A good

preparation may be obtained with cold water and percolation, when spirit is unnecessary, and still better if evaporated in vacuo, as recommended in the E. P.

INFUSUM RHEI, L. E. D. U. S.: *Infusion of Rhubarb.*—℞ Infuse, in a lightly covered vessel, for 2 (12, E.) hours in boiling Aq. dest., Oj, (f℥xviij, E.; by measure, ℔ss. D.) Rhubarb in coarse powder, ℥iij, (℥j, E., ℥j, D.) Add Spirit of Cinnamon, f℥ij, E. Strain, (through linen or calico, E.)

℞ Rhubarb bruised, ℥j. Boiling Water, Oss. Digest for two hours in a covered vessel and strain.

Action. Uses.—Aperient and Stomachic in doses of f℥jss. repeated. The boiling water is ineligible, as a precipitate takes place on cooling: this is intended to be prevented by the addition of the Spirit. A good preparation may be made with cold water and percolation.

VINUM RHEI, E.: *Rhubarb Wine.*—Digest for 7 days coarsely powdered Rhubarb, ℥v, (℥ij, U. S.) Coarsely powdered Canella, ℥ij, (℥j, U. S.), in Proof Spirit, f℥v, (f℥ij, U. S.), and Sherry, Oj, and f℥xv. Strain; express strongly the residue. Filter.

Action. Uses.—Stomachic in doses of f℥ij. Purgative f℥ss.—℥j.

TINCTURA RHEI, E., U. S.: *Tincture of Rhubarb.*—℞ Mix powdered Rhubarb, ℥iijss., (℥iij, U. S.), and bruised Cardamoms, ℥ss. Proceed by percolation with Proof Spirit, Oij, as in Tinct. Cinchona. Or prepare by digestion.

Action. Uses.—Stomachic in doses of f℥j. Purgative f℥ss. A good preparation, especially if prepared by percolation, as Proof Spirit is an excellent solvent.

TINCTURA RHEI COMPOSITA, L. D.: *Comp. Tinct. of Rhubarb.*—℞ Macerate for 14 (7, D.) days Cut Rhubarb. ℥ijss. (℥ij. D.) Bruised Liquorice, (℥vj, ℥ss., D.) Cut Ginger and Saffron, aa, ℥iij, (℥ij, D. Bruised Cardamoms, ℥ss., D.), in Proof Spirit. Oij, (by measure ℔ij, D.) Strain.

Action. Uses.—Cordial, Stomachic in doses of f℥j. Purgative, f℥ss.—f℥j.

TINCTURA RHEI ET ALOES, E., U. S.: *Tincture of Rhubarb and Aloes.*—℞ Mix powdered Rhubarb, ℥jss. Socotrine or East Indian Aloes powdered, ℥vj. Bruised Cardamoms, ℥v.; and with Proof Spirit, Oij. Proceed as for Tinct. Cinchona.

℞ Rhubarb bruised, ℥x. Aloes in powder, ℥vj. Carda-

moms bruised, ℥ss. Diluted Alcohol, Oij. Macerate for 14 days; compress and filter through paper. U. S.

Action. Uses.—Warm Cathartic in doses of f℥ss.—f℥j.

TINCTURA RHEI ET GENTIANÆ, E., U. S: *Tincture of Rhubarb and Gentian.*—℞ Mix Powdered Rhubarb, ℥ij. Powdered or finely Cut Gentian, ℥ss., and with Proof Spirit Oij. Proceed as for Tinct. Cinchona.

Action. Uses.—Stomachic in doses of f℥j, and Aperient in f℥ss.—f℥j.

TINCTURA RHEI ET SENNÆ, U.S: *Tincture of Rhubarb and Senna.*—℞ Rhubarb bruised ℥j. Senna ℥ij. Coriander bruised, Fennel Seed bruised aa, ℥j. Red Saunders rasped ℥ij. Saffron, Liquorice, aa, ℥ss. Raisins, deprived of seeds, ℔ss. Diluted Alcohol, Oiij. Macerate for 14 days; compress and filter through paper.

SYRUPUS RHEI, U. S.: *Syrup of Rhubarb.*—℞ Rhubarb bruised ℥ij. Boiling water Oj. Sugar ℔ij. Macerate the Rhubarb in the water for 24 hours and strain; then add the Sugar, and proceed in the manner directed for Syrup.

This is a mild astringent and laxative, and may be used in bowel affections. *Dose*, from f℥j to f℥j.

SYRUPUS RHEI AROMATICUS, U. S.: *Aromatic Syrup of Rhubarb. Spiced Syrup of Rhubarb.*—Take of Rhubarb bruised ℥ijss. Cloves bruised, Cinnamon bruised, aa, ℥ss. Nutmeg bruised ℥ij. Diluted Alcohol Oij. Syrup Ovj. Macerate the Rhubarb and Aromatics in the diluted Alcohol for 14 days, and strain; then by means of a water-bath, evaporate the liquor to a pint, and while it is still hot, mix it with the Syrup previously heated. It may also be made by displacement.

OLEUM RICINI.

SYNONYMES.—RICINI OLEUM. Ricinus communis, *Oleum e seminibus; expressum, Lond.;* RICINUS COMMUNIS. Oleum e seminibus, *Dub.;* Huile de ricin, *Fr.;* Ricinusol, *Ger.;* Olio di ricino, *Ital.;* Aceyte de ricino, *Span.;* Castor Oil, *Vul.*

HISTORY.—The Castor Oil was known in the most ancient times. The plant (Palma Cristi,) producing it, is the *gourd* spoken of in Jonah iv 6, 7, 9, 10. (See *Kihayon*, in Bibl. Cycl. ii p. 203.) In the Greek, the plant is also called κικι or κροτων, (Dioscorides.) The Latin name *Ricinus*, comes from the Greek name of an insect, the *tick*, which the seeds resemble.

Both Hippocrates and Herodotus, speak of this plant. The Oil is now almost universally known, and used as a medicine. A native of India; when cultivated in this country, it is an annual. The Oil is manufactured extensively in the East and West Indies, as well as in the United States.

Botany.—*Sex. Syst.*—Monœcia Monadelphia.—*Nat Ord.*—Euphorbaceæ.

Gen. Char.—*Flowers* monœcious. *Calyx* three to five-parted, valvate. *Petals* none. *Filaments* numerous, unequally poladelphus; cells of the *anther*, distinct, below the apex of the filament. *Style* short; *Stigmas* deeply bipartite, oblong, colored, feathery; *Ovary* globose, three-celled, with an ovule in each cell. *Fruit* generally prickly, capsular, tricoccous. *Trees, shrubs*, or *herbaceous plants*, sometimes becoming arborescent. *Leaves* alternate, palmate, peltate, with glands at the apex of the petiole. *Flowers* in terminal panicles, the lower male, the upper female, all articulated with their peduncles, and sometimes augmented by bi-glandular bracts.—(*Lindley.*)

Spec. Char.—*Root* perennial or annual, long, thick, and fibrous. *Stems* round, thick, jointed, channeled, hollow, glanceous, of a purplish-red color upwards. *Leaves* large peltate, deeply divided into seven lanceolate, serrated segments, on long, tapering, purplish petioles, with glands at the apex of the petiole. *Flowers* monœcious, in terminal panicles, the lower male, the upper female, all articulated with their peduncles, and sometimes supported by bi-glandular bracts. *Calyx* 3—5 cleft, valvate. *Petals* wanting. *Male. Stamens* numerous, with the filaments branched and united below, with distinct globose cells of the anthers. *Female. Style* 1. *Stigmas* 3, bipartite, plumose, colored red. *Capsule* tricoccous, covered with spines, three-celled; one-seeded. *Seeds* pendulous, elongated, ovate, convex externally, somewhat flattened on the inside, of a pale gray color, but marbled with darker colors. The *seed* is covered by a thin, coriaceous, smooth seed-coat, composed of two layers; at its upper end is observed the fleshy swelling which has been termed *Strophiole*, with a delicate white membrane investing the nucleus,

which is large, oleaginous, and consists of albumen, containing in the middle a large leafy embryo.—*Royle.*

Preparation.—"Two varieties of Castor Oil seed are known, one large, the other small. The latter is thought to yield more oil, and of a superior quality. Geiger found in 100 parts of these seeds, exclusive of moisture, 23·82 parts of seed-covering, and 69·09 of kernel. These 69·09 parts contained 46·19 parts of fixed Oil, 2·40 of Gum, 20·00 of Starch and Lignin, and 0·50 of Albumen. The kernel, when fresh, is of a white color, and sweetish almond-like taste, followed by some acrimony. The Oil may be extracted from the seeds by decoction in water, or expression, with or without the aid of heat, and for experiment by the agency of Alcohol. Sometimes the Oil is boiled with water to dissolve out the Mucilage and to coagulate the Albumen. Dr. Christison sums up the results of various papers by stating that by simple expression a mild oil of excellent quality may be extracted alike from the small and large varieties of the seed; that when so prepared, it is apt to become sometimes rancid (Wright,) but may be prevented from doing so if heated to about 200°, so that its Albumen is coagulated and detached; that the embryo is scarcely more active than the Albumen of the nucleus, and that the husk and perispermal membrane are inert, (Boudron and Henry;) that if the seeds be boiled in the Eastern way, without first roasting them, or driving off the residual water from the Oil by heat, an Oil of fine quality is obtained, which keeps well,—(Guibourt,) but is probably not quite so active: that the active part of the Oil is probably volatilizable during decoction with water (Guibourt,) so that long ebullition may materially impair its energy; and that if the seeds be roasted before being expressed, or the Oil be exposed to a considerable heat, as in the American process, peculiar acids are engendered (called the Ricinic, the Elaïodic and Margaritic,) which greatly increase the acridity (Bussy and Lecanu.)*

Description.—Castor Oil is a thick, viscid, fluid, colorless, when fresh, pale straw colored when old, of a faint but un-

* *Royle*, Ther. Amer. Ed. p. 538, 539.

pleasant smell, oily, and sometimes acrid taste. Although heavier than most fixed oils, it is lighter than water. Its specific gravity is 0-969 at 55° F. If exposed to a cold of 32°, it deposits a few grains of Margarin. Exposed to the air, it becomes rancid, and dries up. It is soluble in all proportions in both Alcohol and Ether. "By the action of Hyponitrous, acid, a solid fatty matter is produced, which has been called *Palmine*." The alkalies saponify it, but produce acids apparently identical with those generated during its distillation. Differing in many respects from other fixed oils, some chemists are inclined to consider it as consisting "of a single and peculiar oleaginous principle," others as composed of three fatty acids, the *Ricinic*, *Elaiodic*, and *Magaritic* which are combined respectively with Glycerine.

Its purity may be tested by its being entirely dissolved by its own volume of Alcohol, or Ether. In this respect it agrees with palm oil, but disagrees with all other fixed oils.

Analysis.—The castor-beans were analysed by Geiger, and produced the following results:

Seed coats,	Tasteless resin and extractive,	1·91	23·82
	Brown gum,	1·91	
	Ligneous fibre,	20·00	
Nucleus of the Seeds.	Fatty oil,	46·19	69·09
	Gum,	2·40	
	Caseum (albumen,)	0·50	
	Ligneous fibre with starch?	20·00	
Loss,			7·09
Castor seeds,			100·00

The oil has produced, as products of saponification. 1. Ricinic acid.* 2. Elïodic acid† (*Ricino oleic acid.*) 3. Margaritic acid‡ (*Ricino-stearic acid.*) By distillation a volatile oil is produced, which is analagous to *acroleine*. When the oil is acted on by hyponitrous acid, *palmine* is produced, and by the action of nitric acid on it, it produces, according to Mr.

* The chrystalized hydrate of this acid consists of C 73·56, H 9·86, and O 16·58, or C^{35}. H^{31}. O^{5}.

† The composition of this is unknown.

‡ The chrystalized hydrate of this consists of C 70·5, H 10·90, and O 18·59. Its formula is C 35, H 31, O 6.

Tilly, Œnantheylic acid, Seberic acid, and Sipinic acids. The formula of the first is $C^{14.}$ $H^{13.}$ $O^{23.}$ + Aq.

Physiological Effects.—The Castor seeds (*semina ricina communis*) when taken, have a nauseous and somewhat acrid taste, and with most persons occasion protracted nausea, and even vomiting. But the oil, as usually prepared from them, is not very apt to produce much nausea, except what arises from its taste, which is disagreeable to almost every one. In doses of from a tea-spoonful to a table-spoonful, it generally produces a laxative effect, and from one to three table-spoonfuls will operate as a purge in from one to six hours.

The purgative power of castor oil is, it would seem, of a specific nature, as we find that its tendency to move the bowels is evinced in whatever way it may be administered, as when injected into the veins or bowels, or when simply applied to the epigastrium, or to raw surfaces.

Therapeutic Properties.—Castor Oil is regarded as being one of the mildest purgatives that we possess, and although of great activity, seldom occasions any uneasiness in the bowels. Dr. Cullen, (Mat. Med.) says, "it has this particular advantage, that it operates sooner after its exhibition than any other purgative I know of, as it commonly operates in two or three hours. It seldom gives any griping, and its operation is generally moderate—to one, two, or three stools only." Its immediate effects are chiefly confined to the intestinal canal, and the discharges produced are never very thin. Nor is the medicine ever apt to occasion much debility.

The application of castor oil is in all cases, in which the milder cathartics prove beneficial. Dr. Pereira has specified eight special applications of the medicine, viz:

1. *In inflammatory affections of the alimentary canal*, as enteritis, peritonitis, and dysentery.

2. *In obstructions and spasmodic affections of the bowels*, as intussusception, ileus, and colic, especially lead colic, "this oil is the most effectual evacuent we can employ."

3. *As a cathartic after surgical operations about the pelvis or abdomen*, (e. g., lithotomy, and the operation for strangulated hernia,) and after parturition.

4. *In affections of the urino-genital organs, of a spasmodic or*

inflammatory character, as inflammation of the kidneys or bladder, calculous affections, gonorrhœa, strictures, &c.

5. *In diseases af the rectum*, particularly piles, prolapsus, stricuture, &c., in which no better cathartic can be used.

6. *As an anthelmintic.*

7. *As a common purgative for children.*

8. *In habitual constipation.*—Dr. Cullen thought that instead of persons becoming habituated to the action of this article, so as to require an increase of the dose progressively, as is the case with most others, they will find that, in fact, a gradual diminution may be practiced with equally good effect until the dose is reduced from half an ounce to two drachms.

Administration.—The dose of oil for children is from a tea-spoonful to a table-spoonful; that for adults from a table-spoonful to an ounce. It is best taken floating on coffee, or spirit, epecially gin, or it may be given with aromatics, or be made up in an emulsion with the yolk of egg and mucilage.

ALOE.—The inspissated juice of various species of Aloe.

Synonymes.—*Ηικρος, Greek;* Elwa, *Hindoo.;* Sibbur, *Arab;* Bol-seah, *Persian* Aloe, *Ger.; Ital.;* Aloe, *Span.;* Suc d'Aloes, *Fr;* Aloes, *Eng.;* Pica, *Vul.*

History.—Aloes were known to Dioscorides, to Galen, to Celsus, and to Pliny, but Hippocrates and Theophrastus do not speak of them. They must have been in use for a long time, both in India and Arabia.

Botany.—*Sex. Syst.*—Hexandria Monogynia. *Nat. Ord.* Liliaceœ.

Gen. Char.—*Perianth* tubular, six-cleft, fleshy, nectariferous at the base, the sepals of the same form as the petals, and closely embricating them. *Stamens* hypogynous, as long as the perianth, or even longer. *Capsule* membranous, scarious, three-cornered, three-celled, three-valved, with a loculicidal dehiscence. *Seeds* numerous, in two rows, roundish or angular.—*Lindley.*

Spec. Char.—There are a number of species yielding the different aloes of commerce, some of which merit a separate notice.

1. ALOE SOCOTRINA, Lam., De Cand.—*Stem* woody, straight, one and a half feet or more in height, naked below, where it is strongly marked with the scars of leaves. *Leaves* amplexica, ascending, ensiform, green, curved inwards at the point, convex below, rather concave above, marked with numerous small white marginal serratures, the parenchyma abounding in a bright brownish yellow juice. *Raceme* cylindrical, unbranched. *Flowers* scarlet at the base, pale in the middle, green at the point. *Stamens* unequal, three of them longer than the flowers.—*Lindley.*

The *aloe socotrina* is a native of the island of Socotra, near the straits of Babelmandel, and yields the socotrine aloes, and, according to some, also the real hepatica.

2. ALOE VULGARIS. *Lam. Stem* woody, simple, cylindrical, short. *Leaves* fleshy, amplexical, first spreading, then ascending, lanceolate, glauceous green, flat above, convex below, armed with hard, distant, reddish spines, perpendicular to the margin; a little mottled with darker color; the parenchyma slightly colored brown, and very distinct from the tough leathery cuticle. *Scape* axillary, glaucous, reddish, branched. *Spike* cylindrical-ovate. *Flowers* at first erect, then spreading, after pendulous, yellow, not longer than the stamens.—*Lindley.*

This species is a native of the East Indies and Barbary, and is cultivated in the West Indies, Italy, Sicily, and Malta. It yields Barbadoes aloes. It is said that the two sub-species *A. Abyssinica* and *A. Barbadensis* are now divided from the A. Vulgaris.

3. ALOE SPICATA, *Thun. Stem* three to four feet high, as thick as a man's arm. *Leaves* thick, flashy, broad at the base, gradually narrowing to the point, channeled, full two feet long, distantly toothed, with a few white spots, their parenchyma almost colorless. *Spike* a foot long, very compact, with the flowers campanulate and horizontal. The three petals broader, ovate, obtuse, white, with a triple green line, the sepals narrower, less concave. *Stamens* much longer than the perianth. The flowers are filled with a purplish honey. *Lindley.* A native of the interior of the Cape of Good Hope, and contributes to yield *Cape Aloes*,

4. ALOE RUBESCENS, *Dec. Stem* suffruticose. *Leaves* amplexical, spreading. thorny at the margin. *Peduncle* compressed, branched. *Branches* sub-bracteate, *Pl. grass.* t. 15. A native of Arabia.—*r.*

5. A. BARBADENSIS, *Mill. Stem* somewhat shrubby, offshoots from the root. *Leaves* sword-shaped, sinuato-serrate. *Corol* yellow. Var. of *vulgaris*, Nees von E. 50. South of Europe, perhaps in the Peninsula of India. (Rheede, ii. t. 3). Introduced into the West Indies.—*r.*

6. A. ABYSSINICA, *Lam.* Subcaulescent. *Leaves* long and lanceolate, rather erect, hard, of a deep green color, rather concave above; margin sinuato-dentate, reddish, flowers of a greenish yellow. Var. of *A. vulgaris* Linn.—Abyssinia.—*r.*

7. ALOE INDICA, *Royle.* A low plant, with spikes of red flowers, which grows in dry barren places in N. W. India. This, if known to Roxburgh, was probably included by him in *A. perfoliata.* Col. Sykes has a species from the Deccan also with red flowers.—*r.*

DESCRIPTION.—There are different commercial varieties of

this drug, whose physical and medical properties are considerably different, and merit separate descriptions.

α. Socotrine Aloes. (*Aloe Socotrina.*)—The true socotrine aloes may be distinguished from all others, by its being of a redder color, and much more agreeable odor. It has a "garnet-red" hue, is in thin and translucent pieces, and when quite dry, is of a "golden-red" or copper color, but by exposure it changes to a brownish red. Its fracture is conchoidal, usually smooth and shining, but occasionally a little rough The odor fragrant, especially when the drug is fresh and heated, or when the breath is blown upon it. It is almost completely soluble in spirits, and easily reduced into a golden-yellow powder.

As this is considered rather the best variety of aloes, many inferior sorts are called by the name it bears, to promote their sale. The annual export of aloes from Socotra is only about two tons; and when it is considered that the whole world must be supplied with this, it is not reasonable to suppose that every article going by this name is genuine. Hence it has been said, that "much aloes going by this name has never seen the island of Socotra."

β. Hepatic Aloes. (*Aloe Hepatica.*)—The genuine hepatic aloes is supposed to be a variety of the socotrine. It is imported from Bombay, and has hence been called *Bombay* or *East India Aloes.* It comes in skins, contained in casks, holding two to three hundred pounds each Its odor is pleasant, resembling the socotrine, but may be distinguished by its opacity and *liver* color. This, at first, was justly considered a superior variety of aloes, and only inferior to the genuine socotrine; but, like that of the latter, its name was soon applied to other and inferior sorts from motives of speculation. When the name *Hepatic Aloes* was first applied to the aloetic productions of the West Indies, the better sorts of the latter were only considered entitled to the appellation. But, at present *Hepatic Aloes* seems to be a common name for all the West Indian varieties of the drug.

γ. Cape Aloes. (*Aloe Capensis.*)—This variety of aloes is imported from the Cape of Good Hope, on the southern extremity of Africa. It is brought here in chests and skins; that brought in the latter is best. Cape aloes has a shining, resinous appearance, is of a deep, brown color, with a greenish tint, and has a glossy or resinous fracture. The edges of the fracture, or thin pieces, viewed by a light transmitted through it, have a ruby or yellowish red color. Its odor is still more strong and disagreeable than that of the West India aloes, but it is not nauseous. The powder is greenish yellow.

Cape Aloes is collected by the Hottentots and Dutch boors, in great quantities, so that it has become extremely low in price, and being generally of a moderately good quality is more used than any other kind. The greatest objection to it is its unpleasant odor.

δ. Barbadoes Aloes. (*Aloe Barbadensis.*)—This, which is now generally called *hepatic aloes*, is the product of the West Indies.

Its color is not uniform; sometimes it is dark brown or almost black, or of a reddish brown, or liver color, and again of some intermediate shade. It is never clear or transparent like the socotrine, but is of a dull fracture, and almost perfectly opaque, even at the thin edges of the fractures, or thin layers. Its odor is nauseous and disagreeable. The powder is of a dull, olive yellow color.

Besides those varieties already named, there are some others of less importance, as the CABALLINE or *Horse Aloes*, which is said to be a product of Spain; MOCHA ALOES produced on the Island of Muscat--said to be a tolerably good kind; INDIAN ALOES, (not the *A. Indica* of the Ed. P.,) of this Dr. Pereira states he has received four varieties from Professor Royle, viz.: 1. Those from Northern India—dull, black, brittle, of little odor. 2. *Guzerat Aloes*—dark, gummy, and difficult to fracture. 3. *Salem Aloes*—blackish masses, large air cavities within, of an agreeable odor. 4. *Trichinopoli Aloes*—resembles Cape Aloes in its brittleness, odor, and color, but is more opaque.

ANALYSIS.—Aloes has been analysed by Trommsdorf, Vogel, and Bouillon-Lagrange, Braconnot, Winkler, and others, with variable results depending upon the kinds of the drug used, and the care with which the analysis was conducted. But the principle constituents were found to be a *resin*, a *saponaceous principle* (called *aloesin*), *albumen*, or an *insoluble albuminous principle*, and *aloetic acid*. Aloes was formerly considered to be a Gum-Resin, but Braconnot has shown that the portion considered to be gum is an extractive of a peculiar character (*aloisin*). The proportion of this principle varies from fifty to eighty per cent. in the different sorts of aloes.

"*Aloisin* is soluble in water and in weak spirit, and may be obtained from the former solution in thin translucent layers, which are of a reddish-brown color, but of a fine yellow when powdered, very bitter, and extremely active as a cathartic. Besides this, there is an *oxygenated extractive matter*, of which the quantity is increased when Aloes are boiled. The quantity of this varies from six to forty-two per cent., and in some kinds there is *Vegetable Albumen*, as might be expected where the juices of leaves are pressed out and then boiled. The presence of an acid in a solution of Aloes is

indicated by Litmus-paper. Trommsdorf considered this to be the Gallic, but Dr. Pereira has named it *Aloetic Acid.*"

Physiological Effects.—Aloes proves cathartic to most animals of the higher orders. On man, from one to five grains will usually produce this effect. It also proves tonic, but this effect is most apparent when taken in small doses. In its operation as a purge, it is rather slow, and is moreover chiefly confined to the lower portions of the intestines. This has been attributed to its being difficult of solution, and that because it is not dissolved when passing through the upper portions of the intestines, its specific effect is not there developed. But this is a mistake, as the tincture of aloes is also slow, or, at least, not by any means *proportionally* more quick.

Aloes is considered a very safe medicine, and is very extensively used in pills, as its dose is small, and its virtues rather permanent. What is remarkable with this article, is that an increase of its dose is not followed by a proportionate increase of its powers or activity; twenty grains will produce but little more effect than five.

Therapeutic Properties and Use.—All varieties of Aloes are cathartic, but are slow in their operation. They seem to direct their action to the muscular coat of the intestines, rather than to the exhalent vessels, and, as already stated, to the lower portions of the canal more than the upper.

Aloes is also tonic and emmenagogue; the latter property has secured it a place in another class. Its tonic power is a happy accompaniment with the cathartic, and gains it many applications that simple cathartics do not possess.

The particular cases in which the use of aloes is, and has been advised, are the following:

1. *In Loss of Appetite, and Dyspepsia*, especially when accompanied with costiveness. Here the medicine will prove very serviceable when exhibited in small doses.

2. *In Habitual Constipation of the Bowels*, arising from a deficiency of bile, or a sluggish condition of the large intestines. Aloes given in doses sufficiently large to occasion purging, will generally be very beneficial.

3. *Hypochondriasis and Nervous Inactivity*, occasioned by study or sedentary habits, are well calculated to prove the valuable medical virtues of aloes.

4. *In Cerebral Affections*, especially when of an inflammatory character, and there is much congestion and tendency to apoplexy, a thorough purge of Aloes will often be of more benefit than any other remedy.

5. *In Worm Complaints*, an occasional cathartic of Aloes will often serve as a complete prophylactic against worms. Used in strong decoction by enema, Aloes will remove the *ascaris vermicularis*, or thread-worm.

6. *To Promote the Secretion of Bile.*—It is thought that Aloes has a specific power to excite the functions of the liver, in the secretion of bile.

7. *To Excite the Menstrual Discharge.*—If thorough purging is instituted with aloes, the menstrual flux is often brought on after the most active emmenagogues have failed. The consideration of its specific emmenagogue powers belongs to another class.

The dose of Aloes is gr. v; but less will often operate.

PHARMACEUTIC PREPARATIONS.—DECOCT. ALOES, (E.,) COMP., L. D: *Compound Decoction of Aloes.*—℞ Boil Extract of Liquorice ʒvij, (ʒss. E. D.) Carb. Potash ʒj, (ϑij, E. D.) bruised. (Socotrine, E. or Hepatic, E. D.) Aloes, powdered Myrrh and Saffron, aa, ʒss., (ʒj, E. D.), in Aq. dist., Ojss., (fʒxvj, E., by measure ℔j, D.), till only Oj, (ʒxij, E. D.) remains. Filter and add Comp. Tincture of Cardamoms fʒvij (fʒiv, E. D.)

Action. Uses.—Cathartic; Emmenagogue in doses of fʒss. —fʒij. The boiling must not be carried to any considerable extent, as some of the Aloes becomes insoluble.

VINUM ALOES, L. E. D., U. S.: *Wine of Aloes.*—℞ Take (separately, D.) powdered Aloes, (Socotrine, E. D. or E. Indian, E.), ʒij, (ʒjss., E., ʒiv, D.), (ʒj, U. S.); and Canella, ʒiv, L., (ʒj, D. Grind Cardamom Seeds and Ginger, aa, ʒjss., E.), (ʒj, U. S.) Pour upon them Sherry Wine, Oij, (by measure, ℔iij, mixed with Proof Spirit, by measure, ℔j, D.), (Oj, U. S.) Macerate for 14 (7, E.) days, continually agitating; then strain (through linen or calico, E.)

Action. Use.—Warm Cathartic in doses of fʒss.—fʒj.

TINCTURA ALOES, L. E. D., U. S.: *Tincture of Aloes.*—℞ Macerate for 14 (7, E.), days bruised (Socotrine, E. D. or Indian,

E.), Aloes, ʒj, (ʒss., D.) Extract of Liquorice, ʒiij, (ʒjss., dissolved in boiling Aq., ʒviij, D.), in Aq. dest., Ojss., L., (Oj. and fʒviij, E.), and Rectified (Proof, D.) Spirit, Oss., (fʒxij, E., by measure, ʒviij, D.) (Agitate occasionally, E.) Strain. (Not conveniently prepared by percolation, E.)

Action. Usc.—Cathartic adjunct to Purgative or Emmenagogue draughts, in doses of fʒss.—fʒij. The weak Spirit is an excellent solvent of the active properties.

TINCTURA ALOES, (COMPOSITA, L. D.,) ET MYRRHÆ, E. U. S: *Tincture of Aloes and Myrrh.*—℞ Macerate for 14 (7 E.) days bruised (Socotrine, E. D. or Indian, E.) Aloes, ʒiv, (ʒiij, D., U. S.), Saffron, L. E., ʒij, (ʒj, U. S.), in Tincture of Myrrh, Oij, (by measure, ℔ij.) Strain. (Not well prepared by percolation, E.)

Action. Uses.—Emmenagogue. Stimulant Cathartic and adjunct to draughts and mixture in doses fʒss.—fʒij.

PILULÆ ALOES, (E.), COMPOSITÆ, L. D.; *Compound Aloes Pills.*—℞ Beat into a pill mass, Bruised Aloes, (Socotrine and Castile Soap, equal parts, E., Hepatic, D.), ʒj, L. D. Extract Gentian, ʒss., L. D. Oil of Carroway ♏xl, L. D. Syrup, q. s., L. D. (Conserve of Red Roses, q. s., D.)

Action. Uses.—Cathartic and Tonic, in doses of gr. x—ʒss. The Gentian and the soap are both thought to promote the action of the Aloes.

PILULÆ ALOES (CUM MYRRHA, L. D.), ET MYRRHÆ, E., U. S.; *Aloes and Myrrh Pills.*—℞ Rub separately into powder, Aloes, (Socotrine or E. I. 4 parts, E., Hepatic, D.), ʒij, and Myrrh, ʒj, (2 parts, E.), then rub them together, till incorporated, with Saffron, ʒj, (1 part, E.) Syrup, q. s., L. D. (Conserve of Red Roses, E.)

Action. Uses.—Cathartic and Emmenagogue in doses of gr. x—ʒj, every night.

PILULÆ ALOES ET ASSAFÆTIDA, E. U. S.: *Aloes and Assafœtida Pills.*—℞ Beat into a proper pill mass, Socotrine, or E. Indian Aloes, Assafœtida, and Castile Soap, aa, equal parts, with Conserve of Roses, q. s.

EXTRACTUM ALOES PURIF, L. EXTR. ALOES HEPETICÆ, D.: *Extract of Aloes.*—℞ Macerate with a gentle heat for 3 days, Bruised Aloes, ʒxv. (Hepatic 8 parts, D., (in boiling Aq. Cj, (8 parts, D.) Strain and set aside for the dregs to subside.

Pour off the clear liquor, and evaporate to a proper consistence.

Action. Uses.---Cathartic, in doses of gr. v---xv. Useful preparation, when freed from all impurities.

PULVIS ALOES CUM CANELLA, D. (ET CANELLÆ, U. S.:) *Aloes and Canella Powder.*---℞ Rub separately, into powder, Hepatic Aloes, ℔j. White Canella, ℥iij; and mix.

Action. Uses.---Cathartic and Stomachic, in doses of gr. x---ʒj.

PULVIS ALOES COMPOSITUS, L. D., *Compound Aloes Powder.*---℞ Rub separately into powder Aloes (Hepatic, D.), ℥jss. Resin Guaiacum, ℥j; and add Comp. Cinnamon (Aromatic, D.) Powder ℥ss; mix.

Action. Uses.---Warm Cathartic and Diaphoretic in doses of gr. x---ʒj.

JUGLANS CINNEREA.—The Extract.

Synonymes.—Juglans Cathartica; Weiser Walnus, *Ger.;* White Walnut, Butter-Nut, Oil-Nut, etc., *Vul.*

History.—During the Revolutionary War, Dr. Rush, became acquainted with the valuable cathartic power of the bark of the White Walnut. The soldiers had gained a knowledge of its empirical use, as a remedy for dysentery, which proved so violent, that the physicians could not successfully control it, until this remedy was discovered. The attention of Rush was thus directed to the article, and on finding it so valuable, prescribed it extensively. The *extract* has since become officinal in the United States Pharmacopia.

Botany.—*Sex. Syst.*—Monœcia Polyandria. *Nat. Ord.*—Juglandaceæ.

Gen. Char—Male. *Amentum* imbricated. *Calyx* a scale. *Corolla* six-parted. *Filaments* four to eighteen. Female, *Calyx* four cleft, superior. *Corolla* four cleft. *Styles* two. *Drupe* coriaceous with a furrowed nut.—*Wild.*

Gen. Char.—An indeginous forest *tree*, smaller than the black walnut, but is known, in favorable situations to attain considerable size, fifty feet in height, and with a *trunk* three or four feet in diameter. When standing in open situations,

the tree usually branches out within from eight to fifteen feet from the ground. The *branches* are nearly horizontal; these as well as the trunk, are covered when young, with a smooth, gray or ash-colored *bark*, whence its specific name *cinnerea;* but when old, it cracks and becomes rough, and of a darker color. The *leaves* are long, and consist of from six to eight pairs of oblong, lanceolate, leaflets: they are aromatic, like all those of the juglans genera. The male *flowers* are in large aments, four or five inches long, hanging down from the extremity of the shoots of the preceding year's growth. The fertile flowers are on the ends of the twigs of the same year's production. The fruit, which consists of an oblong nut, from an inch to an inch and a half in diameter, and from two to four inches in length, is generally in pairs on the same peduncle. The color of the *drupe* is the same as that of the leaves when immature, but of a blackish-brown when ripe. Its *shuck* or fleshy portion is juicy, but hard, and extremely acrid to the taste,—produces vessication when applied to the skin.* The *nut* is deeply furrowed, and has a severable longitudinal seam. The kernel is lobular, like that of all the juglans, very oily and edible. The tree grows in most parts of the United States.

Analysis.—The inner portion of the bark of the root, which is the medicinal part, contains an *essential* and a *fixed oil*; *resin*, *sugar*, an *extractive*, yielding a *peculiar principle*, (*juglacine*), upon which the active properties of the medicine are dependent, *tannic acid*, *potassa*, and *lime*. The bark will yield its virtues to water and alcohol.

Physiological Effects.—In small doses, the decoction of the bark is slightly stimulant, and aperient; in larger ones it proves cathartic; in excessive doses vomiting. In moderate doses it is harmless.

Therapeutic Properties and Use.—The bark of this tree affords one of the mildest and most certain cathartics that we possess. It operates without griping, nausea, or any other unpleasant effects. Like rhubarb, it is somewhat astringent and is hence, very applicable in dysentery and diarrhœa.

* The shuck of the butter-nut has been used as a vessicant by those who practice the use of those agents.

It is also available in fevers, dyspepsia, habitual costiveness, liver complaints, and visceral inflammations generally. Its operation seems to be quite physiological, and not apt to occasion debility. The medicine is also considered a valuable anthelmintic, when given in cathartic doses.

PHARMACEUTIC PREPARATIONS.—The white walnut has not yet furnished us many pharmaceutic preparations. The following, however, are quite valuable.

VINUM JUGLANDIS: *Wine of White Walnut.*—℞ Port Wine Oiij., White Walnut, inner bark of the root, in coarse powder, ʒiv. Digest in the sun for ten days, or by a moderate heat for five or six hours, and strain.

Action. Uses.—A valuable stimulating, and tonic cathartic, useful in dysentery, diarrhœa, intermittents, hypochondriasis, delerium tremens, &c. *Dose*, a small wine-glassful repeated.

EXTRACTUM JUGLANDIS: *Extract of White Walnut.*—℞ Take of the inner bark of White Walnut (that of the root is much the best,) a suitable quantity. Water q. s. Put in an iron kettle, and boil for four hours; strain and boil to the consistence of syrup; clarify with the white of an egg, and evaporate by means of a water bath to the proper consistence.

Action. Use.—This contains all the virtues of the bark, and may be taken in doses of *gr.* x to *gr.* xx.

FEL BOVINUM *seu* TAURI.

SYNONYMES.—FEL TAURI INSPISSATUM; Ox Galle, *Ger;* Bile de Bœuf, *Fr;* Beefs' Gall, Ox-Gall, *Vul.*

DESCRIPTION.—Fresh Beef's Gall, is a viscid fluid, of a greenish-yellow color, a peculiar nauseous odor, and a very bitter sickening taste. As prepared for medical purposes, it is dried by spontaneous evaporation, when it is of a more or less solid and hard consistence, brown color, and possessing its natural and peculiar odor.

The gall may also be refined in the following manner: Take of fresh ox-gall, Oij, alum, ʒj, chloride of soda, ʒj. Boil one pint of gall, and skim; add the alum and keep it on the fire for some time; boil the other part of the gall, as before, and add the salt in the same way as the alum; keep both these

solutions bottled, separately, for three months ; then decant off the clear liquid ; mix them in equal proportions ; a thick, yellow coagulum is immediately formed, leaving the refined gall clear and colorless.

Analysis.—The Ox-gall, analyzed by Berzelius, was found to contain 1, *bilin ;* 2, *cholepyrrhin ;* 3. *mucus ;* 4, *extractive matters ;* 5, *a peculiar fatty matter*, (*cholesterin*) ; 6, *oleate*, *margarate*, and *sterate* of *soda ;* 7, *chloride of sodium*, *sulphate*, *phosphate*, and *lactate* of *soda*, and *phosphate* of *lime*.

It will be discovered that the composition, as well as its common effects, prove bile to be a powerful chemical agent,—alkaline in principle,—well calculated for the digestion of oleaginous substances.

Physiological Effects.—Ox-gall produces effects on the human system, very analogous to those of human bile, it promotes digestion, proves tonic, and prominently laxative. The bile appears to be the chief agent that maintains the peristaltic motion.

Therapeutic Properties and Use.—Bile is justly considered, the most natural cathartic that can be used, and the repugnance with which it is taken, can be the only objection to its use.

When the normal peristaltic motion is feeble, and the bowels incline to costiveness, no article is better adapted than this ; and when duodenal digestion is imperfect, from a want of the natural biliary secretion, the Ox-gall will serve as a substitute.

Beef's gall, is also an excellent remedy in flatulent and even lead colic. It has often given relief, when many other more fashionable remedies had failed. As a remedy in intermittents, it has been much esteemed by some country practitioners ; and perhaps there is no better common cathartic, for dyspeptic habits. The dose is a few grains of the dried gall or from ten to fifteen drops of the fluid bile. The most convenient form of using it is in pills. These may be coated with sugar, flour, or any other substance desired, and thus the disagreeable taste of the gall, may be obviated.

ORDER IV.—CHOLAGOGUES: ANTI-BILOUS CATHARTICS.

A very large number of our cathartics have long since been denominated *anti-bilous*, from the circumstance that they occasion bilous discharges. But it is very certain that too much importance has been attached to these articles on the latter ground; for, however valuable the medicines may be in other respects, it is certain that their abstract power to remove bile cannot long sustain so great a reputation.

Every one that has given any attention to the history of the medical profession, must have observed the blind zeal which has engrossed almost every newly discovered fact, with speculations that are by no means justifiable. Ever since Hippocrates discovered that the bilary secretion may become impaired, there have been practitioners who have made *biliary disease* their almost exclusive study. This "one idea" practice, *fortunately*, is more characteristic of quackery and nostrum venders, than of the regular profession. One would suppose, from the placards in every city and village that has a store in it, that the evacuation of bile is the *ne plus ultra* of medical science. *Anti-bilous Pills!* (in nearly every form that our language will admit, even to the implication of *genders*, as "Anti-bilious FEMALE Pills") constitutes the *display-lines* in every show bill for cathartics.

But those articles which prove anti-bilious are, nevertheless, valuable: perhaps there are none *more* so. The same properties in cathartics that stimulate the liver, also usually extend this action to the general glandular system,—thus acting as universal alteratives or stimulants to the glands, much may reasonably be expected from their action. They might, with the same propriety, be considered *anti-scrofulous*, *anti-tuberculous*, *anti-scorbutic*, *&c.*

All that is contended for in favor of the alterative effects of mercury, will as well apply to a number of the articles of this order. These virtues clearly imply their use, i. e. in all putrid or typhus forms of fever in which the secretory organs are so much impaired. In cancerous, scrofulous, bilious and all other cachetic habits, they are clearly indicated.

PODOPHYLLUM.—The Rhizoma.

Synonymes.—Anapodophyllum Canadense, *Catasb.*; Aconitifolia humilis, flore albo unico campanulato fructu cynosbati, *Mentz.*; *Πους φυλλον*, *Gr.*; Schildblattriger Entenfuss; *Ger.*; Entenfuss, Fluss blatt, *Dutch*; Podophylle de Peltate *Fr.*; Mayapfel *Vul. Ger.*: May Apple, Mandrake, Wild Lemon, &c., *Vul.*

History.—This is a native of North America, and is peculiar to this country. The Aborigines seem to have had the first knowledge of it. They were all very fond of the fruit. The Cherokees made a syrup of it, which they regarded as a common purgative, useful in fevers, pleurisies, &c. They also regarded it anthelmintic, as by its active purging power it carried off the worms. The juice of the fresh root they considered a cure for deafness; they dropped a few minims into the ear. The Osage tribe considered the root a cure for poisons, stating that it drove the poisons off through the bowels.

The root of this plant has been in empirical use from the early settling of this country by the colonists, who gained their knowledge of it from the Indians. It is about forty years since the attention of the regular profession was directed to its virtues, and the plant has become officinal in the U. S. Pharmacopia, and has gained a notice in all regular treatises on Materia Medica. In Europe the plant has, as yet, gained but little attention. But as the profession have confined their attention to its empirical use, rather than its consideration in a pharmaento-physiological point of view, the medicine has never gained a higher character than that of a drastic hydragogue, rather suspicious in its effects. Of late some of our persevering and inquisitive reformers have investigated its therapeutic properties, and their inquiries have been so amply rewarded by their discoveries, that the plant is likely to gain the character of a highly important article of our Materia Medica.

Botany.—*Sex. Syst.*—Polyandria Monogynia.—*Nat. Ord.* Ranunculi, *Juss.*; Rhæadeæ, *Linn.*; Podophylleæ, *Lind.*

Gen. Char. *Calyx*, perianth inferior, three large, colored eliptical, convex, concave sepals, soon falling. *Carolla* ninepetaled. *Stamens*, filaments numerous, short; anthers ob-



Ipomea Jalapa.



Podophyllum Peltatum.

long, pointed, large, erect. *Pistil*, germen superior, roundish-oblong; syle none; stigma obtuse, furrowed, persistant; *Pericarp*, berry globose, crowned with the dark persistant stigma, yellow, or orange-colored when ripe, one-celled, many-seeded.

Spec. Char. The podophyllum genus has been thought to consist of but one species, but three have been discovered by Rafinesque viz: 1, P. Peltatum; 2, P. Montanum, and 3, P. Callicarpum. Of late several other species have been discovered in Northern India. The medical properties of all the species are very nearly alike.

α. P. Peltatum. *Root*, Rhizoma, perennial, horizontal, creeping, jointed, white, several feet in length, with many fibres issuing from the joints. *Stem* annual, upright, simple, smooth, cylindric, about a foot or more in height, and divided, in the bearing plants, into two equal branches or petioles bearing a single leaf each. *Leaves* large, round, peltate, lobed or divided into segments; *segments* cuneate, prominently toothed at the outer margin. *Flowers* white; petals seven to nine, concave, obovate. *Fruit*, berry ovate, somewhat flattened, yellow when ripe, juicy, edable, palatable to most persons when perfectly ripe, but nauseous when immature. This species affords many varieties, as the *Pumilum*, *Elatior*, *Graudiflorum*, *Odoratum*, *Heterophyllum*, *Oligodon*, *Triphyllum*, *Extraxillare*, *etc.* Grows throughout the United States in rich soils.

β. P. Montanum. *Root* of the same description as the foregoing. *Stem* annual, slender, furrowed. *Leaves* large, palmate, not peltate; *segments* long, central ones subdivided by shorter segments, prominently serrate from midway out. *Flower* axillary to the petioles like those of the other species; *petals* narrow, seven to nine in number. Grows on mountains.

γ. P. Callicarpum. *Stem* short, *Leaves* peltate, much resembling those of the first named species. *Fruit* small, oval, somewhat flattened, of a beautiful white color, crowned with the dark colored persistant stigma. The beauty of the berry has occasioned Rafinesque to confer on this species the name Callicarpum, (from $\kappa\alpha\lambda\lambda o\varsigma$, *beauty*, and $\kappa\alpha\rho\pi o\varsigma$, *fruit*.)

Analysis.—The dried root of podophyllum contains, 1, a trace of an *essential oil;* 2, *extractive;* 3, *gum;* 4, *starch;* 5, *resin;* 6, *gallic acid;* 7, a *peculiar principle* (*podophyllin.*) This latter substance contains some of the active medical properties of the plant. Podophyllin may be obtained in a somewhat pure state by boiling the coarsely powdered root in milk of lime for an hour, over a slow fire; straining the decoction, precipitating the lime with sulphate of zinc, decanting and filtering the solution, evaporating this to the consistence of an extract, but being careful not to burn it.---

This extract is now treated with cold alcohol of 0.817, and then the solution, thus formed, boiled with animal charcoal; filtered, then evaporated again, and the residue dissolved with boiling distilled water, which, on cooling, deposits the podophyllin. This preparation, however, has no special advantages over the alcoholic extract of the root, and, being so much more expensive to prepare, is not used for therapeutic purposes.

The virtues of the root are very readily taken up by alcohol, less so by ether, very sparingly by cold water, and little more so by boiling water.

Physiological Effects.—The entire plant, in its recent state, is poisonous, producing excessive vomiting, hypercatharsis, tormina, stupor, and bloating of the body. The fruit when ripe is esculent and nutritious; when taken freely it proves laxative, The rizome, when recently dried and taken in large doses, will operate as a drastic purgative and emetic. When it is well dried, or kept a year or two, or when baked, the poisonous property, which is volatile, becomes dissipated, and the medicine is comparatively mild in its operation as a cathartic.

Therapeutic Properties and Use.—The medicine, properly prepared, is one of the most valuable cathartics that we possess. It has long been a desideratum, with the general medical profession, to find a cathartic that will affect the glandular organs and their functions as mercury does, and which will, at the same time, be safe in its use. This object, which has become of paramount importance on account of the incalculable mischief that mercury has occasioned, it is thought is at last partially gained in the discovery of the full therapeutic power of this medicine alone. The alcoholic extract of the root has a very decided action upon the liver, giving rise, under some circumstances, to copious bilious discharges, and, generally, answering every reasonable expectation as a cholagogue, or alterative and excitant to the biliary apparatus.

In large doses podophyllum is actively hydragogue. In more moderate portions, several times repeated, it is almost certain to extend its action to the liver and secretory system

generally. Thus the theatre of its action is very extensive, which, when considered with the greatness of its power, very important consequences may justly be expected from the general display of its full energies.

Among the cases in which podophyllum is most useful are the following:

1. *In the ordinary Autumnal or Bilious Remittent and Intermittent Fevers.* It cleanses the primæ viæ directly—the secondæ and tertiæ, as well as the general vascular system indirectly. Its stimulating influence over the liver maintains a tonic power, and thus, the primary indications of intermittents and remittents are fulfilled. No article, now known, can supply its place in these cases.

2. *In Jaundice and Chronic or Acute Hepatitis.* The modus operandi of this article, in these cases, is readily understood.

3. *Enlargements of the Spleen, Chronic or Acute,* offer a good chance for the display of its alterative and depurative powers.

4. *Glandular Enlargements generally.* In these cases its remedial powers chiefly involve its hydragogue virtues, which excite the absorbents as explained elsewhere. Nevertheless, it seems also, to have a specific tendency to excite healthy glandular action.

5. *In Dropsies.* Its application in dropsy is considered in the next ensuing order.

6. *Inflammatory Affections generally, and especially those of the Viscera.*

7. *As an Anthelmintic.* Its power to expel worms is chiefly dependant upon its mechanical (*cathartic*) actions. It is said to remove tenia.

In Phrenitis. A brisk operation of podophyllum will greatly relieve phrenitis, and especially the attendant delirium.

9. *In Constipation of the Bowels.* This article, after its operation leaves the bowels in a soluble condition, and obviates costiveness.

10. *In Scrofula.* No other single article, perhaps, is more valuable.

Pharmaceutic Preparations.—As this article, in its simple

or unprepared state, is unfit for therapeutic application, its pharmaceutic preparations are of paramount importance. Still, however, its preparations are not necessarily many in number.

PULVIS PODOPHYLLI PREPARATÆ; *Prepared Podophyllum Powder.* ℞ Pulverize the scraped root of podophyllum, that has been kept in a dry place for a year or fifteen months, or which has been moderately baked in an oven; add to every pound of this powder one ounce of pulverized Anise or Fennel seed, and three drachms of Capsicum. Mix well, and keep in a clean glass jar.

Action. Use.—This is the only way the Podophyllum should be taken in substance; that is, it should not be taken fresh, nor yet alone. The dose is from *gr.* xx to *gr.* xxx. Is best taken in divided portions. Good cathartic powder in bilious autumnal fevers.

TINCTURÆ PODOPHYLLI COMPOSITÆ; *Compound Tincture of Podophyllum.* ℞ Well dried or baked Podophyllum, in coarse powder, ʒxvj; Cinnamon in coarse powder, ʒjss.; Anise, or Fennel seed bruised, ʒij; Alcohol Ovj. Digest the dry articles in the alcohol for seven days, and filter. *Dose*, fʒj-fʒj.

EXTRACTUM PODOPHYLLI; *Extract of Podophyllum.* ℞ Well dried Podophyllum, in coarse powder, ℔ij: Alcohol cong. jiss. Digest for seven days and strain. Distil the Alcohol to Oij; place in a water bath, and evaporate to the proper consistence.

Action. Use.—This extract contains all the virtues of Podophyllum, and is much the most eligible form for its exhibition. Useful in all cases in which any of the other preparations are applicable. The dose is *gr.* v.

The extract of Podophyllum thus prepared, is perhaps the best preparation made of this article. But when it is made, as is generally the case, by the use of water as the menstruum, it is of little value, as the active purgative properties are yielded but very sparingly, even to boiling water. The virtues of podophyllum reside in a resin and a peculiar extractive, and although they are given out even to cold water with facility, while combined with the juices of the fresh root, yet when the latter are dissipated in the process of drying, water will no more serve as a proper menstruum. This cir-



Sanguinaria Canadensis.

cumstance should not be overlooked, seeing that it is of such great practical importance. The watery extract requires a dose fully as large as that of the powder, and has, hence, no advantages over the latter, in its application as a remedy.

SYRUPUS PODOPHYLLI COMPOSITUS: *Compound Syrup of Podophyllum.* ℞ Podophyllum in coarse powder ʒxvj; Alcohol Oiij; water Ov; Ess. Anise, Ess. Peppermint, each fʒij; White Sugar ℔ij. Boil the Podophyllum in the alcohol and water, until the virtues are extracted and strain; evaporate down to one pint, and add the sugar and other ingredients.

Action. Usc.—This is a very agreeable cathartic, and is a good way to exhibit Podophyllum in cases where there is an aversion to its taste, or where the medicine should prove unacceptable or irritating to the stomach. The dose is from a tea-spoonful to a table spoonful.

SANGUINARIA.—The Rizoma.

Synonymes.—Sanguinaria Canadensis, *Linn.;* Sanguinaria du Canada, *Fr.;* Canadisches Blutkraut, *Ger.;* Puccoon, *Ind.;* Bloodroot, Red Puccoon, &c. *Vul.*

History.—This plant has long been known by the natives. They used the root to stain their faces, &c., and to dye their garments and skins. The plant was early in empirical use as a medicine, and for the last forty years it has been the subject of many medical essays, and has been spoken of in the highest terms by most of our authors on Materia Medica. It is made officinal in the U. S. Phar.

Botany.—*Sex. Syst.* Polyandria Monogynia.—*Nat. Ord.* Papaveraceæ.

Gen. Char.—Calyx two-leaved, deciduous. *Corolla* with from seven to fifteen petals. *Stamens* many. *Pistil oblong; stigma* sessile, bilobed. *Capsule* superior, oblong, attenuated at apex, one celled, two valved. *Seeds* globular.

Spec. Char.—*Root*, rizoma perennial, horizontal oblong, contorted, tubercular, beset with fibres, brownish red without, deep red or orange colored within, emitting, when broken, an acrid red juice; its size is about that of the little finger, or larger, in rich soil. *Leaves* radical, with long channeled petioles; they are convoluted, as they ascend out of the ground

early in April or even in March, embrace the scap, and expanding flower. In shape they are sub-reniform, cordate, lobed, glaucous, and prominently veined below, green above, and when full grown, about five inches in diameter. *Flower* white, in some varieties tinged with pink, appearing early in the spring, sometimes before the leaves are unfolded. *Fruit* an oblong, attenuated pod, with round brownish seeds.

This is the only species of the genus, but it has several varieties. Rafinesque has mentioned six, viz: 1, Parviflora; 2, Cespitosa; 3, Reniformis; 4, Repens; 5, Multipetala; 6, Stenopetala.

Analysis.—Analysis proves the root to contain an *extractive* (*Cinchonin Rafinesque*) *resin*, a *gum resin*, *gallic acid*, *fecula*, and, a *peculiar principle*, containing much of its virtues, and which has been called *Sanguinarine*. Alcohol extracts its virtues readily, and boiling water to some extent, but cold water very sparingly.

Physiological Effects.—The seeds and tops are acro-narcotic, and the entire plant poisonous in its green state, when taken into the stomach. Its root is escharotic, and has a very acrid taste when fresh, but less so when dried. When thoroughly dried, or when one or two years kept, it is not capable of producing any violent effects when taken in moderate doses. In doses of ten to twenty grains it excites vomiting. Five grains will nauseate, and lessen the pulse while the nausea continues. In one grain doses, it acts as a tonic.

Therapeutic Properties and Use.—Sanguinaria has been considered one of the most valuable of our indiginous plants. The author, however, has never thought it entitled to so much credit, as he has regarded it rather too violent in its effects. That it possesses properties, however, that are capable of effecting important objects, cannot be denied. It has a remarkable effect upon the secretions, and with podophyllum will operate powerfully upon the liver. It is placed in this order, not so much on account of its cathartic power, which is not very marked, but in consideration of its power over the secretory organs. It is not much used alone, but in connection with some other cathartic remedies, it is capable of effecting important ends in many cases that are difficult to manage.

Sanguinaria is regarded cathartic, emetic, expectorant, diaphoretic, tonic, stimulant, deobstruent, anthelmintic, escharotic, &c. It has many applications, but is most valuable in autumnal fevers, scrofula, and pectoral diseases. In extolling its virtues, Professor Rafinesque says, "from thirty to eighty drops of the tincture in wine, twice a day, is a good prophylactic for intermittents, marshy fevers, and inward fevers. It is very bitter, increases the appetite, and tone of the stomach. But it is beneficial in many other diseases of the liver and lungs, typhoid pneumonia, hooping cough, torpor of the liver, hydrothorax, croup, amenorrhœa, asthma, peripneumonia, trachealis, incipient consumption, ulcerous sore throat, cignanche trachæitis, dysentery, inflammatory rheumatism, and, externally, in ulcers, polypus of the nose, fleshy excrescences, and fungous tumors." Dr. Tully says, "it unites all the beneficial effects of Squills, Seneka Root, Digitalis, Guaiacum, and Amoniacum, without their bad effects." The dose of the powdered root, as a cathartic, is *gr.* v to *gr.* viij, repeated, but it is apt to nauseate, and is not often given alone as a cathartic.

Pharmaceutic Preparations.—Although Sanguinaria enters as an ingredient into many preparations, but few bear its name.

TINCTURA SANGUINARIÆ: *Tincture of Sanguinaria.* ℞ Coarsely powdered Sanguinaria ʒiv; Alcohol diluted Oij. Macerate fourteen days and filter.

Action. Use.—An aperient, cathartic, emetic, and expectorant, mostly used as an emetic and expectorant in croup, pneumonia, &c. Dose f ʒss.—f ʒj.

EXTRACTUM SANGUINARIÆ: *Extract of Sanguinaria.* This is prepared in the same way as the Extract of Podophyllum, which see.

Action. Use.—As this contains all the virtues of the root, it is applicable in all cases in which *that* is indicated. The dose is from *gr.* j to *gr.* iij.

LEPTANDRA.—The Root.

Synonymes.—Veronica Virginica, *Linn;* Black-root, Brinton's root, Culver's Physic, &c., *Vul.;* Quitel, *Del. Ind.;* Hini, *Osage & Missou. Ind.*

History.—Although this plant has long been in empirical use, and high favor, as with those physicians whose names it bears, yet it has never gained popular favor. It had, however, gained an admission into the U. S. Pharmacopia, but was omitted at the last revision. It is an indiginous perennial, growing in rich soil, along fences, and in open woods, in most parts of the United States.

Botany.—*Sex. Syst.*—Diandria Monogynia.—*Nat. Ord.*—Scrophularineæ.

Gen. Char.—*Calyx* four-parted. *Corolla* subrotate, deeply four-cleft, lower segments mostly narrow. *Capsules* compressed, two-celled, few-seeded.

Spec. Char.—There are several species of this genus, that possess nearly analogous properties, and are used indiscriminately, by some practitioners. But, some of the species, perhaps, are too violent to be admitted into our Materia Medica. The *L. Virginica* is the species generally used.

The Leptandra Virginica is a beautiful plant, and like the other species, indiginous. *Root* perennial, horizontal, woody, of the thickness of the finger, from six to twelve inches long, with many long slender, dark fibres issuing horizontally in every direction. *Stems* one to six, upright, from two to five feet high, from one fourth to half an inch thick, simple, or branched at the top, into from one to five spikes, bearing the fructification. *Leaves* whorled, from four to six in a whorl, long, lanceolate, accuminate, serate. *Flowers* numerous, nearly sessile, in long terminal, cylindrical spikes; they are small and white, tubular, pubescent inside. The varieties of this species, are the *Quadrifolia Multicaulis, Polystachya Macrostadrya, agustifolia*, &c.

The other species are: 1. L. Purpurea, which has only three leaves to a whorl, and which are broader. The flowers, which are purple are larger, and disposed in a single terminal, loose, tapering spike. 2. L. Villosa, (Raf.) This has its leaves in whorls also, but they are hairy and brownish be-

neath, lower whorls with five leaves, upper ones with three or four. The spikes are cylindrical, and pubescent, and the flowers white.

Analysis.—The root contains an *essential oil, bitter extractive, tannin, gum, resin?* and *woody fibre*. Its virtues reside in the extractive, and are imparted freely to boiling water, less so to cold water or alcohol. Age impairs its virtues.

Physiological Effects.—In the recent state, the root is acrid and violent in its effects. In doses of three or four ounces of the strong decoction, it will give rise to severe nausea, vomitings, and purging, it is said, of blood. But in the cured state, it is quite mild, and makes a good and safe medicine.

Therapeutic Properties and Use.—The Leptandra has been in creditable use, among Botanical physicians for many years. "The Blackroot," says Dr. Howard,* "is very highly celebrated by those best acquainted with its virtues and effects, as an efficient purge, operating with mildness and certainty, without producing that depression of the living powers so common to other purgative medicines. In typhus and bilious fevers, it removes the black, tarry, morbid matter, from the intestines, which seems so necessary to be carried off by some means or other, and it does it in a manner most natural, without weakening the tone of the bowels, or leaving behind it the poisonous sting so often remaining after the use of calomel, that almost universal cathartic in fevers."

The dose of the powdered root is from *gr.* xx, to ʒj; that of the decoction of an ounce of the root to a pint of water, fʒj —fʒij, repeated.

APOCYNUM ANDROSÆMIFOLIUM.

This article also merits a place in this order, as it is known to be a good anti-bilious cathartic. As such it is an excellent remedy in marsh and autumnal fevers. The dose is from *gr.* xx, to ʒj. The extract is, however, the most eligible form in which to take it.

* Botanic Medicine, vol. ii, p. 262.

Order V.—HYDRAGOGUES.

Hydragogue (*Hydragoga;* from ὑδωρ, 'water,' and αγω, 'I expell), is a term applied to such articles of the cathartic class, which possess the power to expel serous effusions. This is done by their exciting the absorption of them back into the circulation.

One of the most remarkable circumstances, common to the animal economy, is the very peculiar relation existing between the circulatory and secretory systems. To understand this correctly, it is proper to premise first, by noticing the instinctive disposition of the blood-vessels to maintain the normal quantity of the serous portion of the blood. Whenever this is lacking, absorption is accelerated from every accessible source to supply it. This doctrine appears to be established by the experiments of M. Majendie.* The inordinate loss of the aqueous portions of the circulating humors by any one emunctory, is counterbalanced either by a greater absorption from the cellular system, or some of the internal cavities, in which it may be accumulated, or by the diminished action of one or more of the other serous emunctories. Thus we discover, that in dropsical effusions, there is always a *diminished* action of the cutaneous exhalents, and of the kidneys, and that whenever the latter are excited so as to carry off a larger proportion of serum, the dropsical collection will not only cease to progress, but will diminish, as the kidneys and cutaneous emunctories, make their draw upon the circulation; for the latter in turn must be supplied by some other source, and thus the absorbents are called into action and the dropsical fluid is reabsorbed into the circulation, and thence removed faster or slower, as the diuretics or diaphoretics may be pushed.

It is on this same principle, that hydragogue cathartics reduce dropsical swellings. These agents stimulate the internal exhalents, and thus drain from the common circulation, a vast amount of serous fluid, which can only be again supplied by the agency of the absorbents.

Objections have been urged against the use of cathartics in

* Jour. of Experimental Physiology, 1821.

dropsies, on the ground that they produce debility. These are valid to some extent, for when purgation is rapidly sustained, it will, without doubt, carry away more or less chyle, before it enters the circulation. But so far as the serous discharge is concerned, the objection would apply with equal force against the use of diaphoretics, as well as diuretics, or any other means capable of removing serum.

SENNA—The Leaves and Legumes.

Synonymes.—Cassia Senna, *Linn., Dub.;* Sennesblatter, *Ger.*; Senna,*Ital.; Portugal.;* Sen, *Span.;* Senna *Eng.*

History.—The history of senna dates with that of the Arabians, among whom its virtues were early discovered. It is said that it was employed by Mahomet, (*Reiske.*) Mesue Serapion, and Avicenna mention it. The Arabians, however, only used the fruit. At the present time senna is used by almost every class of physicians, and constitutes one of the most popular articles of the old Materia Medica. It is a native of India, Arabia, and Africa.

Botany.—*Sex. Syst.*—Decandria Monogynia—*Nat Ord.*—Leguminosæ.

Gen. Char.—*Sepals* five, scarcely united at the base, more or less unequal. *Petals* five, unequal. *Stamens* ten, free, unequal, the three lower ones longer, the four middle ones short and straight, the three upper ones with abortive anthers. *Anthers* dehiscing at the apex. *Ovary* stalked, frequently arched. *Legume* various.—*Pereira.*

Spec. Char.—There are many different species that contribute in furnishing the sennas of commerce, and there seems to be still some uncertainty about the identity of several. The following descriptions are given by Professor Royle.*

"1. C. Forskalii (C. lanceolata, *Forsk.* and *Lindley*, Fl. Med. p. 259.) Leaflets in four or five pairs, never more; oblong, and either acute or obtuse, not at all ovate or lancolate, and perfectly free from downiness even when young; the petioles have *constantly* a small round brown gland a little above the base. The pods are erect, oblong, tapering to the base, obtuse, turgid, mucronate, rather fal-

*Materia Med. &c., Amer. Ed. p. 350.

cate, especially when young, at which time they are sparingly covered with coarse scattered hairs. (Lindl. *l. c.*) Collected by Dr. S. Fischer in Palm-grounds, in the valley of Fatme, flowering at the end of February. Forskal describes this as being distinguished 'glandula supra basin petioli.' It was found by him at Surdud and about Mor. It is called *Suna* by the Arabs, and probably yields some of the Arabian Senna of commerce.

"2. CASSIA LANCEOLATA.—This is a bushy annual, of about two to three feet in height, extremely leafy, and of a most luxuriant inflorescence in a cultivated state. The stems are erect, round, smooth, a little flexuose towards the apex. The leaves alternate, abruptly pinnate. The leaflets five to eight pairs, with short petioles, ovato-acute in the lower and lancolate-acute in the upper parts of the plant, 'slightly mucronulate, smooth above, rather downy beneath (especially in young leaves,) with the veins turning inwards and forming a flexuose intramarginal line; petioles without glands; stipules softly spinescent, semi-hastate spreading minute.' Racemes axillary and terminal, erect, rather longer than the leaves. Ovary linear, downy, falcate, with a smooth recurved style. Legumes pendulous, membranous, flat, only slightly protuberant over the seeds, oblong, sometimes eliptical, nearly, straight, with the upper margin a little curved, tapering abruptly towards the base and rounded at the apex, of a brown color, containing from five to eight white rugose seeds.

These are figured by Gærtner, ii. t. 146. It is probably the *Cassia Medica* of Forsk. p. cxi., and agrees with his specimen of 'Senna Meccæ Lohajæ inveniebatur foliis 5—7 jugis, lineari-lanceolatis,' p. 85, of which Forskal states large quantities are yearly exported from the district of Abu-arisch to Jidda. This species includes:

"*a. Tinnivelly Senna*, cultivated by Mr. Hughes in the south of India; also that cultivated by the author at Saharunpore, *C lanceolata*, Royle, Him. Bot. t. 37, and by Dr. Wight near Madras. v. fig. 60, B. and spec. in Brit. Mus. It is the *Cassia officinalis* of Gært. and Roxburgh, Fl. Ind. ii. p. 346, which name ought to have been retained, or the above *C. medica*, Forsk. instead of *C. elongata* being coined, especially as this was formed from the leaves of a cultivated Indian Senna found in commercial samples. It is cultivated by Dr. Gibson, near Poona.

"Dr. Burns writes that he has found the lanceolate Senna wild near Kaira in Guzerat. His cultivated specimens, if picked, would form good Senna.

"β. *C. lanceolata* of most authors, *C. acutifolia*, Hayne, ix. t. 41. Nees and Ebrem. t. 345, St. and Church. Pl. 30, as C. Senna. These best represent the form of Alexandrian Senna (v. 60, A., a small leaf,) and specimens in Brit. Mus. from Senaar. (*Kotschy.*) It is found in the valleys of the desert to the south and east of Syene or Assouan, and collected for the trade to Cairo, forming three-fifths of Alexandrian Senna.

"γ. C. *acutifolia*, called of Delile, Esenbeck and Eberm. t. 346. (fig. 60. c.) The leaflets are narrower and more tapering towards the apex than the foregoing, as might be expected in a poorer soil and drier climate. Some of the Indian specimens in Dr. Rottler's Herbarium closely resemble this variety; also African, specimens from Tajowra to the south of the Straits of Bab-el-Mandel.

"The author is unable to distinguish these by any permanent characters, nor dried Senna-leaves, cultivated at Saharunpore from good specimens of *Bombay*

Senna (that is, ordinary Indian Senna) imported here from India; nor these from *Suna Mukki* sent him by Dr. Malcolmson from Aden, and which he states are 'the produce of Africa, but in appearance exactly resemble the Arabian Suna. In the market both are sold as one kind, and bring the same price.'

"3. C. OVATA of Merat, Dict. de Mat. Med. b. 613. *C æthiopica*, Guibourt. Is probably a distinct species, as it is said to have a gland at the base of the petiole and another between each pair of leaflets. The leaflets are in three to five pairs, exactly oval acute, slightly pubescent below; the follicles are thin, pale yellow colored, one-third smaller than those of *C. obovata*. It is said to be found both in Nubia and Fezzan, and to furnish exclusively the Senna of Tripoli, Sene de Tripoli. It is extremely like a variety of *C lanceolata*. The figure of C. Senna in Stevenson and Churchill, Med. Bot. t. 30, quoted by Dr. Pereira as representing this plant, is referred to by Dr. Lindley as a good representation of C. acutifolia of Delile. But Merat and De Lens say of it: 'Nous ne le connaissons que parles feuilles et les fruits qu'on en voit dans la commerce.' M. Guibourt calls it *C. æthiopica;* but instead of referring to *C. lanceolata* of Colladon. Pl. xv. f. e. as representing this species, he says that it is exactly represented by the Sene de Nubie of Nectoux, pl. 2.

"4 C. OBOVATA, *Colladon.* Hayne, ix. 42. Nees and Eberm. 347. Diffuse herbaceous plant. Leaves equally pinnate, glandless. Leaflets four—six pair, (somewhat villous, Roxb.) obovate, obtuse, but slightly mucronate, unequal at the base, the terminal pair more cuneate and larger. Stipules triangular, narrow, and tapering, rather stiff and spreading. Flowers yellow, in racemes. Bracts ovate, cordate, accuminate, concave, single flowered. Legumes broad, membranous, smooth, lunate in shape, rounded at each end, with an elevated crest over each side on both valves, so as to form an interrupted ridge along the middle of each valve. Seeds six to eight, wedge-shaped, rugose as in C. lanceolate.—A native of Africa, from Senegal (*Fl. de Senegambia*) to the Nile; found in Fezzan by Dr. Oudney (*R. Brown,*) in Egypt from Cairo to Assouan, Nubia; found in the Adel country near Sultalli (*Mission to Abyssinia;*) Desert of Suez; Syria; dry parts of India, as Kaira, (*Burns;*) Guzerat, Dekkan (*Col. Sykes,*) near Delhi, and Valley of Rungush, near Peshawar (*Falconer;*) high dry uncultivated lands of Mysore (*Roxburgh. Wight.*) It has been cultivated in Italy (*Sene d' Italie,*) and forms three-tenths of Alexandrian Senna.

"This species is very distinct, in its obtuse obovate leaves and crested legumes, from the preceding acute-leaved species. *C. obtusa* Roxb. was probably described from young legumes, as the author, like Dr. Lindley, has compared good specimens from Mysore with others from Africa. The *obtusata* of Hayne does not seem to differ sufficiently from his *C. obovata*. It is possible, however, that there are two very similar species in Africa. Mr. H. Grant, late of the India House, has favored the author with a specimen in flower, collected by him in February, at Philæ which has upon it *both* obovate leaflets and some which are ovate and acute. Lieut. Wellsted's collection contains a specimen from the coast of Arabia, of which the leaflets are obtuse, eliptic, and hairy."

DESCRIPTION.—Senna has a peculiar agreeable odor, somewhat resembling that of tea, and a nauseous bitter taste. It

has a pale green color, and consists of the leaflets of many different species. These afford several commercial varieties of the drug.

α. Alexandria Senna: *Senna Alexandriana*. This variety receives its name from the Egyptian port whence it is shipped. It consists of the leaflets of several varieties, and even different species, of Senna. 1. Those of the C. Auctifolia, which is a variety of Royle's *C. Lanceolata*, but is figured more linear in the American edition of his Mat. Med.: it is a product of Nubia, Sennaar, and Abyssinia. Its leaflets are acute and short, although the example given by Royle is rather long. 2. Those of the C. Obovata, known by their rounded, obtuse summits, which are sometimes surmounted with a little projection. We find, also, the leaves of the Cynanchum Oleæfolium, or *Argel*, which are distinguished by their length, lighter color, absence of visible lateral nerves on their upper side, their thickness and firmness, and the regularity of their base. Sometimes, too, the leaflets of the Tephrosia Apollinea, sometimes called *Silver-leaved Alexandria Senna*, are to be found with this commercial variety of the drug. These may be known by their silky or silvery aspect, their obovate-oblong, somewhat cuneiform, emarginate, equal-sided appearance, and their lateral veins being parallel, regular, and oblique to the midrib. The flowers and fruit of the Cynanchum are also often present; the former are of a white color and small coryms; the latter in shape are ovoid, follicular, rather larger than an orange seed.

Alexandrian Senna is an excellent variety when the genuine lance-shaped leaflets are carefully selected. But as brought to us, mixed with those cynanchum and tephrosia leaves, which latter must be considered adulterations, it is hardly fit for use.

β. Tinnevelly Senna: *Finest East India Senna*. This is cultivated by Mr. G. Hughs, at Tinnevelly, in the southern part of India. It is a very fine unmixed kind, which is becoming much esteemed. It consists of large thin unbroken leaflets of a fine green color. This is supposed to be produced by the *C. elongata* or *C. lanceolata*.

γ. India Senna: *Mecca or Mocha Senna; Bombay Senna*. This is the produce of Arabia, and has gained its different names from some of the ports and countries through which it is carried to Europe. It is brought to us chiefly from Bombay and Calcutta. It consists of the leaflets of the *Cassia elongata*, with some of the leaf stalks and pods intermixed. The India Senna is distinguished from all other kinds, except the Tinnevelly, by the length of its leaflets, which is from an inch to an inch and a half, or more, and comparatively narrow. Its purgative powers are considered less active than most other kinds.

δ. Tripoli Senna: *Senna Tripolitana*. This is brought from Fezzan to Tripoli, and is hence called by this name. This has much the appearance of the Alexandria Senna, except that it is much broken up, and has hence more uniformity of appearance. It was formerly supposed to be a variety of the *C. auctifolia*, but is now considered the

product of a distinct species, and is named *C. Æthiopica*. The Tripoli Senna is less esteemed than the Alexandrian.

"*Tunis Senna*," says Dr. Pereira, "agrees with that of Tripoli."

ε. ALEPPO SENNA. This is an article that was formerly imported from Aleppo. It is produced by the *C. Obovata*, and has formerly been carried into India and Turkey, and thence to Europe; but being of inferior quality is not much used now.

ζ. SENEGAL SENNA. This, says Pereira, is a "blunt-leaved Senna, having a rougher and more glaucous appearance than the leaflets of the C. Obovata." The author has never seen any of it.

η. SMYRNA SENNA. This is another kind mentioned by Dr. Pereira, who says it resembles the Tripoli Senna, but some of its leaflets are similar to the acute leaved Alexandrian.

θ. AMERICAN SENNA: *Cassia Marylandica*. This is an indiginous plant ,growing in rich soils in bottom lands or low grounds. It is a very ornamental plant, about three feet in height, with beautiful pinnate leaves, and is surmounted with clusters of very rich-looking yellow flowers, that are succeeded, like all the Sennas, with oblong flattened legumes. It is found plentifully in the Middle States, along rivers, especially along the banks of the Ohio. The leaflets of this plant differ somewhat from most of those of the other species, being obtuse at both ends. They resemble the leaflets of the *Tephrosia*, and those of the *C. Obtusa*, more than any others. The Cassia Marylandica, or American Senna, is a pretty certain cathartic, and is well esteemed by some of our practitioners, but the author has never thought much of it. It has rather an unpleasant and sickly odor, and a nauseous taste. It is also more apt to gripe in its operation than the best imported Sennas.

ADULTERATIONS.—Senna is subject to adulteration in the countries where collected, as well as in Europe. The adulteration of the Alexandrian Senna, in Africa, by means of the Tephrosia and Synanchum or Argel, has already been spoken of. This fraud is chiefly practiced at Boulac. This Senna is also said to be adulterated most shamefully with the leaves of the *Coriaria myrtifolia*, and the leaflets of the *Colutea arborescens* or Bladder Senna, which is said to be poisonous and astringent. The leaflets of the latter are eliptical regular and obtuse. Their regularity at the base serves well to distinguish them from the *C. obovata*. The European adulterations, happily, are not extensive, and, it is hoped, will soon cease to affect us, as our government has, of late, taken some important steps to prevent the importation of adulterated drugs.

ANALYSIS.—There have been three important analyses made of Senna, viz: one in 1797, by Bouillon la Grange; another

by Braconnot; and a third by Lassaigne and Fenuelle, in 1821. The following table exhibits the results of the two last.

SENNA LEAVES.		SENNA LEAVES.
BRACONNOT.		LASSAIGNE AND FENUELLE.
Bitter Matter of Senna,	53·7	Cathartin,
Redish Brown Gum,	31·9	Chlorophylle,
Matter, similar to Animal Mucus, perceptible by Acids,	6·2	Volatile Oil,
Acetate of Lime,	8·7	Fixed Oil,
Malate, (or some other Vegetable Salt), of Lime,	3·7	Albumen,
Acetate of Potash, Choride of Sodium,	*Traces.*	Mucus, Malic Acid, Malate and Tartrate of Lime, Acetate of Potash, Mineral Salts,
Watery Extract of Alexandrian Senna,	104·2	Alexandrian Senna

Fenuelle found the pods to contain the same principles, with the exception of the Chlorophylle; instead of which he discovered a peculiar coloring matter.

Boiling, as well as cold water, readily extract the virtues of Senna. They also yield to alcohol. But long boiling injures their properties as a medicine.

Therapeutic Properties and Use.—Senna is a pretty certain hydragogue cathartic, producing copious watery stools. But it is apt to gripe, unless combined with some aromatics and stimulants. Its general application is in dropsical diseases. The medicine is extensively used among old school practitioners, but among true reformers it has never yet gained much favor. It is also much used as a cathartic for the removal of worms. "*Pink and Senna*" is a very common prescription. The dose is ʒss.—ʒij for a full hydragogue effect.

Pharmaceutic Preparations.—Senna affords many preparations—the following are among the most important.

INFUSUM SENNÆ COMPOSITUM: *Compound Infusion of Senna.* ℞ Senna, ʒij, Coriander, bruised, ʒj, Water, Oj. Macerate for an hour in a covered vessel, and strain. *Dose*, fʒjss.—fʒiij.

INFUSUM SENNÆ (CUM TAMARINDIS, D.) COMPOSITUM, E.: *Compound Infusion of Senna.*—℞ Infuse for 4 hours, (occasional-

ly stirring, E.), in a covered vessel not glazed with lead, Senna, ʒj, Tamarinds, ʒj, Bruised Coriander Seed, ʒj, Muscovado or Brown Sugar, ʒss., (ʒj, D.), Boiling Aq., fʒviij. Strain through linen or calico. The same may be made with 2, (or 3, E.), times the quantity of Senna.

This is a very good way to prepare the infusion of Senna, as the sugar and tamarinds much improve its taste. The dose as an effective purgative is fʒjss.—fʒiij.

TINCTURA SENNÆ COMPOSITA, L. E. D.: *Compound Tincture of Senna.*—℞ Macerate for 14, (7, E.), days, Senna, ʒiijss., (ʒiv, E., ℔j, D.), Bruised Caraways ʒiijss., (ʒv, E., ʒjss., D.), bruised Cardamoms, ʒj, (ʒv, E., ʒss., D.), Raisins, (stoned), ʒv, (ʒiv, Coriander, bruised, ʒj, powdered Jalap, ʒvj, Sugar, ʒijss., E.), in Proof Spirit Oij, (by measure, Cj, D.) Strain. (Express the residuum and filter. Or prepare by percolation, as directed for Comp. Tinct. of Cardamom. If Alexandrian Senna be used, free it of Cynanchum by picking, E.)

"A warm and stimulant purgative. That of the E. P. is made more effective by the Jalap, and by the corrective effects of the Sugar. Usually prescribed as an adjunct to the Infusion, in doses of fʒj, sometimes alone in doses of fʒss."

TINCTURA SENNÆ ET JALAPÆ, U. S.: *Tincture of Senna and Jalap.*—℞ Senna, ʒiij, Jalap, in powder, ʒj, Coriander, bruised, Caraway, bruised, aa., ʒss., Cardamom, bruised, ʒij, Sugar, ʒiv, Diluted Alcohol, Oiij. Macerate for 14 days and filter, or

Macerate for 48 hours, and then transfer to a displacement apparatus, and displace with Dilute Alcohol untill Oiij, are obtained.

SYRUPUS SENNÆ, L. E. U. S.: *Syrup of Senna.*—℞ Macerate in Boiling Aq., Oj, (Oj and fʒiv, E.), with heat for 1 hour, (12, E.), Senna, ʒijss., (ʒiv, E.), Bruised Fennel, ʒj, L. Filter. (Infuse Senna into the water; express strongly, so as to obtain at least Oj, and fʒij, of Liquid, E.) Add (while hot, E.) Sugar, ʒxv and Manna, ʒiij, L. Boil down to a proper consistence; add to the infusion of Senna, Treacle concentrated in the vapor-bath, as much as possible, ʒxviij, E. Stir carefully, and when the mixture is complete, remove it from the vapor-bath. Carefully pick Alexandrian Senna, E.

℞ Senna, ʒij, Fennel Seed, bruised, ʒj, Boiling Water, Oj, Sugar, ʒxv. Proceed as L., U. S. *Dose*, fʒss.—fʒj.

Dr. Christison says that the syrup obtained by the Edinburg process is far superior to that prepared according to the Lon-

don formula, as the infusion in that is added after the treacle has been concentrated.

EXTRACTUM SENÆ FLUIDUM: *Fluid Extract of Senna.* ℞ *Tinnevelly Senna* ℔xv avoirdupois, and exhaust it with boiling water by displacement: (about four times its weight of water is sufficient.) Concentrate the infusion in vacuo to ℔x; dissolve in it *Treacle* ℔vj previously concentrated over the vapor-bath till a little of it becomes nearly dry on cooling; add of *Rectified Spirit* (Sp. Gr. ·835) f℥xxiv; and, if necessary, add *water* to make *fifteen* (16 oz.) *pints.* Every f℥ will correspond to Senna ℥j avoirdupois.

This is Dr. Christison's preparation so highly recommended by him. It tastes very pleasantly, and generally operates without nausea or griping. The dose is f℥ij, for an adult.

CONFECTIO (ELECTUARIUM E. D.) SENNÆ, L. (U S.) *Confection of Senna.*

℞ Rub together Senna ℥viij and Coriander ℥iv. Pass through a sieve ℥x of the powder; boil the residue with Aq. Oiij (Oiij and ¼ E.), Figs ℔j and Liquorice ℥ij down to one-half. Express, strain, evaporate in water bath till f℥xiv remain. In this dissolve Sugar ℔ijss., and make a syrup; rub in gradually Pulp of Prunes (Cassia, Tamarinds, L.,) aa ℔ss.; then throw in the sifted powder, and mix (triturate to a uniform pulp, E.)

℞ Boil Pulp of French Plums ℔j and Pulp of Tamarinds ℥ij in Treacle, by measure Oss., to the thickness of honey; add very finely powdered Senna ℥iv, and when cold, Essential Oil of Caraway ℥ij. Mix well. D.

Action. Use.—A mild but useful purgative in doses of ℥j —℥iv.

POTASSÆ BITARTRAS.

SYNONYMES.—TARTARI CRYSTALLI, *Dub.*; Fœx Vini, *Roman;* Cremor Tartari, *Lat.;* Doppelt weinsaures Kali, Weinsteinrahm, *Ger.;* Cremor de tartaro, *Span.;* Cremore di tartaro, *Ital.;* Tartrate acide de potasse, Creme de tartre, *Fr.;* Super tartrate of potash, *Eng.;* Cream of Tartar, *Vul.*

DESCRIPTION AND PREPARATION.—Cream of Tartar is deposited from wines during their fermentation. The philosophy of its formation is this:—the salt is a native constituent of the juice of grapes, especially of those that are very tart; it seems to be in intimate combination with the sugar, the juice undergoes the vinous fermentative change, and alcohol

takes the place of the latter, the capacity of the liquid for holding this salt in solution is destroyed, and hence it is deposited in crystals in the bottom and sides of the casks or vessels, containing the wine. In this state the salt is called *crude tartar* or *argol*. That deposited from red wines is of a reddish color, and is called *red tartar*, and that from *white*, being of a dirty white color, is denominated *white tartar*. Both kinds consist of potassa, united with an excess of tartaric acid, forming a bitartrate with this base, but which is impure from the existence of coloring matter, lime, and the lees of the wine, and hence, requires purification.

The purification of tartar is conducted on a large scale at Montpelier, in France. Here they take advantage of the greater solubility of the bitartrate of potassa in hot than in cold water. "The tartar, previously pulverized, is boiled with water in copper boilers. The solution, when saturated, is transferred to earthen pans, where it deposits, on cooling, a crystalline layer, nearly free from color. This is re-dissolved in boiling water, and the solution having been mixed with four or five per cent. of pipe-clay, is evaporated to a pellicle. The clay precipitates with the coloring matter, and the clear solution, as it cools, deposits white crystals in crusts, which, upon being exposed to the air, on linen, for several days, acquire an increased degree of whiteness." The powder of these crystals constitutes the *Cream of Tartar* of pharmacy.

Cream of Tartar is a white powder, which has a pleasant acid and gritty taste, and dissolves slowly in the mouth. It is insoluble in alcohol, soluble in sixty parts of water at 60°, and eighteen parts at 212°. Its formula is $K O 2, C^4 H^3 O^5$ or two eq. of tartaric acid—132, one of potassa=47·15, and one of water=9, making it 188·15. The water cannot be expelled without decomposing the salt, and is hence, supposed to act the part of a base. As usually found in the drug stores, it contains from two to six per cent. of tartrate of lime, and sometimes more or less sand.

Therapeutic Properties and Use.—Cream of tartar is a good hydragogue cathartic, and is considered quite mild in its action. It is also diuretic, and is hence well adapted to

the treatment of dropsy. The beverage called *imperial*, is a drink made by dissolving half an ounce of the salt in three pints of boiling water, and adding to the solution four ounces of white sugar, and half an ounce of fresh lemon peel. *Cream of Tartar whey*, is made by adding about two drachms of the tartar to a pint of milk. The dose of bitartrate of potassa is from ʒss., to ʒj, as a hydragogue cathartic.

MAGNESIA SULPHAS.

Synonymes.—Schwefelsaure Magnesia, *Ger.;* Sulphato di Magnesia, *Ital.;* Sulfato de Magnesia, *Span.;* Salts, Epsom Salts, *Vul.*

Description and Preparation.—Sulphate of Magnesia is a constituent of sea water, and of many saline springs. It occurs, also, as a native product in some soils or earths, and appears in the form of efflorescence, on rocks and grounds which contain it. Sometimes, also, it is found in the crystaline form. The bittern of sea-water after the crystallization of common salt, contains Sulphate of Magnesia, and Chloride of Magnesium, and by simple evaporation the former may be separated by crystallization. Sulphuric acid is sometimes added to convert the chloride into a further quantity of the sulphate.

The formula of Sulphate of Magnesia is (Mg O, S O^3) + 7 Aq. = 123. As commonly prepared it is in "acicular crystals, but it may be crystallized in quadrangular or hexangular prisms, acuminated by two to six planes, the primary form being a right prism with a rhombic base. The salt is white or colorless, transparent, and sparkling, of a saline, nauseously bitter taste. Unalterable or slightly efflorescent, according to the dryness of the air. Sometimes, but only when impure, deliquescent. Insoluble in Alcohol, soluble in its own weight of water at 60°, and in less than three-fourths at 212°. Exposed to heat, the crystals melt in their water of crystallization, of which six Eq. are dissipated; the salt is then fused into an enamel without decomposition. If moistened when in the anhydrous state, water is re-absorbed with increase of temperature."



Iris Versicolor

THERAPEUTIC PROPERTIES AND USE.—Salts, as this article is commonly called, is regarded a very mild and safe, but yet efficient hydragogue cathartic, and diuretic, and is hence, very highly esteemed in dropsical complaints. It has never been prescribed by the author, but as it cannot be regarded as really a poisonous or mischievous article, and as it is a pretty certain, safe hydragogue, it has been admitted into the practice of some of our New School practitioners. Organic remedies, however, are certainly preferable to the mineral, and should generally be selected first. The dose of Sulphate of Magnesia is about an ounce, but it is considered best given in divided doses, frequently repeated. The most agreeable form in which it is taken, is a solution in carbonic acid water, with lemon syrup. But it is commonly taken simply in a watery solution.

IRIS.—The Rhizoma, Leaves, and Flowers.

SYNONYMES.—Iris, *Fr.; Lat.;* Violen, *Ger.;* Ireos, *Ital.;* Lirio, *Span.;* Oris, *Eng.* Flag, *Vul.*

HISTORY.—This beautiful genus is valuable for its medical character, as well as the beauty of its flowers, and in some species, its agreeable odor. Many of the species have been used in Europe and America, but one only has been made officinal, the I. Florentina, but the I. Versicolor has also found a place in the secondary list of the U. S. P. They are natives of Europe and America.

BOTANY.—*Sex. Syst.* Triandria Monogynia.—*Nat. Ord.*—Iridaceæ.

Gen. Char.—*Corolla* six-parted; the alternate segments reflected. *Stigmas* petal-shaped. *Willd.*

Spec. Char.—All the species agree in having fleshy perennial, horizontal *Rhizomes*, beset with fibres. *Leaves* radical, long, sword-shaped. *Stem* upright, from one to three feet high, sometimes branching. *Flowers* very beautiful, *colors* varied, but very rich. Grows in wet places,—cultivated in gardens.

There are many species of Iris, the *I. Florentina*, *Germanica*, *Fœtidissima*, and *Pseudo-acorus*, *&c.*, are natives of Eu-

rope, and the *I. Versicolor*, *Prismatica*, *Lacustris*, *Missouriensis*, *&c.*, are natives of this country.

Analysis.—The rizome of the I. Florentina, and most probably that of all the species, contains *volatile oil*, *acrid resin*, *astringent extractive*, *gum*, *starch or fecula*, *ligneous matter*, and perhaps *oxalate of lime*.

The medical virtues do not readily yield to either alcohol, water, ether, or oil, and hence, the medicine should be taken in substance.

Physiological Effects.—Iris, in its recent state, is capable of producing violent effects on the system, giving rise to severe nausea, vomitings, and drastic purging, with other unpleasant effects. In its dried state it is much more mild.

Therapeutic Properties and Use.—The rhizome has been regarded too drastic for use as a medicine, in the new practice. The author has never used it except in a few cases to try its virtues. It is a hydragogue cathartic and diuretic, and is supposed, also, to have a powerful effect on the liver and glandular system generally. The powder of the root of I. Florentina, or *oris* of the drug stores, makes a valuable tooth-powder, being astringent, anti-scorbutic, acrid and of a rich odor. The *I. Versicolor* is the variety chiefly used as a cathartic, in this country. It is very powerful, and requires, if used at all, to be taken in small doses. It is regarded by very many, in the reformed profession, to be perhaps the best single article that can be used in syphilis. Rafinesque says that a decoction of three-fourths *Iris*, and one-fourth *eryngium yuccfolium*, has cured the dropsy, without disturbing the bowels. Its chief application is in hydrothorax, syphilis, scrofula, &c. The flowers and leaves possess the same cathartic property with the root or rhizome, only they are milder in their effects. The dose of the powdered rhizome is from *gr.* v to *gr.* x, repeated.

JALAPA.—The Root.

Synonymes.—Jalap, *Fr.;* Jalappen-Wurzel, *Ger.;* Sciarppa, *Ital.;* Jalapa, *Span.;* Jalap, *Vul.*

History.—Jalap is a native of Mexico, and has derived its name from the city of Xalapa, in the state of Vera Cruz, in

the neighborhood of which it grows, on mountains, sometimes at the height of six thousand feet above the level of the ocean. The drug is brought from the port of Vera Cruz in bags, containing from one to two hundred pounds.

Botany.—*Sex. Syst.*—Pentandria Monogynia.—*Nat. Ord.* Convoluvlaceæ.

Gen. Char.—*Sepals* five. *Corolla* campanulate. *Stamens* included. *Style* one. *Stigma* two-lobed; the lobes capitate. *Ovary* two-celled; cells two-seeded. *Capsule* two-celled.—*Lindley.*

Spec. Char. Some confusion has existed in reference to the true species yielding the officinal *Jalapa.*

The following description of the Jalap plant is taken from Royle's Therapeutics, and is most probably correct.

"The true Jalap plant, has a tuberous, fleshy root-stalk, with numerous pear-shaped tubers, externally brownish-colored, internally white, with numerous long fibres. The stem, climbing to a great extent, is of a brownish color, round and smooth, without downiness. Leaves on long footstalks, cordate, with a tendency to become hastate in the lower leaves, deeply sinuated at the base and acuminate at the apex, entire, very smooth. Peduncles axillary, two-flowered, commonly only one blown at a time. Calyx without bracts; sepals five, obtuse, mucronate, with two of them external. Corolla of a crimson or a light-red color, with a long rather clavate tube, four times longer than the calyx; limb endulated, with five plaits; lobes obtuse, subemarginate. Stamens five; filaments smooth, unequal, longer than the tube of the corol, with white, linear, exserted an thers. Stigma capitate, deeply furrowed. Capsule two-celled; cells two-seeded."

Analysis.—Guibourt analyzed the root of Jalap, but without the design of trying to procure all the salts and peculiar principles. He found it to contain of "*Resin* 17·65 per cent., a liquid *Sugar* obtained, by Alcohol, containing some of the deliquescent salts, 19·00, *Brown Saccharine extract*, obtained by water 9·05, *Gum* 10.12, *Starch* 18·78, *Woody matter* 21·60, loss 3·80=100. This, as M. G. remarks, differs from the analyses hitherto given, but in the presence of sugar, which

he supposes to be of the nature of cane sugar, approximates Jalap to batatas and other Jalap (as rose Jalap) roots of the same family, which contain it. The cathartic properties depend on the resin: hence, rectified spirit is the best solvent. Water takes up the gum and starch, with little of the active principle. Though Jalap is apt to be attacked by insects, its virtues are not in consequence impaired, for they leave untouched the resinous part. This resin is of a grayish color, opaque, brittle, acrid in taste, soluble in alcohol, a little so in ether, readily so in nitric or acetic acid, and in solution of potash. It is now often adulterated with guaiacum, which may be detected by the blue color produced by nitrous gas, while ether dissolves it, but does not dissolve pure resin of Jalap. Dr. Kayser has named this rhodoretine, from its producing a red color with strong sulphuric acid. He considers it composed of C^{42} H^{35} O^{20}."

The resin of Jalap, may be said to be of two kinds; one, amounting to seven parts out of ten, is very hard and insoluble in ether; the other is soft and is soluble in that menstruum.

The medical virtues, as above stated, of Jalap, are found to reside chiefly in the resin, and hence the best solvent is alcohol.

Physiological Effects.—In large doses it acts on the bowels as a drastic purgative, producing copious watery discharges. It is apt to occasion nausea and griping. Dr. Pereira, however, regards it perfectly safe and innocent, as a medicine. It is quite local in its effects, and although it operates briskly, its direct influence is much confined to the bowels.

Therapeutic Properties and Use.—Jalap is an active purgative, bringing away copious watery stools. It is rather too drastic for ordinary use as a hydragogue, and it is not altogether certain, that the article is justly entitled to a place in our Materia Medica, and whether it should not be excluded like, *Scammony, Gamboge, Colocynth, Elaterium, Croton Oil*, &c. It is, however, much milder and safer, than either of these, and is not intrinsically poisonous. Its chief application is in dropsical affections. The dose is from *gr.* x, to *gr.* xxx.

Pharmaceutic Preparations.—Jalap is a constituent of various pharmaceutic preparations, but the following only are worthy of a place here:

PULVIS JALAPÆ COMPOSITUS, L. E. D. (U. S.) *Comp. Jalap Powder.* ℞ Rub separately into very fine powder *Jalap* ʒiij. (ʒj. E. [U. S.] ℔ss. D.) Bitartrate of Potash ʒvj. (ʒij E. [U. S.] ℔j D.) *Ginger* ʒij. Mix.

Action. Use.—Hydragogue Cathartic; useful in dropsies. *Dose* from ℈j. to ʒj. It will reduce the swelling of dropsy in an incredibly short time.

TINCTURA JALAPÆ, L. E. D. (U. S.) *Tincture of Jalap.* ℞ Macerate for fourteen days *powdered root of Jalap* ʒx. (ʒvij. E. ʒviij. D. [U. S.]) in *Proof Spirit* Oij. Strain. (Prepare by digestion or percolation, *v.* Tinct. Cinchonæ, E.)—Contains the Resin of Jalap, with some of the principles soluble in water.

Action. Use.—Cathartic adjunct to Purgative draughts, in doses of f3j—f3ij.

EXTRACTUM (SIVE RESINA, E.) JALAPÆ, L. D. *Extract or Resin* (E.) *of Jalap.* ℞ L. D. Macerate *powdered Jalap root* ℔ijss. (℔j, D.), in *Rectified Spirit*, Cj, (by measure, ℔iv, D.), for four days. Pour off the Tincture. Boil the residue in *Aq. dist.* Cij, (Cj, D.) to Css. (℔ ij D.) Strain the liquors, evaporate the decoction, and distil the tincture till thick; then mix the Extract and the resin, and evaporate to the proper consistence over a water-bath. The extract must be kept *soft* for pills, and hard for powder, L.

℞ Take finely powdered *Jalap*, moisten with *Rectified Spirit:* in twelve hours put it into the percolator and exhaust with Rectified Spirit. Distil off the greater part of the Spirit, and concentrate the rest to a due consistence over the vapor bath.—"As the active properties of Jalap depend upon its resinous, and not upon its saccharine, gummy, or amylaceous principles, this preparation is preferable to those of the L. and D. P., where the extracts of water and of spirit are mixed together, and the produce necessarily weaker than the Resin."

Action. Use.—Cathartic in doses of *gr.* v—℈j. Usually prescribed in combination. The Resin of the E. P. in doses of *gr.* iij—*gr.* xij.

PODOPHYLLUM.

This article, which was described and treated of in the order of Cholagogues, also merits a place here, as it is a pretty active hydragogue cathartic, if used in doses of one-third, or such a matter; larger than recommended for other complaints, generally.

Class III.—DIAPHORETICS.

Definition.—This class of remedial agents is variously called; *diaphoretica*, (from διαφορεω, I transpire); sudorifica, (from *sudor*, sweat, and *facio*, I make); or *diapnoics*, (from διαπνοη, perspiration). As these terms all indicate the elimination of the same materials from the system—upon the same general principles, it will do no violence to the present plan of classification to consider them synonymous; and, indeed, this is the usual practice of our most popular therapeutists. "The terms *diaphoretic* and *diapnoic* have been used to designate substances which augment the insensible perspiration; while the word *sudorific* indicates a substance increasing the sweat or sensible perspiration. But, insensible perspiration and sweat differ in their physical conditions only—the former being the vaporous, the latter the liquid state of the same fluid. Hence, there can be no essential difference between diaphoretics and sudorifics."—(*Pereira*). It must be observed too, that the atmosphere, as to moisture and dryness, as well as temperature, very much modifies the process of perspiration; and thus, under some circumstances, the mildest diaphoretics may prove sudorific and vice versa.

Modus Operandi.—Dr. Edwards (De l'Influence des Agens Physiques sur la Vie, Paris, 1824,) has shown, that cutaneous transpiration is effected in two ways,—by a physical action or evaporation, and by an organic action, or transudation. *Evaporation*, or the physical action, is the consequence of the porosity of bodies, and takes place equally in the dead and living state. It is influenced by the hygrometric states of the surrounding air, by its motion or stillness, by its pressure, and by its temperature. Thus, dryness, agitation, and diminution of the weight of the air, increase it. *Transudation*, or the organic action of transpiration, is a vital process, effected by minute spinal follicles, or sudoriferous canals, and depends essentially, on causes inherent in the animal economy, although it may be influenced, to a certain extent, by external agents. Thus, elevating the temperature of the surrounding air, preventing its frequent renewal, and covering the patient with warm clothing, are means which promote the organic,

but check the physical action of transpiration. Diaphoretics affect the transudation, or the vital processes. They affect the exhalents in one or both of two ways;—by increasing the force of the general circulation,—or by specifically stimulating the cutaneous vessels.—*Pereira.*

Physiology.—Perspiration is very justly considered, one of the most important physiological functions, performed in the animal system. It is supposed, that three-fifths of all the ingesta, after subserving the general purposes of the economy, are destined to find their exit through the pores of the skin. Nor is the mere evacuation of recrementitious matter, the only physiological purpose involved in the phenomenon of perspiration. The evaporation thus sustained, is the grand means by which the physiological standard of the temperature of most of the larger animals, is maintained or regulated.

Diaphoretics, which are calculated to promote perspiration, are therefore, not only *physiological* in their effects, but extremely important in their use.

Application.—Perhaps no system of medicine ever introduced, has so fully contemplated the important use of this class of remedies, as the present Botanic system. A reference to any work on practice, discovers them among the most common applications that are made; and it may be remarked that this, perhaps, contributes no less than any other circumstance, to the remarkable success that attends the practice.

The grand purposes effected by the process of perspiration, which stand so intimately connected with all the organic functions of the system, fully warrant the Botanic Reformers in taking the position they have, in reference to this matter. The old school, as if determined to oppose every measure adopted by the former, have consigned this class of remedies to comparative neglect. Professor Chapman of Philadelphia, remarks: "The practice so generally prevalent, at one time, of endeavoring to cure diseases of an inflammatory nature, by extorting sweat by the profuse exhibition of the heating and stimulating articles, was productive of the most *mischievous effects*, and brought these medicines into discredit among regu-

lar practitioners." * But in the next paragraph, he adds: "Of all the plans, however, of treating disease, the practice of sweating, is perhaps, the most popular and generally adopted. By the vulgar, it is constantly resorted to, as the safest and most effectual process. Nor is this opinion confined altogether, to the low and illiterate orders of mankind. Every class of society seems, in some degree, to have acquiesced in the prejudice, and to entertain the same views."

Diaphoretics are important remedies in febrile and inflammatory disease generally. They not only promote the evacuation of the irritating and combustible matters that maintain the fever and inflammation; but, as already hinted, by means of the evaporation they sustain, they let down the heat of the body *directly*. In their application, much discrimination, however, is necessary, as it is evident that the stimulating order of this class of remedies is not admissable, while the circulation is confined. But this matter is fully treated of in the consideration of the different orders of diaphoretics.

When used in intermittent fever, we discover that besides the common principles on which their remedial powers are developed, they, in virtue of the interruption they occasion in the morbid chain of action, when properly used, will frequently cut short the paroxysm at once. Thus, when the stimulating diaphoretics are freely instituted in the commencement of a paroxysm, the chill is broken up, while the succeeding hot stage is brought on, and then, if the nauseating are taken, the fever will be obviated, by the supervention of the sweating stage.

In remittent and continued fever, a proper order of diaphoretics will be of equal avail. That oppression, so common in these varieties of fever, which is dependant on the extreme dryness and heat of the surface, which is sometimes very much like that of incipient typhus, is often relieved by their use; and if early used, they will frequently afford complete relief. Some order or other, of this class of remedies, perhaps, is always indicated in remittent as well as every other variety of fever.

* Therapeutics, vol. i. p. 316.

In pneumonia typhoides, in which there is, as in true typhus, such a manifest tendency of all the humors that contain nitrogen, to putrefaction, the emunctories of the skin should be kept free, and active. Diaphoretics, therefore, are among our most important remedies.. Prof. Chapman remarks, that two leading modes of treatment have been adopted in this affection. "By one set of practitioners, the most profuse use of diffusable stimulants has been recommended; while, by another, the sweating plan is preferred." "My opportunities," says he, "have been sufficient to compare these different modes, and I do not entertain the slightest doubt of the superiority of the latter. The physicians of this city, [Philadelphia,] at least, are generally agreed on this point, and they all acknowledge the infinitely greater success which attended the early and steady employment of the more active diaphoretic measures."

It is scarcely necessary, after what has just been stated, to mention the applicability of diaphoretics in typhus or typhoid fever. It is worthy of remark, however, that the agents of this class are much more available in the incipient stages of those affections. In typhus gravior, or confirmed dothinenteritis, it is often very difficult to procure diaphoresis. Nevertheless, it is still important that the means should be perseveringly applied. The vapor bath will, in most instances, be indispensable, and should never be neglected. When the patient is too feeble to sit in the bath, suitable fixtures, consisting of curved sticks, or sections of hoops, placed over him, while lying in bed, will keep off the covers so as to admit of the free application of the vapor, by means of proper pipes.

The very intimate sympathetic relation which subsists between the cutaneous surface and the lungs, renders the employment of diaphoretics particularly proper in the treatment of inflammatory affections of the latter. When the skin is moist with perspiration, the breathing is generally more free, the pain and distressful feeling in the throat and chest, less severe, and expectoration easier. (Eberle.) It is evident, when the termination is changed to the surface, the inflammatory action in the lungs must abate in a corresponding degree. Eberle thinks, that in incipient phthisis pulmonalis,

the most important remedial means are such as tend to keep up a regular action of the cutaneous emunctories.

Nor are diaphoretics less available in inflammatory affections of any of the other viscera, either of the thorax or abdomen, such as hepatitis, gastritis, enteritis, peritonitis, nephritis, cystitis, &c. Aside from their direct power to obviate inflammation, they have a manifest tendency to equalize the circulation, as well as the nervous action.

These same remarks will hold good in reference to the application of diaphoretics in inflammatory affections of any other tissues. Hence, they may be freely used in rheumatism, gout, and all phlegmonous attacks of external organs.

The advantage of diaphorectics in dysentery, or diarrhœa, as well as cholera infantum, and the ordinary summer complaint of children, should, perhaps, not go unnoticed here. Vogler, Stoll, Akenside, and Richter, were among the first who called the attention of the profession to their utility in these affections. But at the present day, especially among Botanic physicians, no encomium is necessary to insure attention to their claims. "The influence," says Dr. Eberle, "of the morbid condition of the cutaneous exhalents on those of the bowels, and vice versa, is often manifested in a very conspicuous way. We observe, for instance, dysentery, diarrhœa, and inflammation of the bowels to ensue from the sudden suppression of perspiration: and on the contrary, these diseases, from whatever cause they may arise, are almost invariably attended with a dry skin. By exciting the cutaneous emunctories in these affections, therefore, we break the chain of morbid action, equalize the circulation, and give an exit to those recrementitious matters which nature designs to be cast off by the skin, and the retention of which cannot but prove injurious to the animal economy."

Few at this day, doubt the applicability of those agents that promote the serous evacuations from the skin, in dropsy. It is very difficult, however, to excite perspiration in dropsy, and it will generally be in vain to depend on diaphoretics unless aided by the vapor bath.

In diabetes, it becomes an object likewise, to detract the serum to the emunctories of the skin, and hence diaphoretics

will also be found beneficial. They should be aided by frictions, and stimulating liniments.

As to the utility of diaphoretics in the exanthemata, there has been some diversity of opinion. During the prevalence of the exclusive humoral pathology, the use of all evacuents, as it must be presumed, were very popular. It was supposed, that all diseased action was dependant upon the presence in the humors, of some specific virus, and hence every means of depuration was instituted for the purification of the fluids. In the treatment of eruptive affections, as well as others, therefore, diaphorectics held a high character. On the other hand, it is objected that diaphoretic measures are mischievous in the exanthema on the ground that as they maintain the determination to the surface, they enhance the inflammatory diathesis. The truth perhaps lies in the middle ground. It is probable that in specific affections of the skin, such as scabies, herpes, uticaria, &c., diaphoretics will be of little or no use, while the major exanthema, as variola, rubeola, scarletina, erysipelas, &c., may require a treatment of this kind, at least in some of their stages.

In the application of this class of remedies, the fact should not be unobserved that the simple administration of the best articles of the kind is not always sufficient to insure their specific effect. Various collateral means are often necessary, as warmth and moisture to the surface, the exclusion of the atmosphere, warm potations, &c. The first adjuvant should consist of the vapor bath, or warm flannels, steaming bricks, bladders or jugs with hot water, placed to the feet and sides of the patient, &c. Sometimes, when the difficulty is dependant upon a spasmodic constriction of the cuticular emunctories, a cold or shower bath first, or the enveloping of the patient in wet sheets will take off the spasm, and then the usual diaphoretic remedies will be found to act promptly; and again it will be found that active collateral medicines are necessary. Thus, in cases in which the circulation is very languid and the general vitality of the system is low, the most potent stimulants will be required in connection with the diaphoretics.

These matters are, however, further treated of under the different orders of diaphoretics, and hence, need no additional remarks here.

Order I. SPECIFIC DIAPHORETICS.

Some of our agents, of the diaphoretic class, appear to possess a specific power over the cutaneous exhalents, which seems in no way dependant upon any collateral influence, as *stimulation*, *relaxation*, *etc.* These admit of various special applications; and, when found likely to be available, may be invoked in febrile and inflammatory affections, instead of the nauseant diaphoretics, as they are more agreeable to the patient.

ASCLEPIAS TUBEROSA.—The Root.

Synonymes.—Knollige Schwalbenwurzel, *Ger.*; Houatte Tubereuse, *Fr.*; Pleurisy Root, White Root, Butterfly Root, &c., *Vul.*

History.—This is one of the most gaudy species of the beautiful genus *Asclepias*, dedicated to Æsculapius the ancient god of medicine, under his Grecian name of Asclepias. It attracted attention first by its beauty as a wild plant; but on investigation it was found of no less importance as a medicine. It is highly esteemed as a diaphoretic by the profession generally, and especially, by the new school of practitioners. It has found a place in the secondary list of the U. S. P.

Botany.—*Sex. Syst.*—Pentandria Digynia.—*Nat. Ord.*—Asclepiadaceæ.

Gen. Char.—*Calyx* small, five-parted, *Corolla* rotate, five-parted, mostly reflexed. *Staminal crown* (*nectuary*,) simple, five-leaved; leaflets opposite the anthers, with a sublate averted process at the base. *Stigmas* with the five angles (*corpuscles*) opening by longitudinal chinks. *Pollinia* five distinct pairs. (*Torrey.*)

Spec. Char.—*Root* perennial, *large*, branched, or tuberous, yellowish and rough without, and white within. *Stems* from one to fifteen or more, upright, or procumbent, pubescent,



Asclepias Tuberosa

cylindrical, branched, from two to three feet high. *Leaves* scattered, supported on short foot-stalks, oblong lanceolate, entire very hairy, of a green thrifty color above, and paler below. *Flowers* of a beautiful orange color, and disposed in terminal clusters, or corymbose umbels; the corolla is reflexed and of a very singular construction peculiar to the genus: the nectaries or reflecting petals are conical or terete. *Perianth*, folicles two, about three-fourths of an inch thick, by three in length, swelling in the middle, tapering at both ends, acuminate at the apex, one-celled, one-valved, containing the seed and seed-down or silk. *Seeds* numerous, flattish, circular, of a brown color, and attached to a tuft of silk, which on the bursting of the follicle spreads and carries the seed. Grows on sandy plains, in neglected fields, throughout the United States. It blossoms in July and August.

Analysis.—The root of this plant contains an *essential oil*, *bitter extractive*, *gum*, *fecula* and *resinous matter*. Its diaphoretic properties, appear to reside in the extractive, but its expectorant in the resin. Water extracts its diaphoretic virtues but not the expectorant. Much boiling impairs the medicine, and so does long keeping.

Physiological Effects.—Asclepias Tuberosa, when taken in small quantities, produces no very sensible effects, excepting a slight bitterish sweet and peculiar, but pleasant taste. In larger portions it slightly raises the pulse, and when taken for a few days improves the appetite, and increases the cuticular excretions. In large doses, repeated, the pulse is sensibly excited, the perspiration increased, the appetite strengthened, and the spirits revived. Over doses produce nausea and vomiting, as well as purging, if repeated.

Therapeutic Properties and Use.—This article, although not so active as some others, may, nevertheless, be regarded, one of our most valuable diaphoretics. It seems to have a specific power over the excretories of the skin, which it excites gradually but effectually. The medicine is withal very pleasant to the taste, and agreeable to the stomach, and may hence be taken in infusion copiously, and thus also we secure the advantage in part of a sympathetic diaphoretic. It is also valuable as an expectorant, having a manifest tendency

to excite the pulmonary secretion, and seems to evince a soothing influence to irritated parts, analogous to that of an anodyne power. One of its vulgar names indicates the estimation in which it has been held as a remedy in *pleurisy*. Its power in this disease is dependant on its diaphoretic effect, conjoined with its soothing and expectorant action upon the pulmonary organs.

"So many estimable qualities," says Barton, * "are usually attributed to this very favorite plant and popular medicine, that it is not easy to assign it a proper place in the Materia Medica. If the butterfly-weed is deserving of half its reputation, it is richly entitled to a distinguished rank in this [Med. Bot.] work; and so numerous and respectable are the authorities in support of its celebrity, that it is with considerable diffidence, I venture to lessen, in the least degree, its elevated character as a medicine, by the intimation of any doubts of its just claim to its present undisputed reputation. My own experience with it is confined to a few trials in cases in which it is reported to be peculiarly beneficial; and these have resulted in an opinion, that there is some foundation for the encomiastic accounts of this medicine. It may be safely, nay, confidently recommended to physicians, as a mild cathartic, particularly suited to the complaints of children, as it leaves the bowels in a tranquil condition; and as a certain diaphoretic, attended with no inconsiderable expectorant effect."

The author has made many trials of this article in various cases, and under circumstances which would admit of a test of its powers. He has found it a slow but pretty certain diaphoretic, when taken in large draughts of its infusion, and when properly assisted by the situation of the patient. But the cathartic, diuretic, antispasmodic, and other virtues ascribed to it, though possessed of most of them in some degree, are not sufficiently prominent to be depended on.

Asclepias Tuberosa is applicable in fever generally, as well as in most inflammatory diseases, particularly those implicating the pulmonary organs, in which its infusion will serve well as an auxiliary means calculated as a common drink,

* M. Botany, vol. i, p. 243.

to maintain a free perspiration and equilibrium of the circulation, as well as a free condition of the lungs. As an expectorant it is best taken in substance. The dose is about *gr.* xxx. to ʒj., taken in hot water sweetened.

PHARMACEUTIC PREPARATIONS.—INFUSUM ASCLEP. TUB.: *Infusion of Asclepias Tuberosa.*—℞ Asclep. Tub., in coarse powder, ʒj; Boiling Aq., Oj. Infuse for an hour, keeping it hot, and strain.

Action. Use.—This is the most common form in which the A. Tuberosa is taken, and when a suitable quantity of sugar and cream is added, it makes a drink by no means unpalatable. Very good as a common diaphoretic drink, in fevers, pleurisies, etc. *Dose*, a wine-glass full, once every hour, or as circumstances may require.

DECOCTUM ASCLEP. TUB.: *Decoction of Asclepias Tuberosa.*—℞ Boil ʒiij, of coarsely powdered Root of Asclep. Tub., in Aq., Oiij, down to Ojss., and strain.

Action. Use.—A good diaphoretic and expectorant tonic, in the secondary stages of pneumonia and pleuritis. *Dose*, a table-spoonful sweetened with honey, once in two, three, or four hours, as the indications may warrant.

PULVIS ASCLEP. TUB. COMPOSITUS: *Compound Powder of Asclepias Tuberosa.*—℞ Asclep. Tub., ʒxvj; Capsicum, ʒj; Lobelia, ʒss.; Caryophyllus, ʒss. Pulverize and mix.

Action. Use.—A valuable diaphoretic in fever, and inflammation of the lungs and pleura. *Dose*, ʒj in hot water sweetened.

SYRUPUS ASCLEP. TUB. COMPOSITUS: *Compound Syrup of Asclepias Tuberosa.*—℞ Asclep. Tub., in coarse powder, ʒxvj; Aralia Racemosa, bruised, ʒviij; Cort. Prunus Virginica, ʒviij; Convolvulus Panduratus, ʒviij; White Sugar, ℔iv; Ess. Anise, ʒviij; Aq., q. s. Boil for two hours and strain; boil down to Oiij. Add the Sugar and Ess. of Anise.

Action. Use.—An excellent diaphoretic and balsamic expectorant, very useful in bronchitis, pneumonia, pleuritis, etc. *Dose*, one to two table-spoonfuls.

EXTRACTUM ASCLEPIAS TUB.: *Extract of Asclepias Tuberosa.*—℞ Asclepias Tub., in coarse powder, ℔v; Aq., Civ; Alcohol, Oiv. Boil for three hours in the water; add the alcohol and boil for twenty minutes over a slow fire: remove the kettle

and let stand over coals to simmer for an hour, and strain; now boil down to the proper consistence.

This contains the diaphoretic and nervine tonic properties of the medicine, as well as the expectorant to a small extent; and is useful in most cases in which the root is recommended. The *dose* is *gr.* xv—*gr.* xxx.

PTEROSPORA ANDROMEDEA.—The Root.

Synonymes.—Pterospore Paradox, *Fr.*; Crawley, Dragon's Claw, Fever-Root, Albany Beach Drops, *Vul.*

History.—This singular plant, though long known to herbalists, was not generally known to regular botanists until 1816. Dr. James, who found it growing near Albany called it *Monotropa procera.* In 1818, Nuttal established the genus *Pterospora,* embracing this species, which he named, from the resemblance of its flowers to those of the *Andromedea.* Of late it has become very popular as a diaphoretic in fevers, and although not officinal, is much used in practice, especially by physicians of the new school. The author is unable to find it in any regular treatise on Materia Medica.

Botany.—*Sex. Syst.* Decandria Monogynia.—*Nat. Ord.* Monotropes.

Gen. Char.—*Calyx* five-parted, *Corolla* ovate, five-toothed. *Filaments* flat; *anthers* two-celled, two-bristled, sub-peltate. *Style* short; *stigma* capitate. *Capsule* sub-globose, five-celled. *Seeds* winged.

Spec. Char.—*Root* perennial, (Raf.), fleshy, tuberculous; *tubers* many, resembling the claws of a fowl. *Stem* erect, from ten inches to two feet in height, simple, straight, covered with short viscid hairs, cylindrical, leafless, sparcely beset with scales. *Leaves* none. *Flowers* in a terminal raceme, ovate, with five reflex teeth, some fasciculated, axillary to linear bracts, color pale or redish white; *peduncle* curved, nodding. The entire plant is without verdure. It affords four varieties, viz: the P. Flaviculis or yellow-stalked, P. Leucorhiza or white-stalked, P. Elatior or high-stalked, P. Pauciflora or few-flowered.

The plant is found on barren hills and shady uplands, in

the Northern States, and Canada. The P. Leucorhiza and P. Pauciflora are found in the Western States. It blossoms in July.

THERAPEUTIC PROPERTIES AND USE.—The root of this plant is regarded, by many practitioners, as being one of the most prompt, certain, and powerful diaphoretics that we possess. It has been employed by the Indians, herbalists, and Shakers of New-Lebanon, says Rafinesque, as a valuable vermifuge, sudorific, anodyne, deobstruent and emmenagogue. But it is most highly esteemed as a diaphoretic and sudorific in fevers, especially typhus, and other continued as well as remittent fevers, of every variety. When taken freely, it occasions the most profuse perspiration. Rafinesque also says that this article will relieve the night hectic fever, without debilitating the patient,—that it avails in pleurisies and erysipelatous fever.—Is chiefly good in low stages of fever.

"I verily believe," says Elisha Smith, (Bot. Physician, Revis. Ed., p. 195), "that this root, properly administered, with such other medicines as may be necessary, will break up any fever in the space of two or three days, not excepting continued, typhus, or yellow fever; and, that death from any species of fever, would be rarely known." "With these powders"—*powdered root*—continues he, "I have often given quick relief from the excruciating pain of a supposed attack of liver-complaint; which, however, was caused by wind pent up in the bowels. It is an excellent medicine in pleurisy, and inflammations of the chest and brain, and is a sure remedy in erysipelatous fevers."

The medicine is usually given in substance, in the form of powders, commonly called "*fever powders*." The dose is from *gr.* xx. to *gr.* xxx. It has never been analyzed, and hence its proper menstruums are not known.

LIQUOR AMMONIÆ ACETATIS.

SYNONYMES.—AMMONIÆ ACETATIS AQUA, Ed. Dub.; SPIRITUS MINDERERI; *Solution of Acetate of Ammonia. Spirit of Mindererus.*

PREPARATION.—Take of Acetic Acid, diluted, Oj; Carbonate of Ammonia, in powder, q. s. Add the carbonate gradually to the acid until it is saturated.

It may be proper to remark, that when common vinegar is used for the preparation of this article it must be *distilled*, and not used in its impure state as is often the case.

Description.—Solution of Acetate of Ammonia is a limpid, colorless liquid, which has a faint odor, and a slight mawkish taste. If neutral it will not change litmus or turmeric paper. But it is not always prepared so by the practitioner, being sometimes left a little acid or alkaline, according to the circumstances attending its use. If taken internally it is more pleasant when the acid predominates. But is better if left more alkaline, when the stomach inclines to acidity. Its formula is $N H^{3} C^{4} H^{3} O^{3}$.

Physiological Effects.—This preparation, though manifesting, when taken in quantities of an ounce or more, very considerable influence upon the system, and especially upon the secretories, is very mild and insinuating in its effects. If the skin is kept cool, or the person taking it should exercise in the cool air, its action is directed to the kidneys, and free diuresis is produced; but otherwise its power is mostly displayed upon the excretories of the skin.

Therapeutic Properties and Use.—Acetate of Ammonia is an excellent diaphoretic, possessing a specific power over the excretories of the skin. It is highly esteemed by many of the old profession as a diaphoretic in fever; and being an innocent article, as well as a potent remedy, may, with all propriety, be embraced in the new Materia Medica. If the skin is kept warm while the medicine is taken freely, it will seldom fail to produce a free diaphoresis. The indications for its application are in cases of high fever and inflammation, when the more stimulating diaphoretics are less admissible. The dose is from f℥ss. to f℥jss., every two or three hours, diluted with water, and sweetened with sugar.

Its effects are much promoted if, between the doses, some other good diaphoretics are used, and especially if the skin is kept warm, or the vapor bath should be applied.

ICTODES FŒTIDA.

This article (described among the expectorants,) seems to have quite a specific power to excite the cutaneous exhalents,

producing a free and continued diaphoresis. It is certainly worthy of attention in this respect. The dose is from *gr.* v—*gr.* x of the recent root, shielded in some preserves. But when taken in the dried state, the dose must be double this quantity. It must always be taken in substance.

Order II.—NAUSEATING DIAPHORETICS.

In observing closely the operation of the various therapeutic agents that belong to the class denominated *Diaphoretics*, it will be discovered that two prominent principles of action are involved. We find that while the articles of the foregoing order are dependant for the production of their specific effect upon their absorption, into the circulation, and their actual contact with the exhalent vessels, a second order of diaphoretics are observed, which, in producing the same effect, are not necessarily absorbed into the circulation, but seem to act through the nervous system. A peculiar sympathy, elsewhere explained, appears to exist between the stomach and cuticular exhalents, and it is by virtue of this, that the latter order of diaphoretics produce their specific effect.

It has long since been observed that emetics and other nauseating drugs are very apt to occasion diaphoresis, and it is upon a knowledge of this fact, discovered by observation, that the use of the nauseating "*fever powders*" has been established.* Emetics have also been discovered to be attended in their operation, not only by a diaphoresis, but a singular abatement of fever or inflammation, that could not be accounted for by the mere mechanical action attendant, nor the simple stimulating effect of the agents used; and it is certain, that thousands of practitioners have been led, by the good effects of emetics in fever and inflammation, to their general employment in these cases, without apprehending the truth, as to the principle on which the much admired effect is produced.

* This peculiar sympathy, however, does not necessarily require nauseating substances to produce this specific effect upon the exhalents of the skin. Any substance, particularly fluids, in filling the stomach, may give rise to it. Thus a copious draught of cold water will sometimes produce a free diaphoresis.

It is quite certain, from the foregoing facts, that there is sufficient reason for this division of the class, diaphoretics. Though it is not certain that the term *nauseating* is more proper here, than that of *sympathetic*.

The discrimination observed in the use of diaphoretics, by the philosophical practitioner, moreover, clearly evinces the propriety of this division. He finds that the articles of the stimulating and exciting order of this class of remedies, though not mischievous in essence, are nevertheless contra-indicated in all cases, in which the inflammatory diathesis is clearly marked, and the system is confined, at least, until the tension of the fibrous tissues is modified, and the violence of the arterial excitement is abated. In such cases the nauseating diaphoretics are extremely applicable. Instead of enhancing the excitement of the heart and arteries, in producing their diaphoretic effect, they occasion the latter, by removing the very cause of the arterial perturbation; that is, by obviating the constriction of the capillary system. They are admissable in the most violent varieties of the synochal grade of fever, as well as the most aggravated forms of inflammation. The first perceivable effect they produce, after the nausea they occasion, is a very perceptible modification in the pulse, showing their power to equalize the circulation. The fever, or heat of the body, will abate in a corresponding degree, and in a short time, the perspiration will appear. As soon as the system is thus relaxed, the stimulating diaphoretics may be used without the risk of inducing any undue arterial excitement. Thus it appears that stimulants are not phlogistic in their action, and that they are contra-indicated only while the circulation is confined.

LOBELIA INFLATA.

This invaluable article, possessing so many different virtues, though regarded chiefly as an emetic, is, nevertheless, entitled to a place at the very head of the nauseating diaphoretics. No article is more prompt than this, in procuring diaphoresis, or even the most satisfactory sudorific effect.

As, by an inexcusable oversight of the compositor or printer,

the Botanical description of this plant was omitted in its proper place, it is here inserted:

Botany.—*Sex. Syst.* Petandria Monogynia.—*Nat. Ord.* Lobeliaceæ.

Gen. Char.—*Calyx* five-lobed. *Corolla* five-parted, cleft on the upper side, nearly to the base. *Anthers* united. *Stigma* bilobed, barbed at the point. *Ovary* inferior, or semi-superior, and (in all species much alike,) somewhat free.

Spec. Char.—*Root* fibrous, white. *Stem* erect, six to thirty inches high, angular, branched, pubescent or hairy, purplish below, green above. *Leaves* scattered, sessile, lance-ovate, acute, serrate, pubescent. *Flowers* numerous, disposed in terminal leafy racemes, and supported on short axillary footstalks. *Calyx* tubular, or campanulate, five-cleft, with linear pointed segments. *Corolla* of a delicate blue color, has a labiate or irregularly lobed border; upper two lobes smaller and more pointed, lower three equally divided. The upper side of the tube of the corolla is cleft nearly to the base, exposing the stamens. *Stamens* closely surrounding the pistil. *Anthers* united, and enclosing the stigma. *Capsule* two-celled, striated, inflated, crowned with the persistant calyx. *Seeds* numerous, very small, of a brown color, and of an oblong or ovate shape.

The Lobelia Inflata is a biennial, growing in neglected fields, or roadsides, throughout the United States. Its flowering time is from July to September. The proper time for collecting it, is about the first of September, or when the leaves begin to turn yellow, as much of the seed is then mature, and will thus make its collection more profitable than when collected for the seed or herb alone.

Application.—The chief application of this article, in view of its diaphoretic power, is in high grades of fever, and inflammation, when there is much spasmodic constriction, and dryness of the skin, and when the secretions are dried up. In these cases, it relieves the fever, and moderates the arterial excitement with astonishing promptness. It should be given in small doses, frequently repeated, until it nauseates the stomach, when the doses are to be regulated according to circumstances. When the pulse moderates and the skin be-

comes soft and moist, the doses may be diminished. It seldom happens that lobelia, given in this way, fails breaking up the most severe paroxysm of fever, or removing the urgent symptoms of inflammation. As congestion is incompatible with nausea of the stomach, lobelia is manifestly indicated in congestive fevers, and all irregular conditions of the circulation attended with fever or inflammation. In remittent, bilious, or common autumnal fever, where there is much morbific accumulation in the vascular system, lobelia is an important remedy.

The dose of lobelia as a diaphoretic, is *gr.* iij to *gr.* x of the pulverized seed; from *gr.* v to *gr.* xv, of the pulverized herb, and from ♏ x to ♏ xxx of the tincture.

EUPATORIUM PERFOLIATUM.—The Herb.

Synonymes.—Eupatorium Virginianum, (*Pluk.*) Eupatorium Connatum, (*Mich.*) Durchwachsener Wasserdost, *Ger.;* Eupatoire Perfoliee, *Fr.;* Thoroughwort, Boneset, &c., *Vul.*

History.—This plant is a native of this country, and was a favorite and popular remedy among the Indians generally, for many years, and was also, one of the first that the early Colonian settlers became acquainted with. It was used as a febrifuge, and was taken in strong decoction to excite emesis, and to occasion a free perspiration; after which the doses were moderated, but the medicine continued until the cure was completed. One of its vulgar names indicates some of its uses, being much applied as a vulnerary and relaxant, in bone-setting.

Botany.—*Sex. Syst.*—Syngenesia Æqualis.—*Nat. Ord.*—Compositæ, Eupatoræceæ, *De Cand;* Asteræceæ, *Lind.*

Gen. Char.—*Calyx* simple or imbricate, oblong. *Style*, long and semi-bifid. *Receptacle* naked. *Papus* pilose, or more commonly scabrous. *Seed* smooth and glandular, quinquestriate. *Nutt.*

Spec. Char.—*Root* perennial, rather horizontal. *Stems* many, erect, from two to four feet high, one third of an inch in thickness, round, hairy, divided at the top into decussating branches, forming when in flower, a dense, flat, fastigitate corymb. *Leaves* connate, pairs decussant, broad at the base where they

join the opposite, pointed at the apex, from two to four inches long, from one to one and a half wide, rough, serrate, lanceolate, accuminate. *Flowers* small, terminal white, sometimes tinged with purple, supported on short peduncles in bunches. The calyx, which is composed of intricate lanceolate scales, embraces from ten to fifteen small florets which are campanulate, and have their border divided into five equal spreading segments. The *anthers* are five in number, black, united into a tube through which the bifid piliform style projects above the florets. Grows in meadows and wet places, throughout the United States. Its flowering time is in August and September.

Analysis.—Eupatorium contains a *free acid*, *tannin*, *bitter extractive*, *gum*, *resin*, *acetate of lime*, *azote*. It yields its virtues to water and Alcohol.

Physiological Effects.—E. Perfoliatum, to the taste, is bitter and somewhat nauseous. When taken into the stomach, in portions of twenty to thirty grains, it at first excites the pulse, but in from fifteen to thirty minutes softens it, and lessens its frequency. When the dose is repeated it occasions nausea and diaphoresis. If it is still pushed further it will procure emesis. But no permanently unpleasant effects have yet been observed from its administration.

Therapeutic Power.—This article has justly gained the character of a very *certain* and *permanent* diaphoretic, as well as that of an emetic, tonic and aperient. It would be needless to collect all the testimony that has been gained in its favor; and if it be even admitted, that the medicine has been much overrated, it is nevertheless certain that it well merits the confidence of the profession. "The sensible properties," says W. P. C. Barton, "of the boneset indicate its medical virtues; and it appears that the tonic and diaphoretic effects, both of which are unequivocal and powerful, are those most deserving attention."

The tonic virtues of this article have long been esteemed, and have been celebrated as efficacious in intermittents and remittents. But it is very certain that while these are estimable, many results have been ascribed to them that have been the legitimate effects of the diaphoretic power of the medicine. The hot infusion of the plant, drank freely, will

seldom fail to establish a diaphoresis that will continue profuse, sometimes for several days. After evacuating the stomach and bowels, in the autumnal fever, the infusion, drank freely, will generally complete the cure.

The author above quoted, very justly remarks also, that "the efficaciousness of boneset is not confined to the simple forms of intermittent fever. It has beyond disputation, been snccessfully employed in remitting bilious, in yellow, and typhus fevers, particularly in the form of the latter disease, lately so rife throughout the United States. And it is in cases of this disease that I have myself used it, and in which I can offer the additional experience of an excellent practitioner, the late Samuel C. Hopkins, M. D. The Doctor was among those partial to the sweating plan of treating this fever, and his unusual success in a multitude of cases for five or six years in succession, is strongly in favor of that mode of practice. The boneset was the medicine used in producing this effect."*

The Eupatorium is commonly prescribed in the form of infusion. This may be made by infusing an ounce of the herb in a pint of boiling water, for an hour, and straining; the tea may also be drank from the herb without straining, if prepared without pulverizing. This infusion is taken in doses of a wine glassfull every half hour, or as the circumstances may require.

Pharmaceutic Preparations. EXTRACTUM EUP. PERFOLIATUM: *Extract of Eupatorium Perfoliatum.* ℞. Take of the herb of Eupatorium Perf. ℔ v, Water q. s., Alcohol Cong. ij. Boil the herb in the water for three or four hours and strain; now add the Alcohol to the herb, and simmer over hot ashes for two hours and strain. Distil off the spirit until there remains two pints, and after evaporating the liquor of the former process to a similar quantity, add the two, and evaporate by means of a water bath to the proper consistence.

Action. Use.—The same as the aqueous infusion. *Dose.* *gr.* v—*gr.* x. A good article for making pills with quinine.

*Med. Bot. vol. ii. p. 135.

IPECACUANHA.

Ipecacuanha (treated of under the head of emetics) is also a pretty good nauseating diaphoretic, useful in febrile and inflammatory affections, but is inferior to lobelia in this respect. The dose is from *gr.* v—*gr.* x.

EUPHORBIA.

The different species of Euphorbia (noticed among the emetics,) when given in doses, so regulated as to keep up nausea, will procure a diaphoretic effect, available in many cases. The general dose is *gr.* v—*gr.* x.

ANTHEMIS NOBILIS.

Cammomile when taken in strong, hot, infusion, is a good nauseating diaphoretic, available in fever, particularly when of a low type, as typhus, typhoid, and malignant remittent. If the medicine is pushed so as to vomit, it will be more effectual. Its emetic power is mild and harmless. *Dose*, a wine-glass full of the infusion, prepared by infusing an ounce of the herb in a pint of boiling water.

PULVIS SUDORIFICUS.

℞.	Asclepias Tub.	ʒ vj.
	Lobelia Inflata	ʒ iv.
	Ictodes Fœtida	ʒ iv. Pulverize and mix.

This is the formula of Dr. Mattson's sudorific powder, which is so much esteemed in the treatment of fever. It is an excellent diaphoretic of the nauseating kind, and will ever maintain a good character. *Dose, gr.* v—*gr.* xx.

Order I.—STIMULATING DIAPHORETICS.

As obstructed perspiration may be dependant on various, or even *opposite* states of the general system, very different orders of this class of agents are required. Thus we find that the difficulty may involve a very high febrile action,

characterized by an obstinate constriction and burning of the skin: and again, the circulation may be extremely languid, the skin cold, relaxed, and inactive, and hence dry, as before.

In the first instance the *antispasmodic* or relaxant order of diaphoretics are indicated, while in the latter the *stimulating* are required.

The stimulating diaphoretics produce their specific effect rather on different principles, from those on which that of the relaxant is brought about. The first enter the circulation, which they promote, and then they seem to spend their force on the cuticular exhalant vessels, by actual contact, or direct influence. The *relaxants* act chiefly through nervous influence.

All pure stimulants are more or less diaphoretic, in their effects on the system. They are general *excitants*, and evince their influence on all the living tissues in a manner corresponding with the functions that the different organs are destined to perform. Their most obvious and immediate effects chiefly involve the circulation, as this is the point of their first general contact. But, being thus carried forward to the capillaries and external exhalants, before their exciting power is much exhausted, they stimulate the latter to increased activity.

The diaphoretics of this order, like those of the preceding, are not, in the strictest sense, specific in their effects. But these, in virtue of their general exciting power, promote the functions of every organ with which they come in contact.

According to the principles already discussed, it will appear that the agents of this order are not applicable in every case in which diaphoretics are indicated. Thus, in the sthenic diathesis, when there is much vascular excitement while the skin is constricted, and, when there is, in consequence, a congestive tendency, pure excitants are contraindicated, and hence, if used at all, they must be premised by the *nauseants*.

Stimulant diaphoretics are indicated in all low forms of fever, in which a deficient action of the cutaneous emunctories is chiefly dependant upon an enfeebled condition of the



Polemonium Reptans

circulation, as in typhus, typhoid pneumonia, typhoid fever, etc.

It is unnecessary, here, to treat severally of the different articles of the stimulant class that comprises this order of diaphoretics, seeing they are all described in the class to which they more properly belong.

A few formulæ and a posological catalogue of the simple agents will be all that is required. The simple agents may, however, be regarded as consisting of two varieties, viz.:

1. *Those whose Active Properties are contained in an olio-resinous principle, and which are, hence, more permanent in their effects.*

	DOSE.
Capsicum,	gr. v—gr. xx.
Zingiber,	gr. x—gr. xxx.
Piper,	gr. x—gr. xxx.
Myrrha,	gr. x—gr. xxx.
Xanthoxylum,	gr. x–gr. xxx.
Polymonium Reptans,	gr. x—gr. xx.
Anthemis Cotula, (Inf.)	f℥j—f℥iij.
Sylphum Perfoliatum,	gr. x—gr. xx.
Polygala Senega,	gr. x—gr. xxx.

2. *Those whose virtues are dependant upon an Essential Oil, and are much less permanent in their effects.*

	DOSE.
Caryophylus,	gr. x—gr. xxx.
Cinnamonum,	gr. x—gr. xxx.
Menthea, (Inf.)	f℥j—f℥iij.
Nepheta C., (Inf.)	f℥j—f℥iij.
Hedeoma P., (Inf.)	f℥j—f℥iij.
Origanum, (Inf.)	f℥j—f℥iij.
Salva, (Inf.)	f℥j—f℥iij.
Camphora,	gr. v—gr. xx.
The Essential Oils generally,	♏ v—♏ xxx.

PULVIS DIAPHORETICA: *Diaphoretic Powder.*—℞ Myrica Cerifera, ℥xvj; Zingiber, ℥viij; Capsicum, Caryophylus, aa., ℥j, Pulverize and mix.—(Dr. S. Thomson).

℞ Myrica Cerifera, Zingiber, Cort. Pin. Canadensis, Cort. Pop. Tremuloides, aa., ℥xvj; Cort. Quercus Alb. vel Quer. Rub., aa., ℥viij; Capsicum, ℥iij; Caryophylus, ℥ij. Pulverize and mix.—(Dr. J. Thomson).

℞ Asclepias Tuberosa, ℥xvj; Myrica Cerifera, ℥xvj; Rad. Cort. Laur. Sassafras, ℥iv; Rad. Liatris Spicata, ℥iv; Radix Zingiber, ℥xvj; Caryophylus, ℥ij; Capsicum, ℥ij. Pulverize and mix.—(Howard).

These are all very popular formulæ of stimulating dia-

phoretic powders. The first is rather too astringent; the latter, if the sassafras, (which is an inconvenient ingredient, as it produces rather a mucilaginous consistence of the infusion of the powder), be omited, is rather the best.

Class IV.—DIURETICS.

The term *diuretic* (from *Διουρητικος* or *διουρησις*, "a discharge of urine") is applied to that class of medicines which, when taken into the system, produce an increased discharge of urine.

Modus Operandi.—A history of the operation of diuretics comprises the consideration of different principles that are concerned. This may especially be said of their *methodus medendendi*, or remedial action. When the exclusive humoral pathology was most popular, it was supposed that diuretics, as well as other remedies, necessarily enter the circulation, and produce their effects by direct action on the organs concerned. This, as already explained, is true in *part*, of remedies in general, but is, by no means, the sole method of their action.

The functions of the kidneys sustain an intimate relation to those of various other organs of the system, and indirectly to certain external circumstances. Thus, when some of the other excretions are checked, as, for instance, those of the skin, the kidneys vicariously remove them, and thus their own secretions are augmented. All external influences, as cold, &c., which are calculated to obstruct the perspiration, will indirectly increase the urinary evacuation. We have an illustration of this fact in the gradual increase of the urine in the autumn, as the cold weather sets in, and in all sudden changes of the weather, from warm to cold. This circumstance cannot have eluded the observation of *any* person. This cause of increased diuresis is, therefore, equivalent to an increase of fluid ingestion, which, as is well known, generally increases the urine to a proportionate extent.

Diuretics may, therefore, be considered as producing their common effect, on at least two principles, viz.: 1. That of entering the circulation and directly stimulating the kidneys

to the increased performance of their normal functions. 2. That of operating on these organs indirectly through the nervous system. Most of the latter, however, obviously operate to some extent on the same principles that involve the action of the former. It may, nevertheless, be expedient to divide diuretics into two orders; one of the orders may very properly be denominated *saline diuretics*. The other, for the sake of distinction, is called the *stimulating order*.

The chief application of diuretics is in dropsies, especially in anasarca. They are also available in some gravelly complaints, stranguary, syphilis, and suppressions of urine generally.

Order I.—STIMULATING DIURETICS.

This order embraces that part of the class, *diuretics*, which are characterized by their more stimulating character, depending for their action principally upon an essential oil. They are all organic agents.

The articles of this order produce their effects partially through the nervous system, and partly by a direct influence upon the kidneys, by means of their absorption into the circulation.

EUPATORIUM PURPUREUM.—The Root.

Synonymes.—Queen of the Meadow, Gravel root, &c., *Vul.*

History.—The genus Eupatorium was dedicated to Eupator, or Mithridates, King of Pontus, who first used some one of its species as a counter poison. The genus is very extensive; a number of its species are medicinal. But if we except the E. *perfoliatum*, none, perhaps, is more valuable than this.

This article has never received its merited attention by the profession, although it had formerly gained a place in the secondary list of the United States Pharmacopia. In the reformed profession, however, it has been highly esteemed for a number of years.

Botany.—*Sex. Syst.* Syngenesia Æqualis.—*Nat. Ord.* Compositæ-Eupatoriaceæ, *De Cand.* Asteraceæ, *Lind.*

Gen. Char.—Same as E. Perfoliatum.

Spec. Char.—*Root* perennial, horizontal, woody, with many long, black fibres. *Stems*, from one to a dozen, upright, from three to six feet high, from a quarter to half an inch or more in diameter, round, smooth, of a purple color, simple, giving off at the top, at different heights, several setts of short divergent branches, bearing the flowers. *Leaves* in whorls, at the distance of about six inches apart, from three to nine at a whorl: they stand on petioles, from half an inch to an inch in length, are from three to six inches long, from one to two inches wide, oblong, lanceolate, accuminate, rough, entire, serrate. *Flowers* purple, consisting of an umbelliferous, corymbose cluster, composed of numerous very small florets, which are disposed in little bunches of five or more, to an involucre or scaly calyx, like those of the E. perfoliatum. Found in meadows and other low grounds throughout the United States. Flowers in August and September.

Medical Properties and Use.—The fibres of the root of the E. Purpureum are actively diuretic. The caudex also possesses the same properties, but is woody and hard to prepare. The chief application is in dropsical diseases, in which its effects are astonishing. The author has also found it to give very prompt relief in some cases of gravelly habits. A gentleman in the eastern part of Ohio, who, for many years, suffered extremely with paroxysms of pain and suppression of urine, and who had sought for medical aid in vain for years, was relieved very promptly by drinking freely of a strong infusion of the fibrous portion of the root of this plant. The medicine may be used, with confidence, in all cases in which diuretics are indicated. The dose is f℥j—f℥iij of the infusion, made by infusing an ounce of the coarsely powdered root in a pint of boiling water. The plant yields its virtues readily to boiling water and alcohol.

JUNIPERUS COMMUNIS.—The Berries and Tops.

Synonymes.—Juniperi Cacumina et Fructus, *Lond.*; αρκευθις, *Greek*; Abhool, *Arab*; Ginepro, *Ital.*; Genevrier commun, Baies de Genievre *Fr.*; Gemeiner Wachholder, Wachholderbeeren, *Ger.*; Enebro, Bayas de enebro, *Span.*; Juniper, *Vul.*

History.—Juniper was employed by the Greeks and Ara-

bians, and has, ever since its medical virtues and economical purposes have been discovered, been in use. In medicine it is esteemed as a diuretic, stimulant, and emmenagogue ; in the arts, the berries, or essential oil, are used in the manufacture of gin. Native of the northern parts of Europe, Asia, and America. Evergreen.

Botany.—*Sex. Syst.* Diœcia Monodelphia.—*Nat. Ord.* Pinaceæ or Conifera.

Gen. Char.—Male *Amentum* ovate. *Calyx* a scale *Corolla* none. *Stamens* three. Female. *Calyx* three-parted. *Petals* three. *Styles* three. *Berry* three-seeded, irregular, with the three tubercles of the calyx. *Willd.*

Spec. Char.—A bushy *shrub*. *Branches* smooth, and angular towards their extremities. *Leaves* evergreen, three in a whorl, crowded, linear, channeled, subulate, stiff and sharp-pointed, longer than the galbulus, of a shining green color on their lower surface, but having a broad glaucous line along the centre of the upper, which is resupinate. *Flowers* axillary, sessile, the males discharging much polen, of a yellow color. Females on a separate shrub, green, on scaly stalks. *Fruit*, globular, dark when ripe, ripens in the autumn of the second year.

Analysis.—The entire plant seems to be possessed of nearly the same principles, varying mostly only in the chlorophylle, which is contained in the leaves, and the greater proportion of lignin in the trunk and branches. Trommsdorff, who analyzed the berries in 1822, obtained *volatile oil* 1·8, *wax* 4·0. *resin* 10·0, *a peculiar species of sugar with acetate and malate of lime* 33·8, *gum with salts of potash and lime* 7·0, *lignin* 33·0, *water* 12·0, (excess 3·7.)

Physiological Effects.—Very nearly the same as those of the turpentines generally.

Therapeutic Properties and Use.—The berries, essential oil, or tops of the branches are diuretic and stiumlant, considerably excitant to the renal circulation and secretion. The oil is most commonly used, for practical purposes. The application of juniper is in dropsies generally, particularly in anasarca and ascites. It is also available in gonorhœa, gleet,

leucorrhœa, and cystirrhœa. The dose of the berries is ʒj—ʒij, triturated with white sugar. The infusion, prepared with an ounce of the berries or tops, to a pint of boiling water, which is the most convenient way of using them, is taken in doses of fʒiv every four hours.

Pharmaceutic Preparations.—OLEUM JUNIPERI; *Oil of Juniper*. ℞. Prepared by distilling the fruit, tops, or wood with water. Composition C^{10} H^{3}.

Action. Use.—Same as the berries. *Dose*, from two to six drops or more. This is the best form in which to exhibit the Juniper.

SPIRITUS JUNIPERI COMPOSITUS.—L. E. D. U. S. *Compound Spirit of Juniper*. ℞. Macerate *bruised Juniper Berries* ʒxv. (℔j. E. D.,) bruised *Caraways* and Bruised *Fennel Seed* aa ʒij. (ʒjss. E. D.) in *Proof Spirit* Cj. (Ovij. E.) *Aq.* Oij. (q. s. to prevent empyreuma, D.) for two days (twenty-four hours, D.,) (then add the water, E. D.,) and with a gentle heat, L. distil Ci. (Ovij. E.

Action. Uses.—An aromatic diuretic. *Dose*, fʒij—fʒiv.

COPAIBA. The Juice, or Oleo-Resinous Exudation.

Synonymes.—Copaifera Officinalis, Resina Liqua, *Dub.;* Copaiva-Balsam, *Ger;* Balsamo di Copaiba, *Ital.;* Baume di Copahu, *Fr.;* Balsamo de Copayva, *Span.;* Copavia, *Vul.*

History.—It appears that the first account of the Copaiba plant is that given by Marcgrav and Piso, in the year 1648. In 1763 Jacquin described a species of Capaifera, which he denominated C. officinalis, growing in the island of Martinique. Numerous species are now discovered, and their products have become very popular as a medicine, in almost every country. It is a native of South America, and the West Indies.

Botany.—*Sex. Syst.* Decandria Monogynia.—*Nat. Ord.* Leguminoseæ, *Juss.;* Amyridaceæ, *Lind.*

Gen. Char.—*Calyx* none. *Petals* four. *Legume* ovate. *Seed* one, with an ovate arillus, *Willd.*

Spec. Char.—The *Copaiba* Officinalis, described in the U. S. Dispensatory, is an elegant lofty *tree*, much branched at the top, crowned with a thick canopy of foliage. "The *leaves* are alternate, large, and pinnate, composed of from two

to five pairs of ovate, entire, obtusely accuminate leaflets, two or three inches in length, rather narrower on one side than the other, smooth, pellucidly punctate, somewhat shining, and supported on short foot-stalks. The *flowers* are whitish, and disposed in terminal branched spikes. The *fruit* is an oval, two-valved pod, containing a single seed."

There are many different species discovered, among which Royle gives the following with their localities:

1. C. Langsdorffi, *Desf.*	San Paulo and Minas.	6. C. Nitida, *Mart.*	Minas, Geraes, Cujaba, and Goyaz.
2. C. Coriacea, *Mart.*	San Paulo and Minas.	7. C. Beyrichii, *Hayne.*	Rio and Mountains of Estrella.
3. C. Guianensis, *Desf.*	Rio Negro, Para.	8. C. Officinalis, *Lin.*	West Indies, and Venezuela.
4. C. Multijuga, *Hayne,*	Para.	9. C. Jacquini, *Desf.*	
5. C. Martii, *Hayne.*	Para, Maranhao.		

Description.—The commercial drug is an oleo-resinous liquid of about the consistence of honey, and is improperly called *Balsam* of Copaiva. It has a pale straw-color, strong, and peculiar odor, and disagreeable, nauseous, acrid taste. On keeping, it becomes more dense, and darker. It is soluble in alcohol, ether, and oils; but, like other oleo-resins, it is insoluble in water.

Analysis.—Stolze and Gerber found the Balsam of Copaiba to contain *volatile oil* from 32 to 34 parts, *yellow resin* 38 to to 52, *viscid resin* 1·65 to 2·13, the *rest* being *water* in 100 parts.

Adulterations.—Copaiba is said not to be so much adulterated in this country as in Europe. The fixed oils, especially the Castor oil, are the most common articles used in this fraud. It becomes an object with those that adulterate this drug, to use castor oil, on account of its being, like the copaiba, soluble in alcohol, and, hence, less easily detected. Spirits of turpentine is also sometimes mixed with the copaiba. This may be detected by its smell, especially if the adulterated drug is heated. Castor oil may be detected by boiling with water. If the balsam, after the evaporation of the liquid, be hard and resinous, no oil is present; but if soft or greasy, there is no doubt of it. The extent of this

adulteration will correspond with the consistence of the residue after evaporation.

Physiological Effects.—Copaiba, when swallowed, produces an acrid sensation in the mouth and throat. When taken in quantities of ten to twenty drops, it slightly excites the pulse, as well as the mucous secretions. In larger portions, as from half a drachm to a drachm, it proves diuretic and stimulant, with a very marked tendency to the mucous surfaces. In over doses, it is said to produce irritation of the mucous membranes generally, attended with pain, vomiting, purging, and stranguary.

Therapeutic Properties and Use.—This article is not in general use among Botanical physicians, being supposed by some to be too harsh in its effects. It is a stimulant diuretic, useful in dropsies, and chronic affections of the urinary organs, &c., having also a specific tendency to the mucous tissues; is hence prescribed in gleet, leucorrhœa, gonorrhœa, and even syphilis. It is also considered available in various chronic bronchial, gastric, and enteric difficulties, of an inflammatory character.

The dose is ♏ xx to f℥j.

GALIUM.—The Herb.

Synonymes.—Clevers, Goose-grass, Bed-straw, Catch-weed, &c. *Vul.*

History.—This article owes its popularity as a medicine chiefly to the new school physicians. It is not generally known to the practitioners of the old school. The author is unable to find it in any of their works, except a mere notice of three of the species, in the appendix of the U. S. Dispensatory.

Botany.—*Sex. Syst.*—Tetandria Monogynia.—Nat. Ord. Ribiceæ.

Gen. Char. *Calyx* four-toothed. *Corolla* flatish, four-cleft. *Fruit* dry; nuts, two; one-seeded.

Spec. Char.—The Galium genus affords many species that possess nearly the same medical virtues, and also bear a close resemblance in their physical character and habits. Among those generally used are the G. asprellum, G. aparine, and G. trifidum.



Uva Ursi.



Galium Asperula.

Clevers mostly agree in having slender, trailing, herbaceous, branched, quadrangular, scabrous *stems;* and small, whorled, nearly sessile, oblong, lanceolate, or ob-lanceolate, entire, and mostly scabrous *leaves*, with from four to eight in a whorl. The *flowers* are small, white or yellow, scattering or clustered. The *seed* is contained in a thin capsule, is black or dark, curved, small.

Medical Properties and Use.—Galium is an excellent diuretic, applicable in all cases in which this class of remedies are available. It is particularly useful in suppressions of urine, dependant upon either chronic or acute inflammation of the kidneys. The dose is f ʒij—f ʒiv of an infusion, made by infusing an ounce and a half of the bruised herb in warm water for two hours.

LEONTODON TARAXACUM.—The Root.

Synonymes.—Lowenzahn, *Ger.;* Tarassaco, *Ital.;* Pissenlit, Dent de lion, *Fr.;* Diente de leon, *Span.;* Dandelion, *Vul.*

History.—This plant is supposed to grow native in every country of the globe. It has been long known as a medicine, and its popularity as such has been various.

Botany.—*Sex. Syst.* Syngenesia Aqualis.—*Nat. Ord.* Composite—Cichoraceæ. *De Cand. Lind.*

Gen. Char.—*Receptacle* naked. *Calyx* double. *Seed-down* stipitate, hairy. *Willd.*

Spec. Char.—*Root* perennial, fleshy, terete, branched, milky. *Leaves*, radical, long, pinnatifid, generally runcinate, with the divisions toothed, smooth, and of a fine green color, reddish midrib. *Scape* long, cylindrical, hollow, naked, simple, smooth. *Flowers* large, of a golden-yellow, with many florets; receptacle convex and pitted; *seed-down* stipitate, and when mature, forming a spherical cluster, is easily disengaged, and carries the seed with great facility. The entire plant exudes a milky juice, on being wounded. Grows abundantly throughout this country, in meadows and other low-grounds.

Analysis.—The milky juice contains *bitter extractive, gum, caoutchouc, saline matters, resin*, and a *free acid*. The root, in addition to these, contains *starch, sugar*, and a *peculiar principle* called *taraxacin*. Water takes up its virtues.

Physiological Effects.—In small quantities no particular effect is produced. In large portions, as that of *gr.* x to *gr.* xxx of the extract, it proves diuretic and aperient.

Therapeutic Properties and Use.—Dandelion is a mild diuretic, aperient, and tonic. It is very useful in chronic visceral affections, especially those of an inflammatory character, implicating the kidneys and liver. It appears also to exert an influence over the glandular system generally, and is regarded as a highly important article of our Materia Medica. But the medicine is not possessed of much medical activity, it should generally be combined with other more active articles, according as the indications may require. Some physicians esteem dandelion much in the treatment in tubercular consumption, especially when accompanied with dropsical effusions. The usual dose is *gr.* xx. to ʒss. The extract is much the preferable form of its use.

Pharmaceutic Preparations.—DECOCTUM TARAXACI: *Decoction of Taraxacum.* ℞. Taraxacum ʒvij. Aq. Oij. Boil together down to Oj. Press out and strain.

Action. Use.—℞. Same as the root in substance. *Dose*, fʒjss.

EXTRACTUM TARAXACUM: *Extract of Taraxacum.* ℞. Taraxacum, tops and roots, fresh, ℔ v, Aq. Cong. v. Boil until the virtues are extracted; press and strain. Boil down the liquid to the proper consistence. This is the common officinal extract. *Dose*, *gr.* x—ʒss.

EXTRACTUM INSPISATI TARAXACUM; *Inspisated Extract of Taraxacum.* ℞. Taraxacum, roots and tops, any quantity. Bruise and press out the juice. Evaporate spontaneously to the proper consistence.

This is the best preparation of the dandelion that is used. The dose is the same as that for the common extract.

ASCLEPIAS FIBROSA.—The Root.

Synonymes.—Meadow Silkweed; Fibrous Asclepias; Narrow-leaved Cotton-weed; Indian Hemp, *Vul.*

Botany.—*Sex. Syst.* Pentandria Digynia.—*Nat. Ord.*—Asclepiadaceæ.

Gen Char.—Vide Asclepias Tuberosa.

Spec. Char.—*Root* perennial, horizontal, fibrous, white; *fibres* very long and numerous. *Stems* many, upright, smooth, round, shining, branched at the top, with a green colored flaxy bark. *Leaves* opposite, petiolate, lanceolate, pointed at both ends, smooth, entire, three inches long, by one in width, top ones double or two joined latterally at the base. *Flowers*, in their organization exactly resembling those of the A. Tuberosa, but of a dusky yellow color, appearing in clusters on the top of the stem and branches. They appear in July. Grows in meadows, and on the banks of streams, in most parts of the United States.

Medical Properties and Use.—This is a mild diuretic, alterative, and aperient. Useful in dropsies, visceral obstructions, especially those of the urinary organs. *Dose* f ʒiij—f ʒv, of an infusion made with ʒjss. of the root, to Oj of Aq., three to six times a day.

TEREBINTHINA.

The turpentines are all powerfully diuretic, in their effects upon the system. They are described in the class, stimulants, but although rather harsh and severe in their effects, nevertheless merit a place here. Many Botanic physicians object to the use of Turpentine, as a diuretic, on the grounds just mentioned, but it cannot be regarded as poisonous, and when properly used, makes a very efficient and prompt stimulating diuretic. It is, however, contra-indicated when there is much irritation of the urinary passages.

The diuretic virtues of turpentine, are chiefly available in affections of the urinary passages and genital organs, such as leucorrhœa, gleet, gonorrhœa, and suppression of urine, especially when dependant upon a want of activity in the kidneys. The dose is from thirty to sixty drops.

APOCYNUM CANABINUM.—The Root.

Synonymes.—Indian Hemp *Vul.*

Botany—*Sex Syst.* Pent. Digyn.—*Nat. Ord.* Apocy.

Gen. Char.—Vide A. Andro.

Spec. Char.—In general appearance and character, this plant bears a very close resemblance to the A. Androsæmifolium. The stems are, however, more brown. The leaves are acute at both ends, and somewhat downy beneath. The cymes are also pubescent, and the tube of the corolla in this, is of about the same length of the calyx, while that of the other species is longer; the corolla is also somewhat greenish without, and pinkish or purple within, while the flowers of the Andros. are white without, and tinged with red within. The Indian Hemp grows in similar situations with the other species, and like it abounds with milk.

Medical Properties and Use.—The Indian Hemp is diuretic, and in large doses, powerfully emetic and cathartic, rather too violent for use. In small doses, as that of *gr.* v to *gr.* x; it will operate sufficiently mild as a diuretic, aperient, and alterative. The medicine is highly recommended, by some practitioners, in dropsy. It is also available in visceral obstructions generally, especially those of the kidneys, spleen, and liver. Some esteem it in fever. The dose, as a diuretic, is from five to ten grains, either alone, or in combination with some other diuretic. The plant yields its virtues to water and alcohol.

SAMBUCUS.—The Bark, Flowers, and Berries.

Synonymes.—Elder, Sweet Elder, *Vul.*

Botany.—*Sex. Syst.* Pen. Trigyn.—*Nat. Ord.* Capri.

Gen. Char.—*Calyx* five-pointed. *Corolla* five-cleft. *Berry* three-seeded.

Spec. Char.—A well known indiginous shrub, growing about ten feet high, with a branched stem, containing a large, spongy pith. The leaves are opposite and pinnate, and the flowers white, small, and in large umbeliferous clusters, succeeded with small globular, juicy berries, black or purple when ripe.

Medical Properties and Use.—Elder is a good and pretty certain diuretic. The inner bark of the root is the most active, but all the parts, except the woody portion and pith, are

diuretic. The decoction of the bark is eminently useful in dropsy. Numerous cases are reported to be cured by this article, that have resisted the power of many other esteemed remedies.

The knowledge of the value of Elder in dropsy is said to have been first obtained from the Indians. The extract is the best form in which to use the medicine. This is prepared from the bark in the same way directed for that of Cornus Florida. The inspissated juice of the berries is also good as a diuretic. The dose of this is 3j, 3ij. The dose of the extract is *gr.* v–*gr.* x. That of the decoction, made by boiling two ounces of the bark in two pints of water down to one, is from two to three fluid ounces; that of the watery infusion, is a wine-glass full, often repeated, until the desired effect is produced. The active properties are readily taken up by water and alcohol, being contained in a resin and an extractive.

APIUM PETROSELINUM.—The Root and Seed.

Synonymes.—Parsley, Garden Parsley, *Vul.*

Botany.—*Sex. Syst.*—Pent. Digyn.—*Nat. Ord.* Apiaceæ or umbil.

Gen. Char.—*Fruit* ovate, striated. *Involucre* one-leafed. *Petals* equal.

Spec. Char.—A well known indiginous garden plant, with a perennial *root*, and round, furrowed, jointed, branched *stem*, compound pinnated ternary *leaves*, and small umbeliferous *flowers*.

Medical Properties and Use.—A pretty certain and active diuretic, useful, and highly recommended by Dr. Chapman, in dropsy. It is generally taken in strong infusion, freely. The virtues of the plant are readily taken up by water, consisting in part, of an essential oil (combined with the juices of the plant, and hence soluble in water), and of an extractive. The medicine is not generally depended on, alone, in difficult cases, being chiefly used as a collateral agent with other remedies.

ASPARAGUS OFFICINALIS.—The Root.

Synonyme.—Asparagus, *Vul.*

Botany.—*Sex. Syst.* Hexan. Monog.—*Nat. Ord.* Asparagi.

Gen. Char.—*Corolla* inferior, six-parted. *Style* short. *Berry* three-celled; cells two-seeded.

Spec. Char.—An indiginous herbaceous garden plant, about three or four feet high, with many bristle-shaped leaves.

Medical Properties and Use.—A diuretic, formerly much esteemed, and still valued by the French. It is chiefly valuable as an auxiliary means in the treatment of dropsical and nephritic complaints. It has been usually prepared in syrup or extract, by expressing the juice and adding sugar, or evaporating spontaneously. Boiling, without doubt, much injures its virtues. The bruised root should simply be digested in hot water for a few hours, and then the infusion, thus prepared, drank freely. The dose of the syrup is f ʒj–f ʒij; that of the extract from ʒss. to ʒj.

CUCURBITA.—The Seeds.

Botany.—*Sex. Syst.* Monœ Monadel.—*Nat. Ord.* Cucurb.

Gen. Char.—Stamaniate Flow. *Calyx* five-toothed. *Corolla* five-cleft. *Seeds* flat, smooth.

Spec. Char.—This genus embraces many species, the seeds of which are medicinal. They are all naturalized, annual, herbaceous plants or vines. The most prominent are the following: 1. C. citrullus (*Watermelon;*) 2. C. pepo (Pumpkin;) 3. C. ovifera (Egg-squash;) 4. C. Melo-pepo (Flat-squash,) &c.

Medical Properties and Use.—The seeds of these plants are safe and prompt diuretics, very useful in dropsy and urinary obstructions. They may be taken in strong infusion, as auxiliary means to other remedies of this class. The virtues of the seeds reside chiefly in a fixed oil and extractive, and conseqently are not entirely given up to water or spirits. The oil may, however, be obtained by expression, or by boiling the bruised seeds, enveloped in a linen bag, in water, when the oil will collect on the top of the water, and may

be separated when the water cools. This oil is actively diuretic, in doses of from five drops to a tea spoonful.

ERIGERON.—The Herb.

SYNONYMES.—Fleabane, Scabious, *Vul.*

BOTANY.—*Sex. Syst.* Syngen. Supref.—*Nat. Ord.* Composiæ—Asteroid. *De Cand.* Asteraceæ, *Lind.*

Gen. Char.—*Calyx* imbricated, sub-hemispherical, often reflected. *Florets of the ray* linear, narrow, numerous. *Receptacle* naked. *Pappus* double, exterior minute, interior pilose, of few rays. *Nutt.*

Spec. Char.—There are many species of the Erigeron genus that possess analagous properties. All of them are highly medicinal, and have, perhaps, only been neglected on account of the commoness of the plants. The *E. heterophyllum* and *E. Philadelphicum*, which very much resemble each other in their appearance, are here more particularly intended to be represented. They are indiginous, herbaceous plants; the first is biennial, and the second perennial. They have branching roots, and erect, round, and very branched *stems*, from two to three feet or more in height. The lower *leaves* of the first are ovate, acute, deeply toothed, and supported on long winged foot-stalks; the upper ones are lanceolate, acute, deeply serrate in the middle, and sessile; *floral leaves* lanceolate and entire; all except the radical are ciliate at the base. The *flowers* are in terminal corymbs; *florets of the disk* yellow; those of the ray numerous, slender, and of a white, pale blue, or purple color. Flowering time from June to October.

The *E. Philadelphicum* has a top like the above. The lower leaves are ovate, lanceolate, nearly obtuse, entire, or remotely serrated, ciliate on the margin, and supported on long foot-stalks; the upper ones are narrow, oblong, cuneate, entire, sessile, or slightly embracing the stem; *floral leaves* small and lanceolate. *Flowers* numerous, radiate, disposed in a panicled corymb, with long peduncles bearing from one to three flowers, which resemble those of the above species, and appear about the same time. These plants generally grow

together in fields and open places, in various parts of the United States.

The author has discovered various other species of a very close resemblance to the above, some of which, perhaps, are new, as he has not been able to find any description of them in any works on botany. They all have a peculiar odor, which they readily give out on being bruised, and which is somewhat similar to that of *ligusticum*.

Medical Properties and Use.—The *eregerons* are mostly diuretic, tonic, and some of them astringent. They have, of late, very justly gained much attention by our practitioners. They are, at least, only second in rank among all our indiginous plants. The species just described, are very certain in their effects, and seldom disagree with the stomach, even after other articles that are considered mild, may have proved objectionable. In their operation, they appear to possess a specific influence over the secretions; not only those of the glandular system generally, but also, of the mucous and serous tissues, as well as of the lymphatics. Their diuretic power is pretty constant, and is quite available in dropsical and kidney affections, and especially, in irritability of the bladder. Professors Wistar, Physick, Barton, and Eberle, all add their testimony to their power in hydrothorax, anasarca, &c. and some of them recommend them in gout, associated with a lithic diathesis. The medicines have even been declared to dissolve urinary calculi. The herbs should be collected while in blossom, and carefully dried and preserved in close jars. Age impairs their virtues. The latter are taken up by water, but more readily by alcohol. The usual form of exhibition is by infusion, made by digesting an ounce and a half of the herb in a pint of boiling water, until cool. The dose is a wine-glass full, repeated, as may be necessary.

UVA URSI.—The Leaves.

Synonyme.—Bearberry, *Vul.*

Botany.—*Sex. Syst.* Decan. Monogyn.—*Nat. Ord.* Ericaceæ.

Gen. Char.—*Calyx* five-partite, of a pale red. *Corol* rose-colored, ovate-urceolate, five-cleft, border revolute.

Stamens ten, inclosed; filaments flattened. *Anthers* compressed, with two pores at the apex, and furnished latterally with two reflexed arms. *Ovary* globose, supported by three scales. *Style* short. *Stigma* obtuse. *Berry* globose, scarlet, with five single-seeded cells.

Spec. Char.—An evergreen, procumbent shrub. *Leaves* coriaceous, obovate, obtuse, quite entire, shining, of a deep green above, lighter color, and covered with a net work of veins on the under surface, hence reticulated. *Flowers* in terminal clusters of eight or ten, each supported by three small bracts. Grows on stony alpine heights, in the United States, Europe, and Asia.

"The leaves are the officinal parts, and usually collected in autumn. They have sometimes been adulterated with the leaves of Vaccinium Vitis Idæa, or Whortleberry; but these are *dotted* on their under surface, and have their margins revolute and somewhat crenate. The Box leaf is devoid of astringency. Uva Ursi leaves, when dried and powdered, have an odor not unlike that of hay; the taste is bitter and astringent. The active properties are extracted both by water and spirit. They contain *gum*, *resin*, *extractive*, and some *gallic acid*, and about thirty-six per cent. of *tannin*. The watery infusion is precipitated by gelatine, and a bluish-black color is produced, with the sesquichloride of iron. The leaves are employed in tanning, in some parts of Russia."

Therapeutic Properties and Use.—A rather mild diuretic, tonic, and astringent, supposed to have a specific direction to the urinary organs. It has also been reputed to be anti-lithic. It is recommended in diabetes, catarrh of the bladder, incontinuance of urine, gleet, leucorrhœa, and menorrhagia. The dose is ℈j—3j, of the powder, or f℥j—f℥iij, of a strong decoction.

CHIMAPHILA.—The Herb.

Synonyme.—Pipsissewa, *Vul.*

Botany.—*Sex. Syst.* Decan. Monogyn.—*Nat. Ord.* Pyrolaceæ.

Gen. Char.—*Calyx* five-toothed. *Petals* five. *Style* short,

berried in the germ. *Stigma*, annular, orbicular, with a five-lobed disk. *Filaments*, stipitate. *Capsules*, five-celled, opening from the summits.

Spec. Char.—A very small evergreen procumbent shrub. *Leaves*, coriaceous, with short petioles, cuneate, lanceolate, coarsely serrated, smooth and shining. *Flowers*, drooping, in small corymbs, with linear bracts. Grows on mossy turf in the woods, in northern latitudes of America, Europe, and Asia. There is another species possessing nearly analogous properties growing, more commonly throughout the United States. It is a smaller plant, has fewer leaves, and more lanceolate, which are marked by white lines along the midrib and lateral nerves. Otherwise the plant bears a very close resemblance to the above. It is also an evergreen, and is likewise vulgarly called Pipsissewa. It is the *C. Maculata*.

Medical Properties and Use.—These plants are both diuretic, tonic, and astringent, and in their therapeutic, as well as botanic character, are very closely allied to the Uva Ursi. They may be used in the same way in the fulfilment of the same indications. In addition, however, to the virtues ascribed to the article just spoken of, these are supposed to be possessed also of active anti-scorbutic powers.

Order II. SALINE DIURETICS.

Saline substances appear to possess a peculiar tendency to the kidneys. Whether this arises in virtue of the intrinsic power of these agents, or whether it be a consequence of the laws of the economy which seem to prove the kidneys to be destined to the collection of the saline portions of the blood, is a question of some importance, in view of the therapeutic value of this order of diuretics.

Digestion must be regarded as a *chemico-physiological* process. The chemical agents are mainly two, the *acids* and the *alkalics*. The action of the former is evinced in the agency of the gastric juice, and in the fermentative process of the digestion. Then the alkalies become necessary to dissolve what is insoluble in the acids. The alkaline digestion occurs in the duodenum, where the saline matters are furnished in the bile. The acids seem to become exhausted in the di-

gestive process. But the alkaline materials necessarily superabound, and their removal is provided for, in part, in the renal secretion. Now, it is but reasonable to conclude, that any artificial addition of alkaline material to the circulation, will find exit by the same means provided for the elimination of the natural product.

The question now arises whether, when alkalies or saline substances are administered, there is only an increase of the alkaline property of the urine, or whether there is also a real augmentation of the volume of the urinary secretion? Observation clearly demonstrates the affirmative to the latter. Then the alkalies, or saline substances, possess a power to excite the kidneys to their normal action, i. e., their urinary secretion.

The action of saline diuretics thus appears to be direct, or primary, upon the kidneys; and not like that of the former order, which is chiefly through the nervous system, or reflex action.

From these views, it will readily be seen that saline diuretics are quite topical in their effects, and are perhaps, applicable only, to the treatment of dropsy and diseases of the urinary organs.

POTASSÆ ACETAS.

Acetate of Potash.

This salt is found ready formed in many vegetables; indeed, in all which yield carbonate of potash by incinneration. It is colorless, has but little odor, but possesses a sharp saline taste.

"It is usually seen as a shining foliated mass, made up of small pellucid scales, but by slow evaporation it may be made to crystallize in thin compressed laminæ, or in needles. It is so deliquescent as soon to become converted into an oily-looking liquid when exposed to the air. It is soluble in half its weight of water; also in alcohol. Subjected to heat it fuses, then becomes decomposed. Hydrogen and carbonic acid escape. Carb. potash, as in the case of the tartrates, remains as a residue. Acetate of potash is decomposed by

sulphuric and other strong acids, giving off an odor of acetic acid, and also by several salts."

Preparation.—Take Carb. Pot., ℔j; (dry, ʒvij, or q. s., E.) (from tartar q. s. D), and add it (gradually, E. D.) to acetic acid, f ʒxxvj. and Aq. dest. f ʒxij. (Pyroligneous acid Oss. E.) (about five times its weight of distilled vinegar of a medium heat, D.) until saturation takes place. Evaporate in a sand bath, applying the heat cautiously, till the salt be dried, (in a vapor bath till it forms a concrete mass when cold, let it cool and crystalline in a solid cake, E.) (Evaporate to dryness, and cautiously raising the heat, liquify the salt. Dissolve in water, filter, and evaporate, till, on cooling, it becomes a white crystalline mass, D.) (Keep it in well closed vessels, E. D.)

In this process the *acetic acid* unites with the potash, and expels the *carbonic acid*. This article, thus prepared, being rather an expensive preparation, makes it an object to find an equivalent. This may be made extemporaneously, by saturating distilled vinegar with carbonate of potash.

Medical Properties and Use.—A very certain diuretic in doses of ℈ss.—ʒj. Useful in dropsy and urinary affections, and supposed to be particularly applicable in the uric acid diathesis.

POTASSÆ BITARTRAS.

Cream of Tartar.

This article was described in the order of hydragogue cathartics, but also merits a place here. It is a mild diuretic in doses of ʒss.—ʒij, repeated. Useful as an auxiliary to other diuretics.

Citrate of Potash, prepared by saturating lemon-juice with carbonate of potash, is also diuretic, and may be used in the same way and for the same purposes as the acetate.

Class V.—EXPECTORANTS.

The term, *expectorant*, is derived from the Latin *expectoro*, from ex, '*out*,' and pectoreus, '*breast*,' i. e., "out of the breast," intimating the source of the evacuation. Thus, the term is

applied to such medical substances as are considered to have the power to promote the elimination of matter from the bronchial surface or lungs. A physiological consideration of the function of expectoration, however, makes it doubtful whether, indeed, there can be any rational claim for a class of medicines posesssing a constant specific expectorant power, and whether expectorants should not be considered as mere relative agents.

As it is very certain, however, that this function can be promoted, and that to a very considerable degree, by obviating certain morbid conditions that may obstruct it, as well as by stimulating the organs with general and local means, as is done in other cases, in which no specific action can be sustained.

Hence, the propriety of continuing the class of expectorants which, of late, has been the subject of so much controversy, does not depend, altogether, upon the specific character of the means employed to effect the end. It is proper, sometimes, to consider the importance of the object to be accomplished *itself;* and, then, if this becomes a desideratum, and it be acceded that there are indirect means to gain it, the questions arise, whether there is *choice* in those said means? and, whether any practical advantage can be gained in this systematic arrangement?

It is on this ground, alone, that the class is retained in the present arrangement. But, it has been very correctly remarked, that expectorants must be regarded only as relative agents. There is scarcely one of the prominent classes that does not contribute in furnishing this. If the bronchial mucous membrane be inflamed, as in acute bronchitis, its normal secretions may be wholly arrested; in which case the nauseants will be required. If the inflammatory action should be feeble and chronic, and there should be a collection of cold tough phlegm, as in protracted winter coughs and the peculiar bronchitis of old persons, stimulants may be required. When there is much irritation and a tendency to spasm; anti-spasmodics, balsams, or nauseants, may be most indicated. Thus it may be very convenient to arrange such articles of the different classes, into such orders of *this* as will be

best suited to fulfil the various indications that demand expectorants.

Order I.—TOPICAL EXPECTORANTS.—Inhalations.

Inhalation is the most direct method by which the bronchial surface may be reached by medical agents. In order to effect our purpose, therefore, by this, it only becomes necessary to bring our remedies into a sufficient state of rarity to admit of being inhaled without becoming obnoxious. For this purpose, if of a proper quality, they may be converted into a state of *vapor* or *gas*. Thus, the vapor of vinegar or water, may be inhaled by means of a proper apparatus, in cases of dry asthma, with the most happy effects.

Persons have also experienced great relief, in spasmodic asthma, from a general vapor bath, in which they are placed completely in the vapor, so as to compel them to breathe the steam. The same kind of cases as well as bronchitis, may also, be much relieved by smoking lobelia leaves, in a common clean tobacco pipe. Stramonium leaves have also been used in the same way, and, it is said, with great effect, but, this is rather a suspicious remedy. The fumes of resin, pitch, or tar, dropped on hot coals, have also been highly esteemed in phthisis and chronic bronchitis.

Order II.—NAUSEANT EXPECTORANTS.

Nauseants are the most valuable expectorants that we possess. They are available in most cases in which other kinds have been found useful. Thus in all inflammatory conditions of the lungs or bronchia, in which expectorants are required, the articles of this order forcibly recommend themselves. Nausea promotes all the secretions, and those of the mucous surface of the lungs especially, to no *small* extent.

This order of expectorants are particularly applicable in asthma, pertussis, cynanche trachealis, bronchitis, catarrhs, the coughs attending scarlatina, or rubeola, &c.

LOBELIA INFLATA.

Lobelia is the best expectorant that we possess. It serves as a good example of this order. If there be a single article in the expectorant class that can be relied upon in all cases, it is this. But it is particularly available in croup, asthma, bronchitis pertussis, and catarrh, especially if there be much spasm or inflammation present. The dose is *gr.* v—to *gr.* xv.

IPECACUANHA.

The indiginous as well as the South American Ipecacuanha is expectorant, and may be used in all cases where lobelia is indicated, in doses of *gr.* v—*gr.* xv; but these are both inferior in this respect to that potent article.

SANGUINARIA.

The blood-root is a popular expectorant with the old school practitioners. They consider it well adapted to the treatment of cynanche trachealis, but it is also inferior to lobelia. The dose is from ten to thirty drops of the tincture, to a child three years old.

OXYMEL LOBELIA.

For formula, see p. 86.

Action, Use.—An excellent nauseating expectorant. *Dose* from a tea-spoon-ful to a table-spoon-ful repeated.

PULVIS EXPECTORANS.

℞ Lobelia herb, ʒj. Ictodes Fœtida ʒij. Pulverize and mix.

Action. Use.—A very efficient nauseant and anti-spasmodic expectorant, useful in all cases in which expectorants are indicated. *Dose, gr.* x—*gr.* xx, taken in honey or molasses.

Order III.—STIMULATING EXPECTORANTS.

It has already been remarked, that expectorants are properly only relative agents, and that the articles that are designed to promote this effect, must be selected from other classes, according to the indications of the several cases in which they may be required. All proper and general stimulants may, therefore, under certain circumstances, prove expectorant; and this fact is fully corroborated by the experience of every practitioner. No one can have failed to have observed, how prompt and efficient capsicum will act, as an expectorant, under some circumstances. Nevertheless, among the many different stimulants, we find some that seem to be much more specific, in this effect, than the mass appear to be. It is therefore, this variety of stimulants that are here intended to be represented separately. They are more particularly applicable in chronic pulmonary, and bronchial affections.

The following list comprises the most valuable articles of this order of expectorants, and may be ranked, in point of therapeutic value, according to the order in which they may appear:

1. Polygala Senega.—*Dose*, *gr.* v to *gr.* xv of the powder, or from ten to thirty drops of the tincture.

2. Arum Triphyllum.—*Dose*, *gr.* iij—*gr.* v, of fresh root, in honey, or *gr.* x—*gr.* xxx of recently dried, taken in powder, with honey or molasses.

3. Asclepias Tuberosa.—*Dose*, ℥ss—℥j of the powder.

4. Glycyrrhiza.—*Dose*, *gr.* x—*gr.* xx of the refined extract.

5. Inula Helenium.—*Dose*, *gr.* iij—*gr.* x of the extract; ten to thirty drops of the tincture, or *gr.* x—*gr.* xv of the powder.

6. Aralia Racemosa.—*Dose*, f℥j—f℥ij of the syrup.

7. Marrubium Vulgare.—*Dose*, *gr.* iij—*gr.* x of the extract, or *gr.* xv—*gr.* xxx of the powder; f℥j—f℥ij of decoction, and half the quantity of the syrup.

8. Alium.—*Dose*, f℥j—f℥j of the juice.

9. Ammoniacum.—*Dose*, *gr.* x—*gr.* xxx.

Order IV.—ANTI-SPASMODIC EXPECTORANTS.

This order of expectorants is chiefly available in cases where there is much irritation and spasm of the bronchial vessels, as in spasmodic asthma, pertussis, &c.

1. Ictodes Fœtida.—*Dose, gr.* iij—*gr.* x of the recent root; or *gr.* x—*gr.* xxx of the recently dried root, taken in powder, with honey or molasses.

3. Assafœtida.—*Dose, gr.* v—*gr.* x; f℥ss.—f ℥j of the tincture.

3. Galbanum.—*Dose, gr.* x—*gr.* xx.

Order V.—BALSAMIC EXPECTORANTS.

Balsamic expectorants are regarded to be soothing and healing to the lungs, and hence applicable in irritable, abraded or ulcerated conditions of the lungs, as in chronic bronchitis, typhoid pneumonia, and phthisis.

1. Tolutanum.—*Dose, gr.* x—*gr.* xxx repeated; f℥j, f℥ij of tincture; of emulsion with arabic, (℞. Tolutum ℥j; Mucilage Acaciæ ℥ss.; Syrupi ℥iij; Aquæ ℥v. Mix.) the patient may take freely as much as is agreeable to the stomach.

2. Myroxylon.—*Dose*, f℥ss.; to f℥j; dropped on sugar, mixed with molasses, or water by the intervention of the yolk of an egg.

3. Benzoinum.—*Dose*, f℥ss., to f℥ij, of the *compound* tincture, (℞ ℥iij Styracis purificat. ℥ij; Tolutanum ℥j; Aloes, in pulv. ℥ss.; Alcohol Oij.)

Order VI.—MECHANICAL EXPECTORANTS.

Emetics prove expectorant by virtue of their mechanical influence over the lungs, and are more effectual in relieving them when choked with phlegm, than any other meansthat can be employed. They, however, are not dependant for all they effect in this way, simply upon their mechanical action, but partially, upon their stimulant and nauseating power. They are particularly applicable in asthma, whooping-cough, &c.

Class VI.—EMMENAGOGUES.

By the term *emmenagogue* (from εμμηνια "the menses," and αγω "I drive,") is applied to such agents of our Materia Medica, as possess the power to promote menstruation, or the natural periodical discharge common to adult females of the human species.

The specific action of emmenagogues has been a matter of question with many. But it is probable, that this want of confidence has arisen entirely from a deficient knowledge, alike of the physiology of the menstrual phenomenon, and of the principles involved in the operation of the agents designed to promote the process. Many of the agents used as emmenagogues, unquestionably possess a specific action over the secretory functions of the uterus.

If menstruation were a mere incidental or accidental occurrence—a result of plethora, congestion, &c., and if it consisted simply of a discharge of common blood, as in cases of *epistaxis* and *hæmoptysis*, the facts concerned would be widely different. Then, indeed, there would be much more reason to doubt the general specific character of the agents used to promote it. But we find menstruation to be the effect of a specific function of the uterus, *i. e. secretion*, and, hence, that the fluid thus eliminated, although in its general appearance, similar to blood, is nevertheless, peculiar, possessing various characteristics not common to the latter; the color is not constant, like that of the blood; its odor is very different; it does not coagulate like blood—possessing no fibrine, and, *above all*, its chemical analysis gives different results.

This view of the matter, it is thought, will place emmenagogues in equal rank with other agents that are destined to promote the specific functions of organs, as *diuresis*, *diaphoresis*, *catharasis*, &c. A peculiar aptitude, may as properly be admitted here as in any other case.

But if reasoning *a priori* is not satisfactory, *actual experience* will suffice, as it is well known that emmenagogues are marked with a *uniformity of effect* when properly applied. But here it maybe remarked, that much more discrimination is necessary in the use of these agents than is generally sup-

posed, and it is from this very circumstance that the confusion in reference to the specific power of emmenagogues has eminated. Prof. Chapman, has made some very judicious remarks on this point. "Hitherto," says he, "our practice has been, for the most part, exceedingly *empirical*. We have advanced blindly on, prescribing for the disease only, without adverting to those various circumstances which modify the action of remedies, and influence, most materially, the ultimate results." (Ther. vol. i, p. 468.)

No class of remedies, therefore, will show more clearly, the propriety of distinguishing the different varieties of the agents concerned, into orders, the applications of which, fully contemplate these various important circumstances that should regulate their use.

It needs no extra discrimination to discover that when amenorrhœa is dependant on debility, or a want of action in the uterus, that a different order of emmenagogues is required, from those which are indicated in an inflammatory condition of the system, as from the effects of cold or exposure.

Order I.—STIMULATING OR SPECIFIC EMMENAGOGUES.

This order is designed to embrace those articles of the present class which evince, in their operation, a specific emmenagogue effect, and which are indicated in all cases of amenorrhœa dependant upon debility, or deficient vital action of the uterus. Their modus operandi is easily understood, as it cannot be difficult to conceive that the uterus, like all other organs, may be possessed of special sensitive endowments, which render it susceptible of special impressions from particular agents.

It is hardly necessary to remark that the articles of this order are not only inefficient, but even pernicious in cases of amenhorrhœa, associated with an inflammatory condition, either of the uterus itself, or any organs so related as to command powerful sympathetic influence over it. This may of course, also, be said of their applicability in obstruction

of the menses, that may be collateral with any variety of fever.

BOTROPHIS RACEMOSA.—The Root.

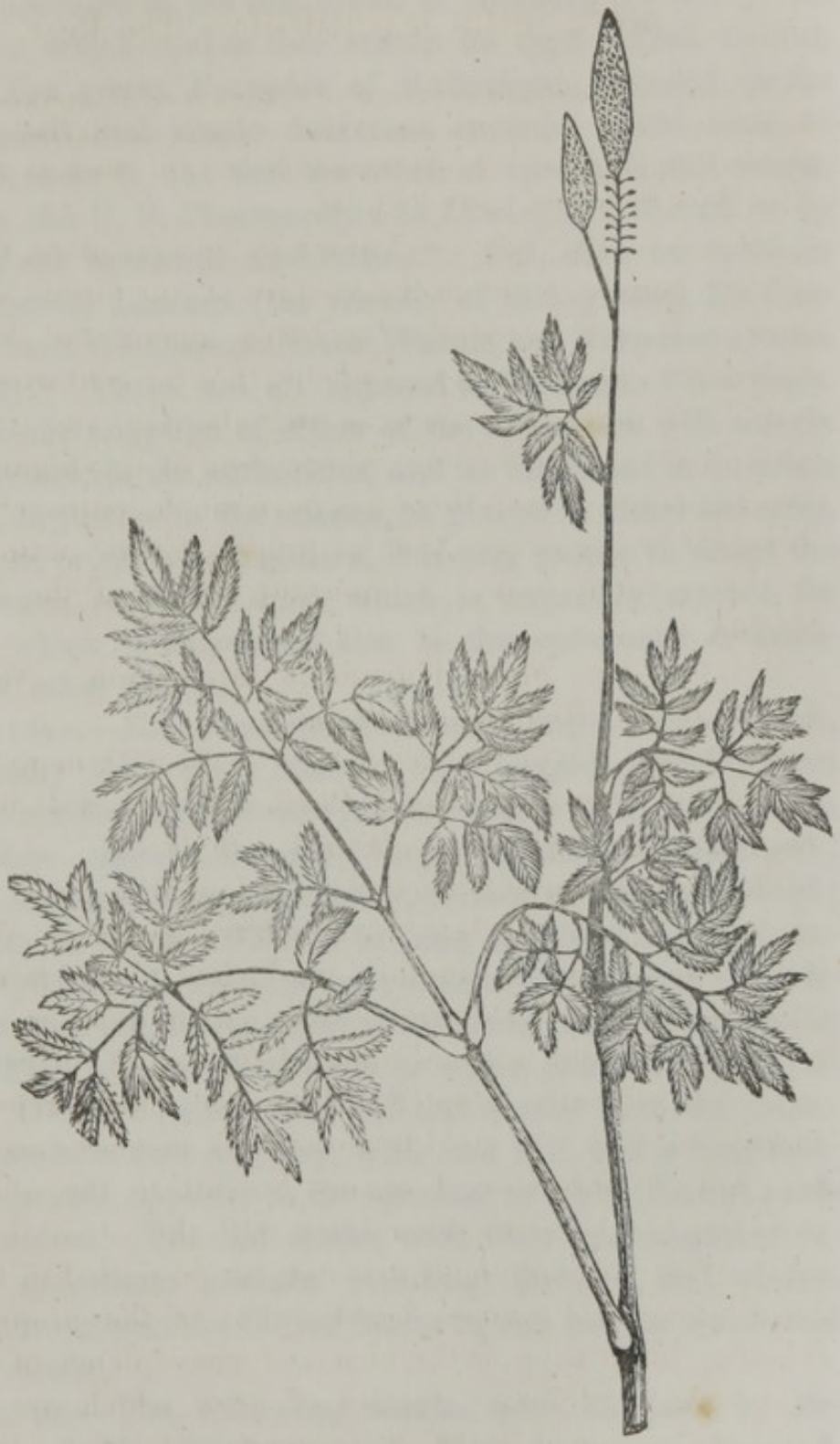
Synonymes.—Cimicifuga Racemosa, *U. S., Torry, Grey;* Macrotrys Racemosa, *Eaton, De Cand.;* Actea Racemosa, *Linn.;* Cimicifuga Serpentaria, *Pursh.* Schwartz Schlaugewurz, *Ger.;* Serpentaire Noire, *Fr.;* Black Cohosh, Rattle Weed, Black Snake-Root, Squaw-Root, *Vul.*

History.—This is a well known indiginous plant, that contributes largely to enrich the verdure of our forests, and wild lands. It was a popular medicine among the American Aborigines, who were acquainted with it for centuries. They considered it an emmenagogue and abortive, and gave it to their squaws in parturition, whence one of its vulgar names. Among the profession there has been much controversy, both in regard to its virtues and its proper generic name. All, however, admit it as an inportant article of the Materia Medica.

Botany.—*Sex. Syst.* Polyandria Monogynia.—*Nat. Ord.* Acteæ, *Rafin.;* Renunculaceæ, *Lind.*

Gen. Char.—*Calyx* four-leaved. *Corolla* with many minute flat petals. *Stamina* many. *Pistil* one. *Capsule* dehiscent longitudinal. *Seeds* many, lateral.—*Rafin.*

The generic name *Cimicifuga* is adopted in the U. S. Dispensatory; and our late writers have generally followed suit. The author, in another work, has also retained the name, as it is always desirable to avoid innovation. But, it is certain, that the original name *Actea* was as correct as the one now officially adopted. Professor Eaton rejects the name *cimicifuga*: "I yield to authorities, in most cases," says he, "but, in this case, I cannot submit to the absurdity, as no one can be better acquainted with the *cohosh* than myself." The only argument that can be presented in favor of either of the old names, besides that of the propriety of avoiding innovation, is the idea and convenience of having the *cohoshs* or different species of *actea*, which are nearly allied, still retained in the same genus. A strict adherence to science, however, precludes this idea. When, then, our regard for science compels us to forego this convenience, we,



Botrophis Racemosa.

of course, should have no affinity for the name *macrotrys*, and ought not to stop short of a correct botanical name. This is provided in the institution of Rafinesque's new genus *Botrophis* which makes this article its type. Prof. Griffith says. "The genus *Botrophis* of Rafinesque, founded on the single pistil and single dehiscent capsule would now be adopted, were it not that the officinal species is still recognized in the U. S. Pharmacopia as *Cimicifuga*, as well as by our highest botanical authorities." But, does he consider the immortal LINNÆUS, (the *founder* of this system), DE CANDOLLE, PURSH, WILLDENOW, EATON, WRIGHT, and RAFINESQUE mean authority? These are all opposed to the name *Cimicifuga*. Now, as the adoption of either of the old names will utterly fail to reconcile the authorities, and as the plant in question cannot, in justice to the science, be placed in either the *actea*, *mycrotrys*, or *cimicifuga* genera, it is very proper to adopt the new genus of Rafinesque, which is expressly created for it, and which is important also to the systematic arrangement of other plants.

Spec. Char.—*Root* perennial, horizontal, large, tortous, black, with many long black fibres. *Stem* simple, upright, from three to six feet high, furrowed, terminated with from one to six spikes. *Leaves* few, very large, ternately decomposed; leaflets sessile, oblong, lanceolate, incised or deeply toothed; end ones tri-lobed. *Flowers* in long terminal racemes; racemes cylindrical, white, when young always curved or reclining at the top, lower flowers maturing and disappearing first. The calyx of the flower is white, peteoloid like a corolla. The true petals are small and shorter than the calyx. The capsule is dark and dry, with one cell, and a longitudinal receptacle, opposite to the opening, to which the flat seeds are attached. The old stalks, with their long capsuled racemes, sometimes remain standing through the winter. Grows throughout the United States in rich soil, in woods and new grounds.

ANALYSIS.—The following results were obtained by the analysis of Mr. Tilghman: 1. *Fatty matter;* 2. *Gum;* 3. *Starch;* 4. *Resin;* 5. *Tannin;* 6. *Wax;* 7. *Gallic acid;* 8. *Sugar;* 9. *Oil;* 10. *Black coloring matter;* 11. *Green coloring matter;*

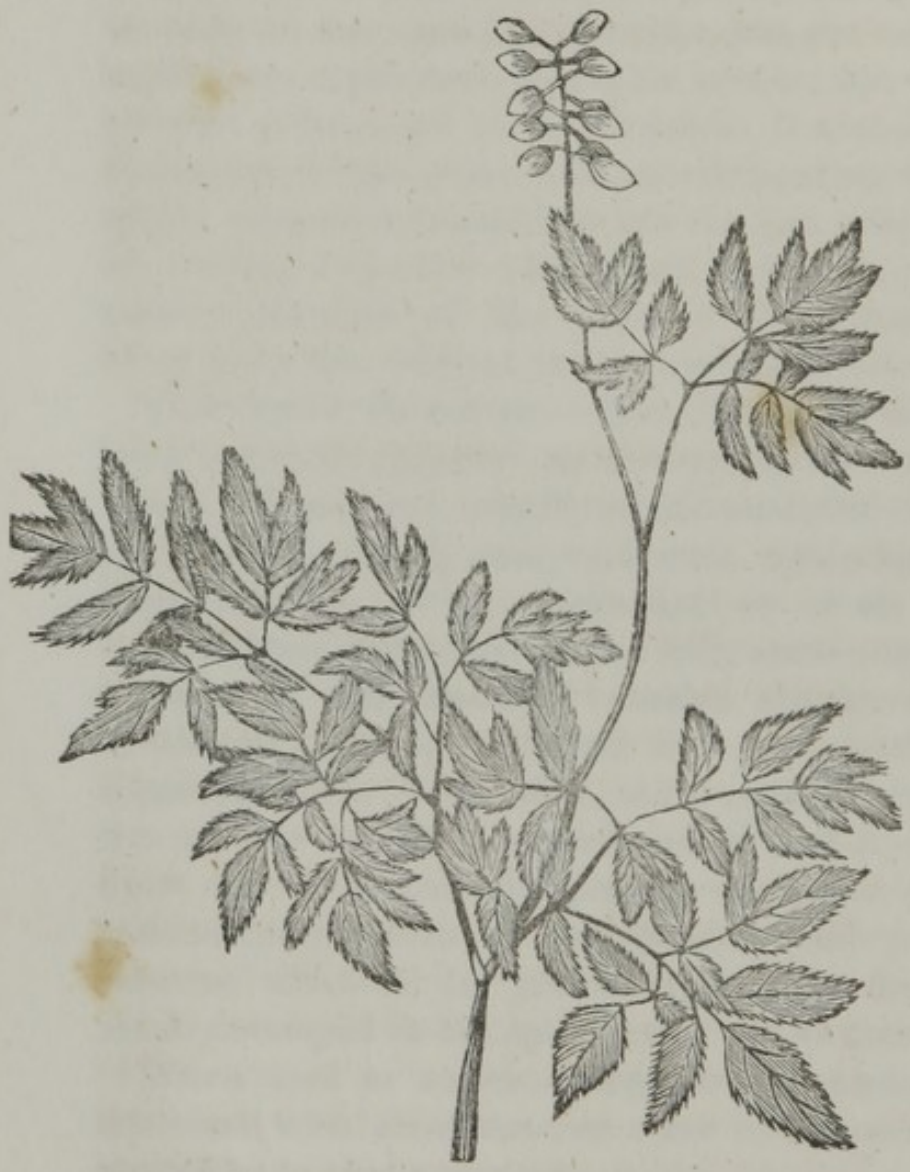
12. *Lignin;* 13. *Salts of lime, iron, magnesia* and *potassa.* He did not determine, however, in which of these principles the active properties reside, or whether he discovered the principle possessing them, at all. The virtues, however, yield to alcohol, water, and, still better, to ether.

Physiological Effects.—The Botrophis is capable of producing some very marked or decided effects upon the system. Its taste in the mouth is peculiar, but not very strong. In small doses it produces no visible effects; but when taken in portions of from one to two drachms, it occasions at first an excitement of the pulse, and an exhilerating effect upon the spirits, somewhat resembling intoxication, which is followed by vertigo, imperfect vision, and headache, attended with much relaxation of the nervous and muscular systems. Over doses are, without doubt, capable of doing mischief.

Therapeutic Properties.—The virtues of this plant have been variously regarded, as it respects their relative prominence. Some have considered the medicine chiefly *emmenagogue*, others, merely *tonic*, and some again have regarded it most valuable as an *expectorant*, or as an *anti-spasmodic* It is, without doubt, one of the best emmenagogues that we possess. It also possesses valuable alterative powers, and evinces an extensive influence over the secretions generally, especially those of the skin, and bronchia. Its action upon the nervous system is clearly manifested by its impression upon the brain, and the general relaxation induced by its constitutional effect. It may possess tonic powers, but its relaxing effect so far predominates, that they are seldom much developed in the operation of the medicine.

When used as an emmenagogue, the medicine should be combined with stimulants, or some of the permanent tonics, according to circumstances.

As this article is not considered in any other place, it may not be improper to mention its value in the treatment of rheumatism, and chronic pulmonary affections. The author has succeeded better with this article, combined, in equal proportions, with guiacum, in those affections, than with any other remedies he has ever used. It may be given in substance, infusion, tincture, or decoction. The dose of the pow-



Actea Alba.

der is *gr.* x—*gr.* xxx; that of the tincture f℥j—f℥iij; that of the infusion, prepared by an ounce of the powder in a pint of boiling water f℥j—f℥iij; and that of the decoction, formed by boiling ℥iij of the root in Oij of water, down to Oj, is ℥ss.—℥j, repeated once in three hours, or as circumstances may indicate.

ACTEA.—The Roots of the Actea Alba, and the Actea Rubra.

Synonymes.—White and Red Cohosh, Bane-berry, &c., *Vul.*

History—These are two species of the Cohosh, that grow in this country, in similar places to those in which the black, or foregoing species is found, although they do not grow so plentifully. They have also been used by the Aborigines, for the same purposes to which they applied the other, and were very much esteemed by them. They have, however, not been much in use by the *whites*,—have never been officinal, nor much spoken of by writers on the Materia Medica; indeed, with most of them, they have entirely escaped notice.

Botany.—*Sex. Syst.*. Polyandria Monogynia.—*Nat. Ord.* Acteæ, *Rafin.* Ranunculaceæ, *Lind.*

Gen. Char.—*Calyx*, four-leaved. *Corolla* with four large flat petals. *Stamens* many. *Pistil* one. *Berry* not opening. *Seeds* lateral. *Rafin.*

Spec. Char.—Both the A. alba, and the A. rubra, very much resemble the Botrophis, except in their fructification. Before the plants are in blossom, they can scarcely be distinguished from each other, nor from the foregoing plant, even by the best botanists. These, however, do not attain quite the size of the botrophis. Their fruit, alone, differs much from that plant. This, in both species, consists of oblong, or globular smooth berries, fleshy without, about a quarter of an inch in diameter, and half an inch in length. They are disposed in a loose raceme, and stand on thick, colored peduncles, The berries of the A. alba, are of a beautiful white, and their peduncles red, while the berries of the A. rubra are red, as the name denotes. The fruit of both species is considered poisonous, and hence, the name Bane-berry.

Medical Properties and Use.—The medical properties of both these plants, are regarded to be identical with those of the botrophis, and are used for the same purposes, in the same way. Some have regarded their emmenagogue virtues more active than those of the latter article. Others, again, (Griffith, &c.,) have considered the white and red cohoshs poisonous, like the helebore. The author has never used them to a sufficient extent to know, from his own experience, that they are positively free from pernicious effects. But as he has never seen any thing wrong with them, and as they have proved themselves possessed of such valuable emmenagogue powers, they have been admitted to a place here. Should their further trial, however, prove them to be poisonous, they must, of course, be expunged from the Materia Medica.

POLYGONUM HYDROPIPER.—The Herb.

Synonymes.—Polygonum Punctatum, *Elliot;* Polygonum Hydropiperoides, *Mich.;* Flehe Kraut, *Ger.;* Smart-Weed, Knot-Grass, Water-Pepper, etc., *Vul.*

History.—This is a humble indiginous plant, growing in door-yards, and about brooks and water-courses. It has been treated with neglect until brought into notice by Dr. Eberle, as an emmenagogue.

Botany.—*Sex. Syst.* Octandria Trigynia.—*Nat. Ord.* Polygonaceæ.

Gen. Char.—*Perigone* simple, unequal, colored, five-parted. *Stamens* six to eight. One to three *styles*. *Seed* one.

Spec. Char.—*Root* white, fibrous. *Stems* procumbent, jointed, slender, of a reddish or greenish-brown color, redder at the joints; and about a foot in height. *Leaves* alternate, long, lanceolate, accuminate, petioloid, entire, smooth, very pungent to the taste; *petioles* sheathing. *Flowers* small white or reddish, and disposed in loose terminal racemes.

There are a number of species of Polygonum that very closely resemble each other, but, although possessed of nearly the same virtues, differ very materially in their potency as medical agents. The P. Persica is the species most valued by Rafinesque, but is much inferior to the P. hydro-



Asclepias Syrica.

piper. The former may be known by its growing larger, with a redder or more deep colored stem; larger leaves, which are also marked by a circular dark spot in their center. The flowers are redder, and disposed in larger, and more compact racemes. The P. hydropiper may be known by the biting or pungent taste of its leaves.

Medical Properties and Use.—Dr. Eberle considered this one of the best emmenagogues that we possess. "I have employed," says he, "this plant in perhaps twenty cases of amenorrhœa; and I can affirm, that with no other remedy, or mode of treatment, have I been so successful as with this. I have seldom found it necessary to continue its use for more than six or seven days, before its emmenagogue powers were manifested." The author has also proved it successful in a number of cases. Dr. Eberle used it in a saturated tincture, in tea-spoon-ful doses. It will answer just as well to use the cold watery infusion. But the plant should never be scalded, as this impairs its medical virtues. Long keeping also injures it. The medicine is perfectly safe, and may be taken freely until the desired effect is produced.

ASCLEPIAS SYRICA.—The Root.

Synonymes.—Cotton-Weed, Silk-Weed, Milk-Weed, *Vul.*

History.—This is the most common species of the Asclepias, growing in great abundance in most parts of the United States, delighting in rich, sandy soil. As a medical agent, it has been classed with the A tuberosa, and the other species. But it has never gained much popularity with the profession, although it had obtained an admission into the U. S. Pharmacopia.

Botany.—*Sex. Syst.* Pentandria Digynia.—*Nat. Ord.* Asclepiaceæ.

Gen. Char.—Vide Asclepias Tuberosa.

Spec. Char.—*Root* perennial, horizontal, of considerable length, creeping, white, of the thickness of the little-finger. *Stem* erect, simple, round, smooth, and about three or four feet high. *Leaves* opposite, large, petiolate, oblong, obtuse, entire. *Flowers* resembling in their organization, those of

the A. tuberosa, of a pale purple color, sweet-scented, disposed in globular clusters on axilary peduncles. *Pericarp* oblong, pointed at both ends, covered with prickles, opening longitudinally, and containing the seed and a large quantity of silky seed-down. *Seed* flat, of a brown color. The entire plant abounds with a thick milky juice, resembling cream. Its blossoming time is July and August.

Medical Properties and Use.—The root of this stately plant, although not possessed of any very active properties, is nevertheless medicinal, and may be regarded as emmenagogue, anodyne, and alterative. It has generally been considered as analogous to that of the A. tuberosa, in its medical virtues. The author has never exhibited it, only in some cases of amenorrhœa, in combination with some other articles. But it has been favorably reported of, in this, as well as in some other cases, by some very respectable practitioners.

Water and alcohol take up its virtues. The dose is *gr.* xx —*gr.* xxx of the powder; f℥ij—f℥iij of a decoction, prepared with ℥jss. of the root to Oj of boiling Aq. The inspissated milky juice is used for the same purposes in doses of from *gr.* v—*gr.* xv.

LEONURUS CARDIACA—The Herb.

Synonymes.—Mutter Kraut, *Ger.* Motherwort, *Vul.*

Botany.—*Sex. Syst.* Didynamia Monogynia.—*Nat. Ord.* Labiatæ.

Gen. Char.—*Calyx* five-angled, five-toothed. *Corolla* upper lip erect, villose, flat, entire; lower lip three-parted; middle division undivided. Lobes of *anthers* parallel, having shining dots.—Exotic.—Naturalized.

Spec. Char.—*Root* perennial. *Stems* numerous, square, upright, from twelve to eighteen inches or more high. *Leaves* opposite, on long petioles, rough, three-lobed, serrate. *Flowers* whitish red, in axilary clusters, beset with the prickly calyx. Blossoming time in June.

Medical Properties and Use.—Motherwort is an emmenagogue and tonic, which has long been a remedy in domestic practice. It is not very active in its effects, and is chiefly ap-

plicable in cases of amenorrhœa, dependant upon general debility. It is usually taken in the form of infusion or tincture. The dose of the infusion, prepared with the leaves of the plant ʒj, and Aq. Oj, is a wine-glass full, three or four times a day, or, from fʒj—fʒiij of the tincture.

Besides these, there are other articles that are occasionally prescribed by practitioners as emmenagogues, and used as domestic remedies, among the most prominent of which are the following:

1. Hedeoma Pulegioides.
2. Tanacetum Vulgare.
3. Rosemarinus Officinalis.
4. Rubia Tinctorum.
5. Polygala Senega.
6. Aloe.
7. Myrrha.
8. Asarum Canadense.
9. Capsicum.
10. Sabina. This article is not safe.

Order II.—RELAXANT AND TOPICAL EMMENAGOGUES.

It has already been stated that the specific agents of this class, are inadmissible in some cases of amenorrhœa, in which other articles of a different order, may nevertheless be, not only safely, but very profitably invoked. This remark relates to cases that are complicated with conditions involving febrile and inflammatory action. Here it would be in vain to expect any benefit from the specific emmenagogues, as it is evident that secretion is incompatible with fever and inflammation. We are left then to hope for success alone from those means which possess the power to obviate collateral difficulties. These are found in the use of *emetics*, *nauseants*, *baths* and *frictions*.

EMETICS.

Emetics and nauseants, especially lobelia and its kindred articles, are of the greatest importance, in the treatment of those varieties of amenorrhœa, which are attended by fever, and inflammation. But it is not from the primary action of

emetics, that is, the mere mechanical effect of emptying the stomach, that we are to expect the good results of these agents. Their constitutional effects alone, will insure the object here sought. The general relaxation of the system, and consequent modification of febrile and inflammatory action, is always necessary in these cases, to re-establish the secretions.

Nevertheless, it appears, sometimes, when a topical impression is indicated, that an infusion of lobelia injected to the uterus, which may be done by means of a catheter and syringe, for virgins, and the common female syringe for married ladies, will, occasionally produce the most happy effect.

Chapman considers emetics useful, also, in amenorrhœa, dependant upon *debility*. "Emetics in these cases," says he, "are more effectual [than the fœtid remedies,] and seem to operate as well by the general renovating impression which they make on the system, as by awakening sensibility in the uterus to the action of emmenagogues. Two or three times repeated, in the course of a week, I have known active vomiting, of itself, in several instances, to restore the menstrual secretion, and still oftener prepare the way, as stated above, for the successful use of the specific remedies."

VAPOR BATH.

As to the utility of the vapor bath, in the treatment of amenhorrœa, brought on by cold, or any other cause, capable of inducing an inflammatory condition of the system, and thus checking the secretions, there can be no rational dispute. No agent is more effectual in obviating this condition, and exciting the secretions, than heat and moisture conjointly applied. This has been fully tested by thousands of practitioners.

The vapor may be applied to the entire body in a common bath-room, commencing the bath at a temperature of about 100° F., and raising it gradually as high as it can be borne by the patient. It should be continued for from fifteen minutes to an hour, according to the circumstances which regulate vapor-bathing in general.

In many cases it may be most advisable to apply the bath to the lower extremities, and hips only — what is generally called the *Hip Bath*. This is effected by means of a bathing apparatus prepared for the purpose. A temporary means may also be prepared, by surrounding the lower extremities of the patient with blankets, so adjusted round the body, as to confine the vapor, (which may be applied by means of a pipe), to the hips and lower parts. By this arrangement, the vapor can be raised to a much higher temperature, which, in virtue of the great topical relaxation thus produced, may be more available, in some cases, than a general vapor bath.

MEDICATED VAPOR BATH.

This bath has the compound advantage of the hot vapor, and the various medicated substances with which it may be medicated. In view of their specific action, some of the volatile emmenagogues are generally used, such as the oil of *pennyroyal*, and *rosemary*. The vapor should be applied to the entire body, in view of impregnating the system as much as possible with the medicines.

RUBEFACIENTS AND FRICTIONS.

Remedies of these kinds may be successfully invoked in amenorrhœa, as well as in other cases. Some of the active stimulating liniments, applied with friction, are most available. ℞ Ol. Hedeoma, f℥j; Ol. Rosmarinus, f℥j; Alcoholic Tinc. Lobelia, f℥iv. Mix.

These applications should be perseveringly practiced until the desired effect is produced, seeing that their effects are not produced at the expense of the living powers.

Class VII.—ANTHELMINTICS.

Anthelmintics (from *αντι*, against, and *ελμινς*, a worm), are a class of remedies that are used to destroy intestinal worms, or for expelling them from the alimentary canal.

It is, however, still disputed, that there are substances possessing a specific power to remove worms. "There is no topic," says Professor Reese, "upon which the profession is so justly chargeable with uncertainty and palpable error, as it is with reference to the treatment of diseases attributed to worms in the alimentary canal, by remedies denominated anthelmintic, to which the specific property of destroying worms is ascribed." "It is well known," he adds, "that the existence of living worms in the stomach and bowels is often found to be consistent with otherwise sound health, and that they often spontaneously escape from the body per os and per anum, when no previous evidence of their existence has been discernible, and when no other disturbance of health can be detected. This is often observable in school-boys, who partake freely of unripe fruit; and these worms are of the variety called lumbrici; and they are often found in the bowels of persons who have been killed when in high health. Still, however, this same kind of worms is found in children, and persons of bad general health, and sometimes accumulating in such numbers as to become a source of disease, and require remedies for their destruction and removal. In most cases, however, even of this character, the worms are often the *effect* of pre-existing disease, and by no means its primary *cause;* notwithstanding their presence may now be the only apparent source of mischief. Especially, will it be found in children, that their digestive organs have been impaired for a long time, and their health frail and feeble, before any suspicion of worms could be gathered from the symptoms. And, in a multitude of examples, anthelmintics, supposed to be specific in their action, are given, for weeks and months, when there is not only no proof of the existence of worms, but when the ultimate history of the patient proves that he has only suffered from the suspicion of being troubled with worms, while his malady has been all the while of another and a different character. This discovery is, however, very often delayed until the articles of this class, and many more, have been tried in vain, and until mothers, nurses, doc-

tors, and quacks, have drugged the patient to surfeiting with worm nostrums, and vermifuges of every variety." *

Others, again, are alike confident in the specific virtues of anthelmintic remedies. Dr. Paris, in his admirable pharmacological work, considers the vegetable bitters absolutely poisonous to worms, and thus maintains the specific power of such remedies in worm complaints; and Prof. Eberle, in his Therapeutics, in speaking of anthelmintics, states, also, that "some of them act in the manner of poisons on these animals—that others destroy them by mechanical action on them—and that others again, simply expel them from the bowels, by producing strong purging;" which is corroborative of the views, not only of the gentleman just named, but of many others.

General observation seems to establish the fact, as stated by Prof. Reese, that there are unequivocal signs of worms in some cases, when the patient may be otherwise in good health; and it is equally evident that, in numerous instances of this kind, quite a uniformity prevails in the anthelmintic effect of some of these remedies. In such cases, therefore, it would be difficult to prove, that the medicines produce this effect by obviating that "*depraved condition of the system*" supposed to favor the generation of parasites.

The fact should not be overlooked, however, that although instances occur in which worms are found in persons who seem to enjoy good health, yet, in other cases, perhaps the majority, they follow as the remote consequence of some other morbific cause; and hence, a dependence upon specific worm medicines, in all cases, must necessarily lead to disappointment, as they are seldom found to remove all the symptoms, much less to effect a permanent cure.

Five different species of worms are known to be generated in the intestinal canal: 1. The tænia solium; 2. The tænia lata; 3. The trichocephalus, or trichuris; 4. The ascaris vermicularis; and, 5. The lumbricoides. These different species require a corresponding modification in the treatment.

* Medicines, their uses, &c., p. 39.

Thus, this class of medicines has been divided into two orders, the *mechanical* and *prophylactic* anthelmintics.

When an anthelmintic remedy, devoid of cathartic power, is used, it will generally be necessary to follow its exhibition with a purgative remedy, with a view to remove the worms.

CHENOPODIUM ANTHELMINTICUM.—The Seed and Herb.

Synonymes.—Wurmsamen, Gansefuss, *Ger.;* Anserine Vermifuge, *Fr.;* Worm-seed, Goosefoot, *Vul.*

Botany.—*Sex. Syst.* Pentandria Digynia.—*Nat. Ord.* Chenopodiaceæ.

Gen. Char.—*Calyx* five-leaved, five-cornered. *Corolla* none. *Seed* one, lenticular, superior. *Willd.*

Spec. Char.—*Root* perennial, branched. *Stem* upright or procumbent, grooved, round, very branched, even from the ground up, from one to three feet or more in height. *Leaves* sub-sessile, scattered, attenuated at both ends, oblong, rather thick or fleshy, dotted beneath, large below, larger ones sinuated by large, unequal, obtuse teeth, upper ones entire, and small, nerves very conspicuous. *Flowers* very small, numerous, and yellowish-green, disposed in large, loose, leafy pannicles, composed of many alternating small spikes, which are again beset with small glomerules, containing from five to twelve sessile flowers. *Seed* flat, lenticular, shining, and covered by the persistant calyx. The whole plant possesses a very strong peculiar odor, ungrateful to most persons, but very agreeable to some. This is dependant upon an essential oil, which is obtained by distillation with water.

Therapeutic Properties.—The Chenopodium Anthelminticum is the best anthelmintic that we possess. The only objection that can be urged against it, is that of its disagreeable odor, which makes it difficult of administration to many persons, and especially to children. The medicine expels speedily, the Lumbricoides and other intestinal parasites, and may be used with confidence, as a general vermifuge. A dose of it is usually given before breakfast in the morning, and at bed time, in the evening, for three or four days successively, and then followed by a brisk cathartic, as Ol. ricini,

in large doses. Should a single course of the medicine not prove satisfactory, and there should be unequivocal evidence of the existence of worms, the same course is repeated.

The dose of the powder, prepared from the leaves and racemes, containing the seed, is from ℈j—℈ij, to a child three years old. The oil is now almost exclusively used. The dose of this, for a child, is from ten to fifteen drops, mixed with sugar, or given in the form of emulsion.

PHARMACEUTIC PREPARATIONS.—PULVIS CHENOPODII COMPOSITUS: *Compound powder of Wormseed.* ℞ Chen. Anth. Semina ʒj. Oranti Cort. ʒj. Anisum Sem. ʒj. Pulverize and mix.

Action. Use.—An excellent anthelmintic. *Dose*, ℈j—℈ij.

OLEUM CHENOPODII: *Oil of Wormseed.* This is prepared by distilling the dried herb with water. The oil is of a light yellow color, when fresh, but becomes brownish when kept. Its specific gravity is 0·946, according to Baumé, but according to Brande, 0·931.

Dose, from ♏ x—♏ xv, followed by a brisk cathartic.

OLEUM CHENOPODII COMPOSITUM: *Compound Oil of Wormseed.* ℞ Ol. Chenop., ʒij. Ol. Terebinthinæ. ʒj. Ol. Anisii ʒss. Ol. Ricinii Oj. Mix.

Action. Use.—This is an excellent preparation, as a common vermifuge, and will meet every reasonable expectation. *Dose*, a tea-spoon-ful, to a child three years old, every morning and evening, for three days, when, if it does not operate, it should be followed with a dose of oil.

OLEUM TEREBINTHINÆ.

This article is one of the most efficient anthelmintics that we possess, but is rather harsh in its operation, and is objected to by very many of our botanic practitioners. It is, however, perhaps, the most certain article we can use for the expulsion of tænia, and is almost equally sure in removing every other species of intestinal worms. The dose is ʒss., twice a day, for four or five days in succession; and, then, to be followed with castor oil. The dose advised for tænia in the U. S. Dispensatory is f ʒj to f ʒij, followed by castor oil, if it does not operate in three or four hours.

SPIGELIA.—The Root.

Synonymes.—Spigelia Marilandica, *Dub.;* Spigelie, *Ger.;* Spigelia, *Ital.;* Spigelie de Maryland, *Fr.;* Pink, Carolina Pink, *Vul.*

Botany.—*Sex. Syst.* Pentandria Monogynia.—*Nat. Ord.* Gentianæ, *Juss.;* Spigeliaceæ, *Martius, Lind.*

Gen. Char.—*Calyx* five-parted. *Corolla* funnel-shaped, border five-cleft, equal. *Capsule* didymous, two-celled, four-valved, many-seeded, *Nutt.*

Spec. Char.—"*Root* perennial, branching, fibrous. *Stems* erect, four-sided above. *Leaves* opposite; sessile, ovate-accuminate, smooth, with the margins and veins a little pubescent. *Racemes* terminal, one-sided, three to eight flowered. *Calyx* persistent, five-parted; *segments* linear, subulate, finely serrulate, reflexed on the fruit. *Corol* scarlet, funnel-shaped, much longer than the calyx; the tube inflated and angular at the top, the limb in five acute spreading divisions, with the five-stamens inserted between them. *Anthers* oblong, heart-shaped, converging. *Ovary* superior, ovate. *Style* longer than the coral, jointed near its base, and bearded at the extremity. *Capsule* smooth, didymous, or composed of two cohering, one-celled, two-valved, globular carpels attached to a common receptacle. *Seeds* numerous."

Analysis.—The roots and tops, analysed by M. Fenuelle, "yielded *a fixed* and *volatile oil*, a *little resin*, a *bitter extractive matter*, supposed to be the active principle, with *mucilaginous* and *saccharine matter*, and *some salts*. The leaves afforded the same principles, but a less quantity of the bitter principle."

Physiological Effects.—It is contended by many persons that the pink root is narcotic and poisonous. Others again who have used the medicine for many years have declared it perfectly innocent. The author has used it considerably, and never observed any bad effects from it. But, should it become settled that it is really poisonous, it must be expunged from our Materia Medica.

It is also remarked that all the bad effects that have been observed in the use of this article have been caused by another plant, which is inadvertently or fraudulently collected and sold, mixed with the spigelia.

THERAPEUTIC PROPERTIES AND USE.—Spigelia is a valuable anthelmintic, much used in this country. It is not very unpleasant to take, and is pretty certain in its effects.

It may be given in powder, *gr.* x—*gr.* xx, to a child three or four years old; 3j—3ij to an adult; or of the infusion, (3iv to boiling Aq., Oj); f3iv—f3j may be given to a child. A quantity of Senna equal to the Spigelia is usually added, to insure a cathartic effect.

FILIX MAS.—The Rhizoma.

SYNONYMES.—ASPIDIUM FILIX MAS. *Lond*, *Dub.* Johannis wurzel, *Ger.*; Felce machio, *Ital.*; Helecho, *Span.*; Fougere male, *Fr.*; Male Fern, *Eng.*; Male Shield Fern, *Vul.*

HISTORY.—This article, although used by the ancients, and mentioned by Dioscorides, Thesphrastus, Galen and Pliny, did not appear to be known generally to the profession, till attention was attracted to it in the year 1775, by the publication of the mode of treating tænia, employed by Madame Nouffer, the widowed lady of a Surgeon in Switzerland, who had acquired great celebrity in the cure of tape-worm by a secret nostrum. Her singular success was such as to attract the attention of the medical profession at Paris, and some of the most eminent physicians of that city were deputed to examine into the subject. Upon their favorable report, the secret was purchased by King Louis the XV, at the price of 18,000 francs.

The plant, though supposed to be a native of Europe and Asia only, is found in the north of Africa, as well as in the United States, growing in pine forests from New Jersey to Virginia.

BOTANY.—*Sex. Syst.* Cryptogamia Filices.—*Nat. Ord.* Filices, *Jussieu.* Filicales, *Lind.*

Gen. Char.—*Fructification* in roundish points, scattered, not marginal. *Involucre* umbilicated, open almost on every side. —*Smith.*

Spec. Char.—*Rhizoma* horizontal, thick, with numerous tufts, (the bases of the fronds) ranged along the common axis, separated from one another by brownish-yellow silky scales. The

true *roots* emerge from between these tubercles, and descend downwards. The *fronds* or *leaves* ascend upwards in tufts of one to four feet high. *Fronds* bipinnate, rising in a circle from the tufted rhizoma; *pinnules* obtuse and serrated, only slightly narrowed downwards, and the lowest leaflet of considerable size, lobes usually a little combined at the base. *Veins* distinct, after leaving the midrib, not uniting with those of the adjoining pinnule. *Stipes*, or footstalk and midrib, either glabrous, yellow, or densely clothed with purple scales. *Sori* roundish, scattered, covered by an indusium, which is reniform, attached by the sinus. *Sori* placed in two rows, near the central nerve, and below its lower half.—*Nees von Esen.*

Analysis—The Rhizoma was analyzed by Geiger, and was found to contain of a "*fat oil* 6·9, *resin* 4·1, with *tannin*, *starch*, *gum*, *uncrystallizable sugar*. Morin, of Rouen, indicates a *volatile oil*. M. Peschier, of Geneva, found its *active principle* soluble in ether, an *aromatic and strong smelling fixed oil*, *adipocire*, &c. Ether extracts the adipocire along with the active ingredient, but deposits the former on standing."

Medical Properties and Use.—The Rhizoma of this plant has been very popular as an anthelmintic, especially as a remedy for tænia; and it is still highly esteemed by many practitioners as a remedy against worms. M. Ronzel (*Jour. de Pharm. 3e. ser.*, iv. 474), seems to have been very successful, with this article, in the treatment of tænia, having removed more than a hundred, and never found it to fail. Doctors Peschier and Ebers also speak favorably of its success in the removal of this order of entozoa (U. S. Disp.). It is also said to be still more efficient in the removal of the *bothriocephalus latus* than our species, or *tænia solinum*. The dose of the powder is from ʒj—ʒiij, to be given in the form of electuary or emulsion, and repeated, morning and evening, for one or two days successively. It is usual to follow the medicine with a brisk cathartic. M. Ronzel gives half an ounce to adults, made into boluses, and to be swallowed in the space of fifteen minutes in the morning, on an empty stomach.

Pharmaceutic Preparation.—EXTRACTUM FILICIS MARIS: *Ethereal Extract of Male Fern.*—℞. Buds of Filix Mas. ʒiij; Ether ℔ij; digest, filter, and evaporate to the proper consistence.

The Ether may be saved by conducting the evaporation in a still. This is Dr. Peschier's preparation, so much esteemed.

Action. Use.—A remedy for tænia. *Dose*, ʒss.—ʒj.

℞. Rhizoma Felix Mas. ʒiij; Alcohol, Oij; digest, filter, and evaporate to proper consistence.

This preparation is, perhaps, equally good as the above, but the product of the process is not so successful, as two and a half pounds of the Rhizoma will only yield about ʒxiij of the extract; while a pound of the Rhizoma, when treated with ether, will yield an ounce and a half.

Action. Use.—Same as the above.

PUNICA GRANATUM.—The Bark of the Root,—Rind of the Fruit,—Flowers.

Synonymes.—Granatbaum, Granat-rinda, *Ger.;* Ecorce de Grenade, *Fr.;* Malicorio, Scorza del Melograna ti, *Ital.;* Corteza de Granada, *Span.;* Pomegranate, *Vul.*

History.—The bark of the root of Pomegranate was employed as an anthelmintic by Dioscorides, and by Celsus. This early knowledge of it is still continued in some parts of the East. The medicine was introduced into the West by Doctors Buchanan and Anderson, and is now a popular remedy in various countries, especially in Germany.

Botany.—*Sex. Syst.* Icosandria Monogynia.—*Nat. Ord.* Myrtaceæ.

Gen. Char.—*Calyx* five-cleft, superior. *Petals* five. *Pome* many-celled, many-seeded. *Willd.*

Spec. Char.—*Stem* arborescent and irregular, in arid situations rather thorny. *Leaves* usually opposite, often fascicled, oblong, inclining to lanceolate, quite entire, not dotted, smooth, shining, and of a dark green. *Flowers* commonly solitary, of a brilliant scarlet. *Calyx* thick and fleshy, adhering to the ovary, turbinate, five to seven cleft. *Petals* five to seven, crumpled. *Stamens* numerous, often double. *Style* filiform; *stigma* capitate. *Fruit* of the size of a large apple, with a thick leathery rind, and crowned by the tubular limb of the calyx. *Cells* several, arranged in two strata, separated from each other by an irregular transverse diaphragm, lower division of three cells, the upper of from five to nine cells. *Seeds* numerous, involved in pellucid pulp, with foliaceous, spirally convolute cotyledons.—*Nees von E.*, 301.—A

native of Asia, but has been introduced into the East and West Indies, where it flourishes. It is also cultivated in Europe and in the United States.

Analysis.—The bark of the root was analyzed by Mitouart and Latour de Trie, and others; but the source of its peculiar anthelmintic powers, has not been discovered, and the subject requires further investigation. "It contains *tannin* (about 20 per cent.), *gallic acid*, *resin*, *wax*, *fatty matters*, and *mannite*."

Description.—The root itself is heavy, knotted and of a yellow color; its bark is often sold in strips, sometimes with parts of the root still adhering to it. On the outside, of a grayish-yellow color; on the inside, yellow, something like that of the barberry. It has little smell; when chewed, colers the saliva yellow; has an astringent taste, without any disagreeable bitterness.

Adulterations.—The bark is apt to be adulterated with the barks both of box and of barberry. The former is white and bitter, but not astringent; the latter yellow, very bitter, and is not affected by the tests of the genuine article. An infusion of the bark of the root of the pomegranate yields a deep "blue precipitate with the salts of iron, a yellowish-white one with solution of isinglass, and a grayish-yellow one with corrosive sublimate; and potash or ammonia colors it yellow."

Therapeutic Properties and Use.—Although all parts of the pomegranate tree are astringent, and useful in diarrhœa, and dyssentery, yet the medicine is chiefly valuable as an anthelmintic. It is regarded by the Germans to be one of the most successful articles known to the profession, for the removal of tænia. It is also available for the expulsion of other orders of worms.

It may be given in doses of ℈j, in powder; or a decoction may be formed by steeping for twelve hours, *fresh Root-bark of Pomegranate* ℥ij. in *Aq.* Oiss., and boiling down to Oj. Of this f℥ij—f℥iv. may be administered in the morning, fasting, and repeated every two hours, until three or four doses have been taken; pursuing the same course another day, if not efficient at first, with occasional doses of Castor Oil, or some other active purgative.



Lobelia Cardinalis.

MELIA AZEDERACH.—The Bark of the Root.

SYNONYMES.—AZEDERACH U. S. Pride of China, Bead tree, *Vul.*

BOTANY.—*Sex. Syst.* Decandria Monogynia.—*Nat. Ord.* Meliacæ.

Gen. Char.—*Calyx* five-toothed. *Petals* five. *Nectary* cylindrical, toothed, bearing the anthers in the throat. *Drupe* with a five-celled nut. *Willd.*

Spec. Char.—A beautiful *tree*, rising thirty or forty feet in height, with a trunk near a foot in diameter. *Leaves* large, doubly pinnate, consisting of smooth, accuminate, denticulate, dark green leaflets. *Flowers* of a lilac color, very fragrant and delightful, and are disposed in axillary clusters near the tops of the branches. *Fruit* a round drupe, yellowish, and about the size of a cherry, when ripe.—A native of Syria, Persia, and India. Cultivated as ornamental trees throughout the Southern states.

MEDICAL PROPERTIES AND USE.—The bark of the root is said to be a very good anthelmintic. It is used in the form of decoction; ʒiv of the bark are boiled with Oij of Aq. to Oj. *Dose*, a table-spoon-ful every hour or two, until its effects as a cathartic are manifested.

It is said by some to be narcotic in its effects, when large portions are taken, and is hence of dubious utility.

LOBELIA CARDINALIS.

This article (described among the stimulants) is esteemed a good anthelmintic.

ORDER II.—MECHANICAL ANTHELMINTICS.

This order of anthelmintics is designed to embrace all those articles that are used, either to destroy entozoa, or remove them from the intestines on purely mechanical principles.

MUCUNA.—The Spiculæ of the Pods.

Synonymes.—Dolichos Pruriens, Pubes leguminis, *Dub.;* Ruhkratze, *Ger.;* Pois a gratter, *Fr.;* Dolico Scotante, *Ital.;* Cowitch, *Vul.*

Botany.—*Sex. Syst.* Diadelphia Decandria.—*Nat. Ord.* Fabaceæ, or Leguminosæ.

Gen. Char.—*Calyx* with two long caducous bracteoles, campanulate, two-lipped, under lip entire, lower trifid. *Vexillum* shorter than the wings and keel. *Keel* terminated by a polished acute beak. *Stamens* diadelphous, alternately longer. *Legume* hispid, oblong, few-seeded, with partitions of cellular substance between the seeds. *Seeds* oval, roundish or reniform, with a narrow oblong line, the hilum.—*Twining plants of the tribe Phaseoleæ.*

Spec. Char.—Royle gives two species: 1. M. prurita, a native of East India; 2. M. pruriens, which is indigenous in the West Indies.

"M. pruriens, *Dec.*—*Leaflets* ovate acute, the middle one rather rhomboidal, the latter ones oblique at the base. *Racemes* lax, many-flowered, interrupted, 1—1½ foot long. *Flowers* with a disagreeable alliaceous odor, standard flesh-colored, wings purple or violet, keel greenish-white. *Calyx* hairy, pink, with lanceolate segments. *Legume* about three inches long and roundish, as thick as the finger, with somewhat keeled valves, densely covered with strong and stiff, sharp-pointed brown hairs.—Native of the West Indies. Bot. Reg. 1838, t. 18; Steph. and Churchill, iii. t. 179."

"M. prurita, *Hook.*—*Leaflets* smaller, more obtuse, the middle one truly rhomboidal, the lateral ones dilated on the upper edge. *Raceme* ovate, compact, more often three-flowered. *Flowers* dark purple. *Calyx* with short triangular teeth. *Legumes* oblong, much broader, curved and compressed, without any raised keel on the back of the valves, densely covered with sharp stinging hairs; which, white and soft when young, become brown and stiff when ripe.—Native of the East Indies.—Hooker, Bot. Misc. ii, 348; Suppl. t. 13."

Description.—The pod is about three or four inches long, and about the thickness of the little finger, compressed, and in general shape like that of the italic *f*. It is covered with

small short spiculæ or hairs, which constitute the medical portion. These are of a brown color, and when handled, penetrate the skin in the soft parts; thus occasioning the most intolerable itching.

Physiological Effects.—The spiculæ seem to be poisonous when applied to any portion of the body not protected by a mucous membrane, as they produce such excessive smarting. But when taken into the system, in view of its anthelmintic power, it is regarded very innocent, as it seems that the mucous coat of the intestinal canal is a perfect barrier to their action on the bowels or parietes of the prima viæ.

Therapeutic Properties.—The spiculæ are a very certain anthelmintic. Their action appears to be simply mechanical. They penetrate the worms, and thus destroy them. That this is the principle of their action, is very certain from the result of experiments performed with the article upon the worms out of the body, as well as by the fact that the tincture or decoction does not possess the least anthelmintic power.

The usual mode of preparing the spiculæ for use, is to dip the pods, which are covered with them, into molasses or honey, and then scraping them off with the liquid, which is in a proper state for use when it has attained considerable thickness with the cow-itch. A table-spoon-ful of this is a proper dose for an adult, and a tea-spoon-ful for a child three or four years old, every morning and evening, for three days, and then followed by a brisk cathartic.

CATHARTICS.

Cathartics may be reckoned with the mechanical anthelmintics. They are generally depended upon to carry off the worms even when the ordinary anthelmintics are used, and are often very efficient in expelling them when given alone, especially the more active kind of purgatives. Aloes is particularly serviceable in expelling the *ascaris vermicularis*. It is used by injection into the rectum as well as per stomach. Gamboge, though too drastic for use, and hence expunged from the Materia Medica, has been highly esteemed for its anthelmintic virtues. Castor oil is one of the most common

articles of the cathartic class that are used to expel worms. To insure their success, they should be taken to produce active purging.

Order III.—PROPHYLACTIC ANTHELMINTICS.

This order of anthelmintics is intended to embrace those articles of this class that most generally are regarded, rather as preventatives of the generation of worms, than as agents for their removal when they become a source of annoyance.

There are, however, two principles on which the articles of this order are considered to display their anthelmintic powers. 1. They consist, universally, of bitter substances, which, although conducive to the health and propagation of almost every other species of animals (especially those whose digestion makes a biliary apparatus necessary), are intrinsically not only offensive, but actually *destructive* to intestinal entozoa. 2. Bitters being almost universally tonic, are calculated to tone up the system, and thus tend to environ, or dispose it against their generation, or morbid accumulation. Indeed, the doctrine is not without plausible foundation, that worms are dependant entirely for their generation upon a debilitated, or ill habit of the system. Some, in the investigation of the pathology of their existence, have invoked various plausible abnormal conditions of the intestines, for evidence in favor of a theory which contemplates the cold slime, or mucous accumulations of the intestines, as the essential elements of their existence, and which supposes that without this nourishment the worms could not find means of subsistence, and that by consequence their being would be ephemeral, or at least very contingent. The prophylactic power of bitter tonics against worms was therefore chiefly ascribed to their power of improving the physiological condition of the intestines, so as to change their secretions, and thus remove their liability of being infested by these parasites.

The following articles are among the bitter tonics that

have proved themselves the best prophylactics against intestinal worms:

1. Liriodendron Tulipifera.
2. Populus Tremuloides.
3. Absinthium.
4. Artemisia Santonica.
5. Sabadilla.
6. Tanacetum Vulgare.

Class VIII.—SIALAGOGUES.

The term *Sialagogue*, (from σιαλος, 'saliva,' and αγω, to excite) is applied to such medical agents as are used for the purpose of promoting the flow of saliva. It has already been remarked, that this class might with much propriety be omitted, as its articles are all contained in the other classes, particularly in the *emetic* and *stimulant*. In producing their sialogogue effect, they evince no peculiar power, except that which characterizes all the more pungent stimulants, and prominent nauseants. They are applicable in fever, when the mouth is dry and parched, as well as in various inflammations of the mouth and throat.

Sialagogues simply involve the topical application of stimulants and nauseants. They may be divided into two orders, viz:

I.—*Stimulating Sialagogues*
1. Capsicum.
2. Zanthoxylum, &c.

II.—*Nauseating Sialagogues.*
1. Lobelia.
2. Tobacco, &c.

Class IX.—ERRHINES.

Errhines (from εν, 'in,' and ριν, 'the nose'—Errhinas Lat.,) as already stated, do not constitute a very important class of remedies. They have but a limited application, it being only in a few affections of the head, as in catarrh, cephalalgia, and in cases of mechanical obstructions in the nasal fossæ.

The modus operandi of Errhines is very simple, consisting solely of an irritation and stimulation of the nerves supplying the Schneiderian membrane, as the olfactory and the nasal branch of the trigeminum, and thus occasioning a flow of

the natural secretion. When the irritation produced by Errhines is extensive, it is reflected upon the respiratory nerves, or phrenic, par vagum, pneumogastric, &c., and thus a kind of a convulsive motion, *sneezing*, is occasioned. This latter effect is generally promoted when the thorough effects of Errhines are desired.

ASARAM EUROPÆUM—The Leaves.

Synonymes.—"Ασαρον, Gr.; Asaroon, *Arab.*; Assaro, *Ital.*, *Span.*; Haselwurzel *Ger.*; Asaret, Cabaret, *Fr.*; Assarabacca, *Vul.*

Botany.—*Sex. Syst.* Gynandria Decandria, *Eaton*, *&c.* Dodecandria *Linn.*—*Nat. Ord.* Aristolochides, *Juss.*

Gen. Char.—*Calyx* three or four-cleft, sitting on the germen. *Corolla* none. *Capsule* coriaceous, crowned.—*Willd.*

Spec. Char.—*Rootstock* creeping, with numerous branched root-fibres. *Stems* very short, round, each bearing two kidney-shaped leaves, which are of a dark green color, shining above, but a little hairy, with long downy footstalks. In the axil of the two leaves there is a single drooping flower, about an inch long, fleshy, lurid in aspect. *Perianth* coriaceous, campanulate, three-lobed; *segments* incurved. *Stamens* twelve, inserted on the ovary; anthers attached to the inner side of the filaments, below the summit, each of two round separated cells. *Ovary* turbinate; style short. *Stigma* stellate, six-lobed. *Capsule* coriaceous, six-celled. *Seeds* ovate, with horny albumen. Hilly woods, mountains of England, &c., Flowers in May; said to be collected near Kirby Lonsdale, Westmoreland.—*Royle.*

Description, etc.—The root-fibres, when bruised, have a spicy odor and an acrid taste. The leaves are scentless, but have a bitter and acrid, slightly aromatic taste. Both are employed on the continent, but the leaves only are officinal, though the whole plant is usually sold. Analyzed, the root was found to contain a *volatile oil*, *bitter extractive*, (which will itself excite nausea), a *camphor-like body* named *asarine*, which is volatile, has an acrid taste, excites nausea and vomiting. The leaves yield a volatile oil.—*r.*

Physiological Effects.—The European asarum is acrid and

irritant. When taken it will occasion violent vomiting and purging. It is unsafe for general use.

THERAPEUTIC PROPERTIES.—This article is a very powerful and certain errhine, occasioning a copious flow of mucus, which continues sometimes for several days. The leaves should be finely pulverized and snuffed up the nostrils in portions of from *gr.* j—*gr.* iij.

PHARMACEUTIC PREPARATIONS.—PULVIS ASARI COMPOSITUS: *Compound Asarabacca Powder.* ℞. Rub together into powder, *dried leaves of asarum* ʒj. *Dried lavander flowers* ʒj. *Dried marjoram leaves* ʒj.

Action. Use.—A good aromatic errhine.

ASARUM CANADENSE.

The leaves of this article will also act as an errhine when used freely. The application of this is the same as that of the A. Europea.

Besides these, tobacco, lobelia, capsicum, &c., are also examples of this class of remedies.

SUB-DIVISION:—SECOND.

IMMUTANTIENTS:—NON-EVACUENTS.

This subdivision of physo-dynamic remedies embraces all those articles of that *grand division*, which, in their effects upon the system, do not occasion any sensible evacuation, but which exert their remedial influences directly upon the tissues, or substances of the organs, modifying their essential condition and promoting and regulating their motive powers and several functions as they may be deficient or deranged. No part of the Materia Medica furnishes remedies of greater importance.

This sub-division embraces the following important classes, viz: *Stimulants*, *Tonics*, *Astringents*, *Nervines*, and *Alteratives*, —*Rubefacients*, *Derivatives*, or *Revelents*, &c., are not admitted here to the character of classes, as they furnish no articles that are not contained in other classes, or whose virtues are

peculiar. Our active and pungent stimulants, as capsicum, sinapis, and the essential oils, are among the best rubefacients and revelents that we possess. All, therefore, that could be said of them under those several separate heads would only apply to their application. The judicious and intelligent practitioner, therefore, does not require such useless specifications. The terms rubefacient, revelent, derivative, &c., nevertheless, are convenient, and may still justly be used in speaking of the topical application of stimulants, &c.

Class I.—STIMULANTS:—INCITANTS.

Definition.—The term stimulant comes from *stimulus* (a 'goad' or 'spur,') and is synonymous with *incitant* or *excitant*, (from *incito* to 'spur on' or incite to activity.) The literal meaning of the term, therefore, is to promote action, and to aid the living powers and vital processes.

The appelation stimulant, or the plural *stimulants*, in its most extended sense, would, however, embrace the majority of medical agents, and even the aliments and mental emotions. But in its more limited signification as understood in the classification of the Materia Medica, it is defined to mean such articles of medicine as possess a general exciting power without any specific or local tendency. Thus a pure stimulant will, like a simple motive power, tend to maintain a regular and general propelling force, affecting all the organs and functions of the entire system.

Modus Operandi.—It is very evident that the quality of the impression of this class of agents, like that of all others, is dependant, in one sense, upon the endowment of the nerves; yet there are properties in medical and other substances, which insure them their constant peculiar virtues, that are absolutely intrinsic. Stimulants and tonics, for instance, are alike dependant upon the nervous system for their action, but how different the *quality* of this action. The former possesses the faculty of arousing the *excitability* of the nerves, the latter the *tonicity*. Observation and experience as yet, can alone enable us with certainty to discriminate between the virtues of the different agents. Whether our investigations in organic

chemistry or phytochimy will ever enable us *a priori* to know the precise physiological or therapeutic virtues of medicines, seems yet to admit of a question. Nevertheless our expectations from this source of inquiry are justly high.

Most of our stimulants produce their effects through the circulation. Some, however, from the rapidity of their influence, must act directly through the nervous system,—their impression being communicated by the nerves distributed on the part where the agent is applied.

Stimulants are mostly pungent or acrid to the taste, and very irritant* when applied to denuded surfaces or delicate textures.

Physiology.—Stimulants may be regarded as the most innocent and congenial agents of the Materia Medica. Most other articles possess specific tendencies, and although harmless, when indicated, may, under some circumstances, produce effects that are mischievous. But stimulants may be considered as being adapted, in their very nature, to aid and promote the normal vital powers in whatever way the purposes of the general economy may require their distribution.

It is, indeed, very true, that the old profession have ever regarded stimulants as of doubtful utility in most cases of disease, in which an inflammatory or febrile diathesis prevails; nay, more than this, they consider them absolutely pernicious in these cases.

If we regard fever and inflammation as being, in essence, identical with the normal calorification of the system, which is undoubtedly true, then the effect of stimulants, in one sense, must be considered to promote both fever and inflammation, as they increase the activity of the heart and arteries, and

* The term *irritation*, in this sense, is not understood *necessarily* to mean a pathological condition. *Irritability* must be regarded as an essential physiological principle, like that of *sensibility*, with which, in one sense, it may be considered identical. *Irritation*, then, is simply the excited condition of the principal *irritability* as *sensation* is that of *sensibility*. Those who cannot admit this definition, will understand the impression of stimulants upon raw surfaces, &c., to be that of a *keen and peculiar* SENSATION.

The author is disposed to regard both *irritation* and *inflammation* as being, in one sense, physiological, and even sanative, although very liable to involve pathological conditions.

thus course the blood through the lungs more rapidly. Hence more oxygen is taken in, and the combustion by consequence, is enhanced.

But while it is assumed that *fever*, *inflammation*, and *animal heat* in ESSENCE are *identical*, it is also admitted that the common phenomenon may transcend the normal standard, and thus assume a *pathological* character.

This doctrine is in good keeping with what is known to obtain in reference to all the functions of the system. The effusion of fluids upon both serous and mucous surfaces, is a natural process, but this may exceed its normal limits, and thus dropsies and imposthumous collections are, sometimes, produced. Chylific absorption is a natural function, and who has not witnessed the occurrence of the most troublesome plethora or hyporæmia? Thus the calorification of the system, owing to accidental causes that may tend rapidly to enhance combustion, or from a want of vital resistance to it, may be abnormally increased, and hence, may assume the character even of synocha.

It has been remarked that, in one sense, stimulants may promote fever or inflammation. This is true, and when any existing fever is of the synochal grade, or when the skin is dry and unyielding, and there is much tendency to congestion, the active stimulants must not be used, as their primary effect, that is, their action upon the sanguiferous system, may occasion more mischief under these circumstances, than any secondary results can possibly atone for.

It is now proper to consider the secondary and paramount effect of stimulants, and the relation of this to inflammatory and febrile action. It has already been stated that this class of agents, in their action, maintain the vital energies, and, it might have been added, the integrity of the tissues; and, now, without forgetting this, it is important to bear in mind that all excessive inflammatory and febrile action is the result of a want of vital resistence to combustion, or, in other words, *of inability of the vital principle to resist the excessive action of oxygen*. Stimulants, in their secondary effect maintain the vital principle, and, hence, also the integrity of the tissues and the normal or physiological condition of the blood, and

other fluids. Therefore, in this action, they tend to obviate or prevent excessive calorification or fever and inflammation. In a word, as excessive calorification or febrile and inflammatory action is the result of inefficient vital resistance to the excessive influence of oxygen; and as the secondary effect of stimulants is that of exalting the vital integrity of all animate parts, they, in the same ratio, as far as this part of their action is concerned, will tend manifestly to modify or obviate this abnormal movement or excessive combustion.

In all cases, therefore, in which the primary excitement of stimulants is not likely to prove mischievous, they will be admissable, and may prove eminently beneficial.

All observation most clearly corroborates the correctness of this doctrine. It is true the vital doctrines of the old school system stand diametrically opposed to this. But how often have this advocates deplored the imperfection of their system, and inefficiency of the remedies prescribed under its provisions? Who has not been amused at, *nay*, moved with *contempt*, for that countless group of authors that presume so much on the credulity of the reader, as to continue to multiply volumes of hypotheses and speculations after most frankly and repeatedly acknowledging their *own* want of confidence in their doctrines and theory?

Application.—From what has been said of the physiology of their action, stimulants must be regarded as admitting of very extensive and important application. If the obvious fact be admitted that all disease is the result of inefficient vital resistance, or, in other words, of inability of the organs to perform their normal or physiological functions, and it be conceded moreover, that stimulants, in their paramount influence over the organs, tend to exalt and maintain their physiological condition and functions, these agents can seldom be used amiss, when applied as medicine, unless, indeed, their primary exciting power over the circulation should be likely to prove mischievous.

None can too well appreciate the full power and scope of influence that belong to the different classes of our remedies. We should at least always be fully aware of the *grand purposes* that may be effected by any given class of agents.

Now, if the doctrines of the old school be correct, stimulants can be safely invoked *very seldom*, and this fact, indeed, is clearly stated by all their authors, on therapeutics as well as practice. They consider almost every departure from the physiological state as being characterized by increased action or an exalted condition of the vital principle, and which, in the curative processes, will demand the use of sedatives and depletives. Allopathy is inconsistent with the idea of asthenic disease. "*Action*"! "*Excitement*"!! "*Morbific movement*"!!! is the highest idea of pathology that can be conceived of by many theorists. *Want of action* or *debility* seems most strangely to elude their observation. This appears to be fully corroborated by the statements of Professor Chapman: (*Ther.* vol. ii, 4th ed., p. 104:) "Nothing, perhaps, in the exercise of our profession, is more difficult than to fix the period in the progress of disease, or to ascertain the circumstances in which it becomes proper to prescribe stimulants. As relates to the use of depleting remedies, it is far more easy to come to a just decision. Not to descend to details, which probably would not shed any very distinct light, I shall merely observe, that in making up our minds on this point, we must, in the first place, be guided by the state of the system. *Meaning in the administration of stimulants to overcome an existing action by a new and stronger one, it is obvious that they can only be resorted to with any hope of advantage, in the feeble shapes of disease, or in more violent forms, reduced by previous evacuations.*" This is the doctrine maintained by all their writers and teachers, at least so far as the author has been able to know, and his opportunities for obtaining information on the subject have been by no means limited.

Now, the very opposite of the above doctrine may be regarded as an approximation of the truth. *Vital inefficiency* may be considered as the general proximate cause of disease. True, the consequence in very many forms of disease, as in fever and inflammation, may be increased, or abnormal excitement, owing to chemical phenomena, or the effects of oxygen, which are now less controlled, and are displayed to an extent corresponding to the want of proper vital resistance.

In these cases, therefore, stimulants of the proper kind are

necessary, providing their application is not contra-indicated by the strong tendency to vascular excitement. It has already been stated that the primary effect of stimulants is that of an excitant to the circulation. Hence, reason would dictate that their use should always be premised in the synochal grade of fever and high inflammatory action, by *cold affusions*, as the *shower bath*, *sponging*, &c., or by *nauseants* or *relaxants*, and proper *sudorifics;* after which, stimulants may be admissible even in this, the highest grade of febrile excitement. By their use a free perspiration may be kept up, and an equilibrium maintained.

The author, however, wishes to be distinctly understood, that, although he regards the proximate cause of *synocha* identical with that of *typhus*, i. e., *diminished vitality*, or a want of proper vital resistance to morbific influences; still when the vascular or febrile action consequent on this want of vital integrity, should much exceed the natural standard, active stimulants are improper, owing to their primary action, or their tendency to provoke still more, the existing excitement or vascular perturbation. He hopes, too, that he may not be charged with *tautology*, if on this important subject he should, for the purpose of preventing misapprehension, advert again to the ultimate therapeutic power of stimulants and the application of the latter in febrile or inflammatory disease.

But what is here to be said is simply this, that stimulants are not applied in sthenic disease by the judicious and scientific reformer, in view of their primary exciting power, but, on the other hand, alone in consideration of their ultimate tendency to sustain the living powers or vital integrity.

This doctrine, it is acknowledged, embraces the elements of a complete innovation upon the dogmas of the popular schools. But while the author is willing to show all due deference to more matured minds, and a proper respect for the labor of *ages*, he cannot succumb to the vain notions of *false theorists*, for the mere purpose of avoiding the calumnious charge of innovation. To prove recreant to duty, and to press on heedless of the demands of *true science* and *reason*, would be an act unworthy of a *devoted reformer*.

The importance of stimulants in the treatment of asthenic disease, is too apparent to be overlooked by any. Their application here is never contra-indicated.

There is no point in practice on which the various classes of the profession are more agreed, than on the necessity of stimulants in all diseases marked by obvious debility, and low vital reaction. It is unnecessary, however, to specify particularly in reference to their application here.

This class of remedies, perhaps, presents a greater variety of orders than any other of the Materia Medica, and it is a matter of some importance, and great *convenience*, to know the relative value, of the latter, and their different applications.

The proper *menstruum*, for this class of medicines, is alcohol, but the virtues of all the articles will yield, to a moderate extent, to water of every temperature.

Order I.—SPICY STIMULANTS:—PUNGENT INCITANTS.

This order, which embraces capsicum, zingiber, piper, &c., is the most important of the class. Its articles are those always invoked, when stimulants of a potent and permanent character are required. They are all very permanently pungent in their taste, and hold their virtues chiefly in an oleo-resinous principle, and a volatile oil; although, in a few cases, they are found in an extractive, to some extent. In many instances, as in the above named articles, a peculiar principle, that appears to possess the virtues of the article from which it is obtained, is found. Alcohol and ether are the general menstruums; nevertheless, in some instances, as in capsicum, zingiber, &c., the virtues yield, to a considerable extent, to water.

The articles of this order of stimulants can alone be depended on in violent forms of disease; others are *convenient*, and sometimes *important*, but these are *indispensable*. They, like all others of this class, are generally agreeable to the stomach, but, when given in large portions, sometimes occasion excruciating pain in the stomach, owing to their acridity, or



Capsicum Baccatum.

pungency. This is usually of short duration, and may also be relieved by liberal potations of sweet milk, warm or cold water, or, if persistant, by an emetic.

CAPSICUM.—The Fruit.

Synonymes.—*Καπτω, Greek;* Pepperone, *Ital.;* Poivre d'Inde, *Fr.;* Der Spanische Pfeffer, *Ger.;* Spaancheper, *Dutch.;* El Pimentero, *Span.;* Pimenteo, *Port.;* Villia-Capo-Molazo, *Malab.;* Perez, *Russ.;* Chilli, *Mexican;* Red or Cayenne Pepper, *Eng.*

Botany.—*Sex. Syst.* Pentandria Monogynia.—*Nat. Ord.* Solanaceæ, *Juss.;* Lurideæ, *Linn.*

Gen. Char.—*Calyx* five-toothed, persistent. *Corolla* rotate, five-cleft. *Anthers* converging, two-celled, dehiscent by fissures. *Berry* juiceless, papery, hollow, two to four-celled, many-seeded, naked. *Seeds* naked.—*Nees.*

Spec. Char.—The Capsicum genus affords numerous species, which are mostly distinguished by the character and appearance of the fruit. Among the most prominent of the species are *C. minimum*, *C. baccatum*, *C. frutescens*, and *C. annuum*. Many varieties of the latter have so changed by cultivation as to entitle them to the rank of species. All the species are medicinal, and differ only in the degrees and permanency of their stimulating or excitant power.

The C. annuum, which is the species so extensively cultivated in this country and Europe, is an annual plant, that grows usually from one to three feet high. The *stem* and branches are smooth, dark-green in color, furrowed, angular, and forked. *Leaves* ovate, accuminate, sometimes lanceolate, entire, shining, and in some instances, hairy beneath, on the veins. *Flowers* small, white, axillary, solitary, drooping. *Calyx* five-cleft. *Corolla* rotate, equal. *Stamens* five; *filaments* short; *Anthers* dark-colored, connivent, opening longitudinally. *Fruit* firm, succulent, two-celled; *Seeds* flat, numerous, of yellowish-white color. The form of the pods differs, according to the improvement that cultivation has made in the varieties of the species. They are round, oblong, conical, terete, or horn-shaped; the latter kind is most common. Their color varies, from a beautiful scarlet to a

deep yellow, when mature. In their growing state, their color is of a deep green. The size of the pod varies likewise, being from one inch to four inches in length, and from a half inch to two inches in diameter. The flowers appear in July and August, and the fruit ripens in October.

The other three species of these Capsicums are inhabitants of the tropical regions, in Africa, South-America, and the East and West-Indies. They are perennial shrubby plants, whose berries or pods are very small when compared with those of the C. annuum. Nees makes the following distinction between these species. He says that sometimes the fruit is globose or lobed; the variety is then called *C. baccatum*. When the fruit is small, elongated, and pointed, the variety is called Bird-Pepper, and botanically, *C. minimum*. When the plants are allowed to grow beyond the year, they become shrubby, and form the species or variety called *C. fructescens*.

This description of the *baccatum* species differs somewhat from that given by many writers,* but the probabilities go far to confirm the views of Nees. The name comes from Bacca, "*a berry*," which, indeed may apply to the fruit of all the species; but it usually means a *small round* or *globular* berry, as that of the elder, bay, or myrtle. If a distinction of this kind cannot be made, from the *name* for this species, it must be confessed that there is little propriety in its use, and that it has other than its true Latin meaning.

History.—The C. annuum is supposed to be a native of the warmer parts of America, and was, perhaps, not known to the ancients. Some of the species of capsicum, however, were well known to the Romans, Greeks, Hindoos, the inhabitants of the East Indies, and perhaps others.

The *Siliquastrum* of Pliny answers to the description of the C. fructescens, which, according to Rheede, is the C. indicum. The latter, whatever species it may be, was known in the East from time immemorial. It is said to grow wild in the East Indian Islands.

The fruit of the capsicum is much in use in the tropical

* The author, in the first edition of his "Family Medicine" followed others in applying the description of the *C. minimum* to the *C. baccatum*.

countries, both as a medicine and condiment. The inhabitants consider it peculiarly adapted as a remedy in debility of the stomach, and various other impaired conditions of the digestive apparatus. In some places, hardly a single meal is taken without its use in some form or other. Some even eat it raw, with a relish. It is almost certain to restore the appetite so generally lost by individuals, who go from more temperate parts to those torrid climes. It was not, however, introduced into any of the modern pharmacopias as an officinal article, until a comparatively late day. Dr. Adair Makitrick, according to Cox, first attracted the notice of the profession to it. He found it useful in depraved conditions of the system, which he called *Cachexia Africana*. It gained great popularity in the West Indies as a remedy in cynanche maligna, during the alarming prevalence of Scarlatina on those islands. From the flattering reports of Dr. Stephens, the medicine also acquired great character in England, as a remedy in malignant anginous affections.

It, however, remained for Dr. Samuel Thomson, the first pioneer of modern medical reform, to introduce the medicine into general practice. Before his day, nothing more could be claimed for it among the profession, than the character of a specific or empirical remedy for certain forms of disease. But Thomson gained for it a place at the very head of one of the most prominent classes of medical agents. It is now an article of considerable character in commerce, and is exported from the East Indies, Hindostan, Africa, West Indies, and South America. The Capsicum Annuum, however, as already remarked, is cultivated in this country and Europe. It supplies part of our market, but is far inferior to that produced in warmer climates. The fruit of all the species is indiscriminately ground up together, generally sprinkled with salt, and put up in barrels. In this condition it is known in our market as *cayenne pepper*, or capsicum. When brought in the pod, it is imported in bags, and is known by the common name of chilly peppers, or chillies. The green fruit is also preserved in vinegar, and kept under the name of *pepper-sauce*.

Physical Properties.—The dried fruit kept by druggists, and commonly called *chillies*, consists of small, long, taper-

ing, conical, oblong, or round berries, which are more or less wrinkled and flattened. They are from three-quarters of an inch to two inches or more in length, independent of the adhering calyx or stalk, and from a quarter to three-quarters of an inch in diameter. Their color varies from a bright scarlet to a yellow. The epidermis is tough and leathery, and the seeds flat, and of a yellowish-white color. They have a faint but peculiar aromatic odor, and extremely pungent and hot taste, which continues in the mouth for many minutes. The powder, commonly called *cayenne pepper*, is moderately fine; when fresh, of a bright color, varying from a beautiful red to a brown or yellow. The color fades on exposure to light, and will ultimately almost disappear. The color will assist much in judging the quality of the medicine. The odor of the powder is more obvious than that of the pods, and when snuffed into the nostrils, will produce distressing irritation and sneezing. Its pungency is more readily perceived than that of the berries. It will yield its active properties very readily to alcohol, ether, acetic acid, and water, and to hot water much more readily than to cold. The animal, fixed, and essential oils, also take up its pungent properties. When burned on a stove, it will give off very acrid fumes, and the least quantity will, in a few moments, impregnate the air of a large room, so as to make it absolutely irrespirable on account of the irritation it produces in the trachea and bronchial tubes.

Impurities.—The only article with which capsicum is adulterated, that is likely to do much mischief, is the red oxide of lead. This may be detected by digesting the powder in diluted nitric acid, filtering, and adding a solution of sulphate of soda, when, if it contains any oxide of lead, a white precipitate will be formed. When it contains logwood, as is sometimes the case, it may be known by adding a little sulphuric acid to the filtered infusion; when, if it contains logwood, the infusion will turn red. Other impurities must be detected by the appearance of the powder, and the taste. If it contains much salt, it is not fit for general medical purposes.

Analysis.—The proximate principles of capsicum are, *gum*, *wax*, *resin*, *essential oil*, *an extractive*, *fibrine*, *starch*, and *water*.

Its ultimate principles are, *oxygen*, *carbon*, *hydrogen*, *chlorine*, *potash*, *phosphorus*, and perhaps some other elements.

Bucholtz and Braconnot, who analyzed it, the first in 1816, and the other in 1817, obtained the following results:

BUCHOLTZ'S ANALYSIS.		BRACONNOT'S ANALYSIS.	
Wax,	7·6	Wax, with red col. matter,	0·9
Resin, soft and acrid,	4·0	Acrid oil,	1·9
Extractive, bitter, aromatic,	8·6	Brownish starchy matter,	9·0
Extractive with gum,	21·0	A peculiar gum,	6·0
Gum,	9·2	Animalized matter,	5·0
Albuminous matter,	3·2	Woody fibre,	67·8
Water,	12·0	Salts (citrate of potash 6.0, phosphate of potash, and chlor. of potass, 3.4,	9·4
Woody fibre,	28·0		
Loss,	6.4		
Fruit of C. Annuum, without seeds,	100·0	Fruit of C. Annuum,	100·0

The essential oil, obtained by distillation with water, possesses the aroma and peculiar taste of capsicum, but has nothing of its pungency. This latter consists in a soft gum-resin (*capsicin*,) which may be obtained by evaporating the alcoholic tincture to the consistence of an extract, digesting this in ether, and evaporating as before. The product, while hot, is pretty thin, but on cooling, forms a thick oily substance, of a reddish-brown color, and tremendously acrid and penetrating taste, possessing all the active properties of the capsicum in a very small compass. On exposure to the air, it is converted into a resin. It is slightly soluble in acetic acid, very sparingly in water while soft, not in any degree when hard; but it is completely soluble in ether and alcohol. This is what is usually called the oil of capsicum. The author has obained two ounces of this from a pound of capsicum. It has been supposed that the active properties of the capsicum can be obtained in the form of an alkaloid, by treating it successively with alcohol and a solution of potash, &c.; but the author never could succeed in this way, for as soon as the resinous substance is taken up with the potash, and then washed away, as the process requires, the active properties of the capsicum will be found to have gone with it.

Physiological Effects.—Capsicum evinces the most marked characteristics of a prompt and general excitant. Its to-

pical effects are, however, much more obvious than its general impression; when applied to the skin it is actively rubefacient and irritant;—the capilaries become gorged with red blood, the temperature somewhat raised, and the epidermis slightly elevated; but there is no dryness nor yet effusion, as in inflammation. This excitement and irritation, after continuing some thirty minutes or an hour, disappears, although the cause may still be applied. In the mouth, the effect is the same as when applied to the surface, but the burning, although instantly experienced, is sooner over, and is not near so intolerable as when applied to parts externally, where the integuments are thin and very vascular. This difference is dependant on the intervention of the mucous and saliva in the mouth. When taken into the stomach in moderate qantities, it, at first, only produces a local impression of warmth, but this is almost instantly succeeded with a genial and pervading glow, which imparts vigor to the circulation and activity to the secretions, and various other functions. The appetite is promoted, the spirits are exhilerated, and the mind rendered more placid—in a word, as may be expected from a pure and healthy stimulant, all the normal functions are promoted, and particularly those of digestion.

When the stomach is empty, or deficient in its mucous covering, the medicine will sometimes occasion intolerable pain; but, happily, it is generally of short duration. It may be obviated by drinking some cream, milk, or any other article that will either modify the pungency of the capsicum, or which will serve as a shield to the stomach. It is proper to remark, however, that aside from the inconvenience of the pain merely, there has not been observed any unpleasant effects, even from very large quantities. If the use of the medicine is always commenced in small doses, it will seldom disagree with the most delicate stomach; and if the doses are alternated, with suitable drinks, an incredible quantity may be taken, without the least inconvenience.

Capsicum is regarded, by our old school friends, as being exceedingly imflammatory in its effects on the system.

Dr. Murray says, that the practice of using capsicum as a gargle in cynanche, though it has been successful in the West

Indies, "is not without danger from the *violent inflammation* it is liable to induce." Hooper says it produces *visceral obstructions*, especially of the *liver*. Vogt declared that it would bring on *gastritis*. Rafinesque, Thatcher, Pereira, and indeed most all their authors, ascribe to its effects, *fever*, *inflammation*, *thirst*, *headache*, *vessication*, &c.

This doctrine contemplates fever and inflammation as being, in *essence*, pathological; whereas, the phenomena here involved, are absolutely identical with the normal calorification of the system, and differ only in the extent of their development. In either case, all is dependant on the influence of oxygen over the constituents of either the blood or the tissues. Now, the affinities of oxygen are only controlled by the force of the vital principle, which, in the healthy state of the body, is always sufficient to regulate the combustion in the system, according as the demand for the change of materials may be. Thus is maintained the normal standard of the temperature. It is obvious, therefore, that whenever the vital force is diminished in the system, or any of its parts, that fever or inflammation will arise, corresponding in extent with the said diminution, and the consequent increased influence of oxygen.

Capsicum, though it excites the heart and arteries, and thus exposes the blood more to the contact of the oxygen in the lungs, and will, hence, in the same proportion, indirectly favor the *oxidation* of this fluid, yet the paramount aid afforded the vital integrity of the tissues by it, will fully atone for all the above, when its use is not objectionable on account of the mere excitement of the vascular action which it occasions, and which it is well to avoid in all cases when the circulation is much confined, (as is universally the case in fever of the synochal grade, or high inflammatory action) simply because of the consequent mechanical mischiefs.

This disquisition is not imposed here in view of advocating, ostensibly, the use of stimulants in fever or inflammations, but as the true principles that involve the physiological effects of this highly important class of remedies, are so generally misapprehended, if not totally *misunderstood*, it has

been deemed proper to throw out these few hints on the subject.

If all who are implicated in the above misrepresentation of the physiological effects of Capsicum, had put themselves to a corresponding trouble, in the investigation of the subject, there would, at least, have been an evidence of *solicitude*, or a sense of *responsibility* on their part. But the circumstances go far to show that they have rested their assertions on a hypothesis having no other foundation than *unproven analogies*. Thus some earlier authors, in treating on this article, have pronounced it phlogistic, and succeeding writers, from the idea of its exciting properties, have followed suit without further inquiry. Were it necessary, the faithfulness of these remarks might be made abundantly evident by a simple reference to the statements of those authors themselves; of which the following, from the much renowned English Therapeutist, Pereira, may serve as an example. "*In excessive doses*, WE CAN EASILY BELIEVE *that vomiting, purging, abdominal pain, and gastric inflammation, ascribed to it by Vogt, may be induced by it*, THOUGH I AM UNACQUAINTED WITH ANY CASES *in which these effects have occurred.*" He says that he can "*easily believe*" it; but upon what *evidence?* Has he investigated its effects by actual experiment? It seems *not!* But authors have thus spoken of it; and from its plausibility, the profession generally believe it.

For a more particular exposition of the *modus operandi* of these agents, see *stimulants*.

THERAPEUTIC PROPERTIES AND USE.—Capsicum is very justly reckoned the best general stimulant that we possess. It is a simple excitant, and the circumstance of its fulfiling different and *contra*-indications is to be explained on the principle of its concert of action with the physiological laws, which correspond with every rational intention of cure.

The medicine is exceedingly prompt in its action, and were its general impression equal with its local effects, it would be still more valuable as a medical agent. It is, nevertheless, placed at the head of the stimulants. As an agent of this kind, it evinces its power remarkably in equalizing the

circulation, and thus obviating congestions, arresting hæmorrhages, and relieving local inflammations.

Capsicum is particularly applicable in all cases in which the vital force is far exhausted, as it will assist in recovering a reaction, with less expense to the tissues than most stimulants will, and hence its utility in typhus, typhoid, low remittent, and epidemic yellow fever. Dr. Wright speaks in high terms of its efficacy in arresting the *black vomit*. In Asiatic cholera, cholera morbus, palsy, asphyxia, &c., it is also of signal benefit. Its active stimulating and exciting power, will produce a re-action, promote the circulation, and maintain the vital principle. The author might here relate numerous instances of such cases, in which, by the faithful use of this article, both internally and externally, the patients have been recovered from apparent death, to the astonishment of all present.

In many chronic affections, as rheumatism, gout, and various other inflammatory diseases of parts remotely situated from the general circulation, it will be found that capsicum will be of benefit.

In dropsies, it proves serviceable by exciting the absorbents, and promoting cutaneous tranpiration; and in phthisis, hepatitis, nephritis, &c., by equalizing the circulation, and thus promoting a tendency to resolution. These same advantages obtain in its use in pleuritis, peritonitis, carditis, and various other inflammatory affections of the serous surfaces, and muscular structures among the viscera. In carditis, especially, the author has observed some of the most happy effects from its use: in many instances this article gave complete relief after the usual means had failed. In intermittents, especially in the cold stage, capsicum is a good medicine, and in many cases will prevent the chill.

There is no complaint, however, in which capsicum has established a greater reputation than in scarlatina and cynanche maligna. Its usefulness in scarlatina was first discovered in the West Indies. Dr. Stephens made the most flattering report of its efficacy in this disease, when it prevailed there. He says that he used it in four hundred cases, in which it gave the most satisfactory results—that "it

seemed to save some whose state had been thought desperate." It promoted the separation of the sloughs, and soon improved the constitutional symptoms. Dr. Pereira, though he, like the rest, denounces capsicum as a *philogistic agent* of the most violent kind, corroborates the exalted views of Stephens, Collins, Headly, and most other authors, as to its utility in various inflammatory diseases of the throat. Among reformed practitioners, its value in this, as well as all other inflammatory and malignant anginose affections, has been fully tested, and their superior success in the treatment of those affections is much owing to the use of this potent agent.

It has long been a popular domestic remedy in *colds* and various acute attacks. Thus, what is called "*pepper tea*" is a common medicine for hoarseness, catarrh, and the chills that usually attend the incipient stages of fever.

Dyspepsia is another form of disease in which capsicum has proved itself a special remedy. It stimulates the nerves of the stomach, promotes the secretion of the gastric and pancreatic juices, as well as the bile, and, although without any cathartic power, will very much assist the peristaltic motion.

Sprinkled on the surface of indolent ulcers and cancers, it will often procure a healthy action in the parts, cause them to clean off, and heal up. In like cases it may also serve as a constituent of plasters, to be worn over the sores, for similar purposes.

As a rubefacient, there are few articles in the Materia Medica equal to it. Its effects are very durable, and are never attended with vessication.

Capsicum, like most other remedies, though more serviceable in some forms of disease than in others, cannot be considered in the light of a specific, but must rather be regarded as a general remedy, which must be selected to fulfil various indications that may appear in many different varieties of disease. Like all simple stimulants, it is serviceable in all cases of diminished vital action, and may either be used for the direct fulfilment of given indications, or it may be combined with other remedies, with a view of promoting their

action. Thus capsicum is known to promote alike the operation of emetics, cathartics, diuretics, diaphoretics, expectorants, tonics, &c., by exciting the organs upon which these agents severally act. It is usually taken by infusion. From *gr.* x to *gr.* xx are infused in Oss. of boiling water, and taken at two doses, a few minutes apart. The powder is taken in like quantities, either in a little mucilage or sweetened water. It is also taken down, simply stirred, in cold water.

Contra Indications.—The only cases in which capsicum is particularly contra-indicated, is in synochal grades of fever, as well as inflammations that are attended with a high heat of the general system, accompanied with a contracted and husky skin, and violent headache. In these cases, the medicine should not be given until the system is well relaxed by other appropriate means; for while the muscular parts are so firmly contracted upon the vessels, the increased momentum, produced by this excitant, may augment the violence done to the more delicate structures by the force of the circulation while the system is thus confined.

Pharmaceutic Preparations.—The preparations of capsicum, or those into which it enters as an ingredient, are pretty numerous. The most prominent only will be noticed.

TINCTURA CAPSICI: U. S., Lond., Dub. Ed.—*Tincture of Capsicum.* ℞. Capsicum in coarse powder, ℥ij; Alcohol, Oij; macerate for ten days and filter; or if prepared by percolation, the powder may be made into a pulp with a little of the spirit, and then placed into the percolater or instrument of displacement, and the spirit passed through it. The U. S. Dispensatory directs only half the quantity of the capsicum to the same quantity of diluted alcohol; and the English pharmacopia directs ʒx of capsicum to Oij of proof spirits. The *dose* is from f ʒj to f ʒij. Used for the same purposes to which the powder is applied. This is the form in which capsicum is commonly used as a rubefacient.

OLEUM CAPSICI: *Oil of Capsicum.*—An impure oil of capsicum may be prepared by digesting the alcoholic extract in ether and evaporating the etherial solution. This oil is extremely pungent, containing all the active properties of the capsicum. It is powerfully rubefacient; too much so for common use; but makes an excellent application in paralysis, and in all

cases in which a counter-irritant is required. Introduced into the hollow of a tooth, it will, generally, stop it from aching. It is a valuable ingredient in stimulating liniments, as well as stimulating pills.

PILULÆ CAPSICI: *Capsicum Pills.*—These are made from a mass, prepared by working a suitable quantity of fine capsicum into thick molasses. If an extract, made from some of the permanent tonics, is substituted for the molasses, the pills will be much more permanent in their stimulant effects. The pills, while fresh, should be rolled in flour, or the dust of slippery-elm bark, so as to obviate their pungency while being taken. *Use.*—Capsicum pills are found beneficial in dyspepsia, and many other chronic diseases, as carditis, phthisis, &c. Various articles are combined with capsicum in making pills of this article, according to the use for which they are intended. Thus, in chronic nervous affections, scuttellaria, or assafœtida, and in dyspepsia and habitual constipation, a laxative, as the extract of juglans cineria, are used.

When capsicum is used as a gargle in sore throat, it is usually prepared with vinegar and salt: ℞ 3ij Capsicum; 3ij Chlo. Sod. and Oss. Acetic acid.

ZINGIBER.—The Rhizomæ.

SYNONYMES.—ZINGIBER OFFICINALE, (Roscoe); *Ζιγγιβερις, Greek*; Zinjabil, *Arab*; Ingwer, *Ger.*; Zengero, *Ital.*; Gengibre, *Span.*; Gingembre, *Fr.*; Ginger, *Eng.*

BOTANY.—*Sex. Syst.* Monandria Monogynia.—*Nat. Ord.* Zingiberaceæ, (*Lindly*;) Scitamineæ, (*R. Brown.*)

Gen. Char.—*Corolla* with the outer limb three-parted, inner one-lipped. *Filament* lengthened beyond the anther into a simple incurved beak. *Capsule* three-celled, three-valved. *Seeds* numerous, arillate. *Rhizocarpal* plants. *Rhizomata* tuberous, articulated, creeping. *Stems* annual, inclosed in the sheaths of distichous leaves. *Leaves* membranous. *Spikes* cone-shaped, radical, or rarely terminal, solitary, consisting of one-flowered imbricated bracts. (*Blume.*)

Spec. Char.—*Leaves* sub-sessile, linear-lanceolate, smooth. *Spikes* elevated, oblong. *Bracts* acute. *Lip* three-lobed.—(*Roxburgh.*)

Rhizoma biennial. *Stems* erect and oblique, and invested by the smooth sheaths of the leaves; generally three or four feet high, and annual. *Leaf-sheaths* smooth, crowned with a

bifid ligula. *Scapes* solitary, six to twelve inches high. *Spikes* the size of a man's thumb. *Lip* dark purple. *Ovary* oval, with numerous *ovals; style* filiform; *stigma* funnel-shaped, ciliate. *Capsule* roundish, unilocular. *Seeds* numerous; mostly abortive.—(*Brown, Hist. of Jamaica.*)

History and Habitation.—Ginger is supposed to be a native of the East, but is now found in most parts of the tropical regions, where it is a native product, or has been the subject of transplantation. It has been known from time immemorial. Dioscorides* and Pliny† speak of it. The former called it *Ziggiberis:* the latter *Zingiberi*, or Zimpiberi. The Chinese and Arabians also had an early knowledge of it. The ginger of commerce is chiefly derived from India. A superior variety is, however, brought to us from the West Indies by way of England; and, of late, a very good article is brought from Africa.

Ginger is propagated by planting cuttings of the root-stock of the plant.

Description.—The *Rhizome*, or Radix Zingiberis, as it occurs in our market, consists in flattish-cylindrical, branched or lobed pieces, called *races*, which seldom exceed four inches in length, and are usually somewhat curved. The color and external appearance of these races is dependant on the mode of preparation, and perhaps on a difference in the plants that produce them. This latter idea is supported by Dr. P. Brown, who has already been mentioned. Dr. Wright‡ also states that two sorts are cultivated in Jamaica. We have, then, two varieties, called the *white* and *black* ginger, which may be noticed separately. Both varieties have a peculiar and very agreeable aroma, which is quite durable.

a. White Ginger: (*Radix Zingiberis albi.*)—This is of a superior quality, brought to us chiefly from America. It is divested of its epidermis, and has, externally, a yellowish-white, and, internally, a pale-buff color. The pieces, owing to the loss of their bark, are somewhat smaller, and are also rounder than the other variety. The purchaser should exercise some caution in the selection of this article, as there is much trickery practiced in its preparation. The root is sometimes dipped into a preparation of whiting and water, and is thus *white-washed*, or covered with a coat of whiting, which, however,

* Lib. ii, cap. 190. † Hist. Nat. lib. xxii. ‡ Lond. Med. Jour. vol. viii.

can be easily detected. But when, as is often the case, the root is bleached with chloride of lime, or is whitened with the fumes of sulphur, the imposition is not so easily detected. Either of these processes are calculated to impair the virtues of the article.

We occasionally have specimens of several other kinds of ginger that are classed with this variety. The *African ginger* is also of a whitish color, and is partially scraped. The races of this are somewhat smaller than those of the other. The author has a specimen of this, that is equally as strong as any Jamaica ginger he has ever seen. The *Barbadoes ginger* is somewhat darker, and its races are shorter, flatter, and are covered with a corrugated epidermis.

β Black Ginger: (*Radix Zingiber nigri.*)—This is the common ginger of commerce, and is imported principally from the East Indies and Hindostan; but some is brought from the West Indies. It occurs in races like the *white*, but they are of a dirty, dark, yellowish-gray color, with a wrinkled epidermis; and are usually worm-eaten, and rotten at the ends. When the epidermis is removed, some places exhibit darkish or black spots, of a resinous, or horny consistence. The interior is usually whitish and farinaceous. These roots, which are brought in sacks weighing about one cwt. each, are ground up and put in kegs and barrels. The color of this flower is of a yellowish-brown; and besides the dirt, bark, and rotten parts, the drug is often rendered still less valuable by shameful adulterations with meal and flower.

With this variety, we find the *Tellicherry ginger*, and *Malabar dark ginger*, which are all very analogous in their properties, and need no further description.

Composition.—According to M. Morin, ginger contains a *greenish-blue volatile oil*, *resinous matter*, which is soft, acrid, aromatic, and soluble in ether and alcohol; a *sub-resin* insoluble in ether; a small portion of *osmazome; gum; starch;* a *vegeto-animal matter; sulphur; acetic acid; acetate of potassa;* and *lignin*. The analysis of Bucholtz* is as follows:

Pale yellow volatile oil,	1·56
Aromatic, acrid, soft resin,	3·60
Extractive, soluble in alcohol,	0·65
Acidulous and acrid extractive, insoluble in alcohol,	10·50
Gum,	12·05
Starch (analogous to bassorin,)	19·75
Apotheme, extracted by potash (ulmin?)	26·00
Bassorin,	8·30
Woody fibre,	8·00
Water,	11.90
White Ginger,	102.31

*Gmelin's Handb. d. Chem.

The odor of Ginger is dependant upon its volatile oil, procured by distillation, and a soft resin, which may be obtained by digesting the alcoholic extract of ginger, first in water, then in ether, and evaporating the etherial tincture.

Physiological Effects.—In the mouth, ginger produces a hot or pungent sensation, and gives rise to a flow of saliva. When taken into the stomach, in moderate quantities, it occasions a sensation of warmth and stimulation; the pulse is accelerated; the spirits raised, and a genial warmth pervades the body, which is succeeded with a relaxation and moisture of the skin. It promotes digestion, and evinces a calming influence over the nervous system. When taken in large doses, it seems to excite, more especially, the organs of respiration; but this is most probably the effect of the increased action of the circulation, and, is, hence, secondary. Over the genital organs, it manifests, also, an exciting influence. When applied to the Schneiderian membrane, or the skin, it produces its purely stimulating effects.

Therapeutic Properties.—Ginger is a pure aromatic stimulant, and, as such, makes a very valuable medicine, although its chief use, until of late, has been as a *spice* and *condiment*. In all cases of debility and enfeebled vital re-action, this article serves an important purpose; especially, in cases of enfeebled digestion, that are dependant, simply, upon a want of tone in the organs. Few articles are more valuable in cholera, cholera morbus, or cholera infantum. In these cases, it should be prepared in a cordial, or syrup. With rhubarb, it is invaluable in dysenteries, and summer complaints, among children. As a stimulating carminative, it is eminently adapted to flatulent habits, and hysteria. It relieves nausea, pain and cramp in the stomach and bowels, and obviates tenesmus. With ulmus fulva, it forms an excellent cataplasm for parts affected with gangrene; and, used in the same way, it is of eminent service in various ill-conditioned ulcers, fistula, scrofula, carcinoma, etc. Ginger is often found convenient as a corrector of the taste of less pleasant medicines.

Pharmaceutic Preparations.—Ginger is usually taken in the form of a warm infusion or tea; commonly with other

articles. The dose of the powder is *gr.* x to *gr.* xx, of the best article of white ginger; but it must be remembered that there are some kinds in market, that have not the strength in an ounce, that should be contained in a single dose. The tea is prepared by infusing ʒj to ʒij in Oj of boiling water. There are various other preparations of the medicine which have been made officinal.

TINCTURA ZINGIBERIS: *Tincture of Ginger.* ℞ Take of Ginger, in coarse powder, ʒijss.; Rectified Spirit,* Oij. Macerate for eight or ten days. The *dose* of this is fʒj or fʒij.

What is called Essence of Ginger is prepared in the same way as the tincture, only that a greater proportion of the ginger is taken. Some have attempted to increase its strength by distilling off some of the spirit; but this impairs the medicine, as the oil is driven off in the process.

Action. Use.—The tincture of ginger is applicable in most cases in which the infusion is given, and has the advantage of the smallness of the dose required. It serves well as a vehicle for other medicines. The most common use of the tincture, or essence, is in cases of colic pains, hysteria, flatulency, rheumatism, and gout.

SYRUPUS ZINGIBERIS: *Syrup of Ginger.* ℞. Take of bruised ginger ʒijss.; boiling water Oj; sugar, ℔ijss. Macerate the ginger in the water for four hours, and strain; then add the sugar, and dissolve it. This is the officinal preparation of the London College, but it is not strong enough to be of much account, except as a vehicle in which to take other medicines, or as a means of flavoring stomachics.

A very good preparation of this kind may be made by dissolving a suitable quantity of white sugar in a strong tincture of ginger.

PIPER NIGRUM.—The Fruit.

SYNONYMES.—*Πεπερι, Greek;* Pepe Nero, *Ital.*; Poivre Noir, *Fr.*; Schwarzer Pfeffer, *Ger.*; Germeine Pepper, *Dutch*; Pimenta Negra, *Span.*; Fifil Uswud, *Arab*; Lada, *Malay*; Miricha, *Java*; Sahan, *Pelembang*; Pilpil, *Persian*; Black Pepper, *English.*

BOTANY.—*Sex. Syst.* Diandria Trigynia.—*Nat. Ord.* Piperaceæ.

Gen. Char.—*Spadix* covered with flowers on all sides.

* If prepared with Proof Spirit, it becomes turbid by keeping, in consequence of the mucilage it contains.

Flowers hermaphrodite, rarely diœcious, each supported by a scale. *Stamina*, two or more. *Ovarium* with one, solitary erect *ovule*. *Stigma* punctiform, obtuse, or split. *Berry*, one-seeded. *Embryo* dicotyledonous, monocotyledonous, inverted.—(*Blume.*)

Spec. Char.—*Stem* trailing or climbing, shrubby, radicant, terete, dichotomatous, with tumid joints. *Leaves* alternate, distichous, ovate, acuminate, dark-green and shining above, paler beneath; five to seven-nerved, reticulate, coriaceous. *Spikes* opposite the leaves, situated near the extremities of the branches, pedunculate, long, slender, drooping. *Fruit* ripening irregularly throughout the year, sessile, green at first, then red, and ultimately black.

History and Habitation.—Black pepper was known to the Greeks. Hippocrates* used it, and Dioscorides speaks of it. It was called πεπερι by both of these. Pliny† speaks of it as a condiment. But the Hindoos were the first who more thoroughly investigated its medical virtues.

The pepper genus of plants is found growing native in various parts of the East Indies, and is cultivated for its fruit in Sumatra, Java, Malabar, &c., but is confined, it seems, to the longitude of 90° to that of 115°, E., and 5° S. latitude to 10° or 12° N., beyond which limits it is said not to be found.

The following estimate of the comparative production of pepper, in the various parts in which it is cultivated, is made by McColloch—(*Dic. of Commerce.*)

Sumatra (*West Coast*),	20,000,000 lbs.
do. (*East Coast*),	8,000,000
Siam,	8,000,000
Malabar,	4,000,009
Malay, peninsula,	3,733,333
Islands in the Straits of Malacca,	3,600,000
Borneo,	2,666,667
Total,	50,000,000

The pepper vine is propagated by cuttings, and is supported by props or trees. It begins to bear fruit the third or fourth

* Enum. Plant. Javæ, p. 64.

† *Hist. Nat.* lib. xii, cap. 14 ed. Valp.

year after it is set. The berries are gathered before they ripen, and are dried in the sun.

Description.—Black pepper consists of round, corrugated berries, of about the size of a small pea. Their shrivelled appearance is caused by the drying of the succulent portion of the berry, and its thus shrinking upon the harder part. The bark may be easily removed when the berry ripens, and thus may be formed what is called *White Pepper*. The white pepper is also manufactured in this country and England, by soaking the pepper in water, to crack and loosen the integument, and then subjecting it to trituration when dry, and then winnowing.

Composition.—In 1819, a peculiar principle, called *piperin*, was discovered by Oersted, in which the active properties of the medicine was supposed chiefly to reside, especially its anti-intermittent properties. Luca, who analyzed the white pepper in 1832, could not procure the piperin, and concluded that it is contained alone in the succulent portion of the berry. But the author, in some of his analyses of this and other similar articles, has well discovered that it is very easy to confound the piperin with the resinous portion of the subject of analysis. Pontet subsequently discovered it in the white pepper.

Piperin may be obtained by evaporating the alcoholic tincture of black pepper to the consistence of an extract, submitting the extract to the action of a strong alkaline solution, by which the oleaginous matter is converted into a soap, washing the undissolved portion with cold water, separating the liquid by filtration, treating the matter left on the filter with alcohol, and allowing the solution obtained in this way to evaporate spontaneously. The piperin is deposited in impure crystals, which may be further purified by alternately dissolving and crystalizing it with alcohol or ether. The elementary constituents of piperin are C^{34}. H^{19}. NO^{6}. When pure, piperin is white, but as found with the druggists' it is usually of a straw yellow. When perfectly pure, it is almost tasteless; but when it contains a portion of the resinous matter, it is proportionally pungent to the taste.

Besides *piperin*, black pepper, according to the analysis of Pelletier, contains an *acrid soft resin*, *volatile oil*, *extractive*, *gum*, *bassorin*, *starch*, *malic acid*, *tartaric acid*, *potash*, *calcerous* and *magnesian salts*, and *woody fibre*.

According to Luca, white pepper contains:

Acrid resin,	16·60
Volatile oil,	1·60
Extractive, gum, and salts,	12·50
Starch,	18·50
Albumen,	2·50
Woody fibre,	29·00
Water and loss,	19·29
White Pepper,	100·00

Physiological Effects.—The physiological effects of this article are very analagous to those of zingiber, only that they are less general in their extent through the system, or, in other words, they are more confined to the parts on which the primary impression is made. It was supposed by Van Swieten, Wilmer, Wendt, Lange, Jager, Pereira, and others, to have a tendency to produce an inflammatory condition in those to whom it is administered in full doses; and a number of other pernicious influences are said to result from its use. But it would seem, that, if it were possessed of properties capable of acting in this way, much more evidence would obtain on the point, from its very extensive and almost universal use as a condiment, as well as a domestic remedy. In their conclusions, these gentlemen no doubt were much influenced by the gratuitous idea, that all stimulating substances are phlogistic in their tendency when taken into the system.

Therapeutic Properties.—Black pepper is a very active stimulant, but is less permanent and diffusive in its effects than the capsicums. When we wish to produce the prompt effect of a *powerful* stimulant, this article recommends itself. The medicine is more particularly adapted to languid conditions of the stomach and bowels, as in cases of chronic dyspepsia and flatulent colic. The author has witnessed the most prompt and decided benefit from its use in cases of the latter kind. It has long been in favor as a remedy in intermittents, and some have regarded it even a specific for those

complaints; but it is not now much depended on as a febrifuge, in this country. Of late it is gaining some character with many of the profession as a remedy in gonorrhœa, and is considered by some, to be little inferior to the P. cubeba in those cases.

The piperin, in general practice, has very unjustly superceded the pepper, especially when prescribed as an intermittent; and it is certain that there are no other grounds for this than the force of book authorities. But since *dogmatism* has extinguished the spirit of inquiry among our authors, and they have become contented while within the tracks of their predecessors, it is easy to see that a *reiteration* of statements is necessary to every full volume on the science. Thus an article, once successfully introduced, will not soon lose its character. Nothing is more certain than that piperin lacks much of the activity of the pepper itself, and that it will in no case answer as a good substitute. It is not, however, intimated, that, to insure all the good effects of pepper, it must necessarily be taken in substance; but, on the contrary, we may accomplish every object, in the use of an alcoholic extract, that may be effected by the exhibition of the pepper in substance. This extract may be formed into a pill, and in this way we may have every advantage that is claimed for piperin over the crude article, which is the *smallness of the dose*. This extract, made into an ointment, will destroy lice, and cure tinea capitis. If mixed with molasses, in proper proportions, it will destroy house flies. The dose of the powdered pepper is *gr.* x to *gr.* xx; that of the tincture, f3j. The extract may be given in doses of *gr.* iij—*gr.* v.

An invaluable confection for the cure of *piles* and *fistula* is made by incorporating well together, one part each, of the fine powder of piper nigrum, rad inula helaneum, rad glyceriza, two parts of white sugar and honey, and three parts of fennel seeds. The dry articles are first well mixed, and then incorporated with the honey.

PIPER LONGUM.—The Fruit.

SYNONYMES.—Pepe lungo, *Ital.;* Pimiento larga, *Span.;* Poivre longue, *Fr.;* Langer Pfeffer, *Ger.;* Pipula moola, *India;* Long Pepper, *Eng.*

BOTANY.—*Sex. Syst.* Diandria Trigynia—*Nat. Ord.* Piperaceæ.

Gen. Char.—Vide P. Nigrum.

Spec. Char.—*Stem* shrubby, climbing. *Leaves*, lower ones ovate-cordate, three to five-nerved; upper ones on short petioles, oblong, accuminate, oblique, slightly cordate at the base, obsoletely four to five nerved and veined, coriaceous, smooth, grayish-green beneath. *Peduncles* longer than the petiole, (Blume).* *Flowers* in dense, short, terminal, and nearly cylindrical spikes.

HISTORY AND HABITATION.—Piper Longum was early in use among the Hindoos, and is still extensively used throughout the East. It is a native of South-Eastern Asia, and grows abundantly in Bengal and Hindostan. The fruit, which is green when immature, becomes red when it ripens. It is gathered before it is mature, as it is then more pungent than when quite ripe.

DESCRIPTION.—There are several varieties of the long pepper, that have been described by travelers. In that produced in Bengal and Hindostan, not only the catkins or long berries are useful, but the thicker parts of the vine and root are also cut up and cured, and are equally pungent with the fruit. This variety has not quite so strong an odor as the common black pepper. The fruit of the long pepper that is indigenous to the Philippine and Sunday Islands, and is cultivated in Java and Sumatra, is very aromatic and pungent, even more so than that of the P. nigrum. The catkins are of a grayish-brown or a pale cinnamon color, thick and terete. There are also other varieties named, as the *P. chapa*, (Hunter), *P. sylvesticum*, (Roxburgh), but which, perhaps, are identical with the two latter.

COMPOSITION.—Vide P. nigrum.

PHYSIOLOGICAL EFFECTS.—As might be inferred from the proximate identity in the specific character, as well as composition, of the long with the black pepper, the physiological

* Enum. Fl. Javæ, p. 70.

effects are very analagous. The permanency of the impression of the agent is somewhat dependant on the variety of the long pepper which is the subject of experiment—the Phillipine and Java pepper being the strongest.

Therapeutic Properties.—Piper longum is much esteemed throughout the East, particularly in Hindostan, as a stimulant and stomachic carminative. But it is still more extensively used for culinary purposes, in the character of a spice. In this country it has not been much introduced as a medicine or condiment. It may be given as a substitute for black pepper, in similar doses. It serves as an ingredient in several officinal preparations, as the *Pulvis Aromaticus*, of the Dub. and Lond. Pharmacopias, *Pulvis Creta Compositus*, of the same, and the *Tinctura Cinnamoni Composita*, of the Lond. and Ed. Pharmacopias.

PIPER CUBEBÆ.—The Fruit.

Synonymes.—Cubebe, *Ital.;* Kubeben. *Ger.;* Cubebas, *Span.;* Cubebe, *Fr.;* Kebabeh, *Arab.;* Kubob-chini, *Hindoo.;* Cubeb, *Eng.*

Botany.—*Sex. Syst.* Diandria Trigynia.—*Nat. Ord.* Piperaceæ.

Gen. Char.—Vide P. Nigrum.

Spec. Char.—*Stem* a perennial, climbing, terete, jointed, smooth, flexuous vine. *Leaves* petiolate, ob-ovate, entire, acuminate, rounded or oblique, cordate at the base, nerved, coriaceous, smooth. *Peduncles* almost equal to the petiole. *Berries* with elongated pedicels. (*Blume.*)*

History and Habitation.—"It is uncertain when the Cubebs of our shops were first introduced into medicine, or who first alludes to them. There does not appear to be any foundation for the opinion, that the ancient Greeks were acquainted with them. Many, indeed, pretend that the Carpesion (καρπησιον) of Galen is our Cubeb, and that the *round pepper* of Theophrastus, the pepper of Hippocrates, were all names for them; but this is a conjecture founded on a very bad basis. The Arabians are at the head of these blunders. Serapion has translated all that Galen says of carpesion into

* Enum. Flor. Javæ. p. 70.

his chapter of Cubebs, and attributed all its virtues to it, and has even added every thing to the account that Dioscorides has left us of the *Ruscus*. Avicenna is also in the same error, and calls the carpesium *Cubeb;* and from these authors Actuaris and the other Greeks, have collected their accounts. It is plain from all this, that either the carpesium of the Greeks, and the cubeb of the Arabians, are the same thing, or else that the Arabians have been guilty of confounding different things in a strange manner together. If the latter be the case, there is no judging of any thing from what they say; and if the former, it is very evident that our cubebs are not the same with theirs—that is, with the carpesium of Galen; for he expressly assures us that this was not a fruit or seed, but, as he tells us, a kind of slender woody twig, resembling in smell and virtues the root of the valerian. Nothing is more evident, than that the carpesium, therefore, was either a fibrous root, or the small twigs and branches of a climbing plant, [the vine or root of the piper longum of the Hindoos?] not a round small fruit. If the Arabians, therefore, were acquainted with our cubebs at all, it appears that, not knowing what the carpesium and ruscus were, they ignorantly attributed the virtues, ascribed by the Greeks to those medicines, to these fruits." (Pereira.)*

The native countries of this species of pepper are Java, Penang, and some parts of Africa. It is a wild plant growing in the woods, and does not appear to be cultivated. "The female plant is often distinguishable from the male, by habit and the form of the leaf, but always by the catkins being thicker, and presenting, at maturity, an almost clustered appearance."

It is uncertain whether the cubebs of commerce are the products of a single species of the pepper genus. Indeed, it has been affirmed by Blume, that none of the fruit of the officinal, or p. cubeba, although of good quality, are ever sent to Europe, but that the *cubeba cania*, another species, which is more pungent, and has a smaller and shorter-stalked berry, and a distinct anise flavor, furnishes the most of the drug of commerce. Dr. Lindly, however, observes that he cannot

* Mate. Med. vol. ii, p. 209.

perceive any difference in the taste of the dried fruit of the former (p. cubeba,) and the cubebs of the shops. Griffith* states that "cubebs are also furnished by *C. bourboniensis* of the Isle of Bourbon, and which Fee referred to P. candatum, but which is a Brazilian species. The cubebs from the Cape of Good Hope, according to Miguel, are from *C. capensis*, and those from Guinea, from *C. clusii;* this latter is probably *piper of zelii*, which is stated by Smith in Rees' Cyclopedia, and by Nees and others, to furnish Guinea cubebs, and which Lindly says is very different from the above (*piper cubeba*,) and the quality of whose fruit is still to be ascertained. Miguel, in addition, believes that the cubebs of commerce are also in part from *C. sumatrana*, *C. nessii*, and *C. wallichii*.

It is very probable that the drug brought to us is not produced by one species, for, besides the opinion of the gentlemen above named, the evidence afforded on this point by the variety of effects, reported on its physiological and therapeutic action, goes far in its support.

Description.—The berries of the piper cubeba, which are the medical portion, are spherical, about the size of a pea, of a grayish-brown color, and have a stalk attached, about two or three lines in length. They resemble the p. nigrum fruit, only that they are somewhat lighter colored, and of a little larger size. The cortical portion of the berry, which, in the recent state, forms the fleshy part, appears to sustain a smaller proportion to the remainder, than the same part of the fruit of the p. nigrum does to its other portions. Within it, is a hard, spherical, whitish, oily seed. The taste of cubebs is acrid, or pungent, like the other peppers, and the odor is camphorous and peculiar.

* Med. Bot. p. 568.

ANALYSIS.—The constituents of cubebs, according to Vauquelin and Monheim, are as follows:

VAUQUELIN'S ANALYSIS.	MONHEIM'S ANALYSIS.	
1. Volatile oil, nearly solid.	1. A green volatile oil,	2·5
2. Resin, like that of copaiva.	2. A yellow volatile oil,	1·0
3. Another colored resin.	3. Cubebin,	4·5
4. A colored gummy matter.	4. Balsamic resin,	1.5
5. Extractive.	5. Wax,	3·0
6. Saline matter.	6. Chloride of sodium,	1·0
	7. Extractive,	6·0
	8. Lignin,	65·0
	Loss,	15·5
CUBEBS	CUBEBS,	100.0

PHYSIOLOGICAL EFFECTS.—The effects of cubebs, on the healthy system, are very analogous to those of black pepper, only that they are more mild; or, in other words, cubebs are not so active as a stimulant as is the black pepper. But while cubebs are less active as a general stimulant, their specific action is much more marked. They seem to have an obvious tendency to influence the kidneys and urino-genital organs. Given in full doses, they often produce active diuresis, and communicate their smell, or odor, to the urine, as well as deepen its color. Some have considered cubebs an acro-narcotic poison, and have reported effects of this character. These reports have, however, not been satisfactorily confirmed; and what is more, equally as much has been said, in this way, against that species (P. nigrum), of this genus, which has been so long used in this country as a condiment, without any apparent unhappy effects; and the cubebs, likewise, themselves, have been, and are still, in very extensive use as a spice and condiment throughout the East; and we have never heard of any deleterious effects from such use. It is not denied, however, that there may be some species of this genus which may act in this way, when taken in large portions. The *Micropiper methysticum*, of the South Sea islands, has narcotic properties. Dr. Griffith says, that when the bruised fresh root is macerated in water, it forms an intoxicating drink, which is in universal use among the inhabitants of the Pacific Archipelago.*

* The inhabitants of these islands consider this article a cure for syphilis. They drink it in quantities sufficient to produce intoxication, after which the

Therapeutic Properties.—Cubebs are stimulant, carminative, stomachic, and occasionally diuretic. They, as already stated, are much used in the East as a stimulating spice, as well as a medicine. As a general stimulant, they are very analogous to black pepper, for which they may be substituted. Their chief application has, however, been confined, of late, especially in this country, to the treatment of affections of the urino-genital organs. As a remedy in gonorrhœa, the medicine has gained a high reputation. When given in large doses, in the onset of the disease, the discharge will usually soon cease, without the appearance of any other unpleasant symptoms; although some have stated, but perhaps without due investigation, that they have observed in the medicine a tendency to produce swelling of the testes. Dr. Pereira, of London, says, that he has never observed this affection to be more frequent after the use of cubebs, than when they were not employed; and Dr. Broughton states, that he gave them to fifty patients, and in forty-five they proved successful. Of these, he remarks, that only two had swelled testicles.

The control this medicine has over inflammation of mucus surfaces is not confined to gonorrhœa, but it seems almost equally efficient in leucorrhœa, and gleet. It is also recommended by Sir B. Brodie, in abscess of the prostate gland. Pereira recommends it in bronchial discharges. Their application, in cases of gastric derangements, dependant on atony and relaxation of the organ, need scarcely be mentioned.

The Indians macerate cubebs in wine, it is said, and take them to excite sexual feelings. The dose of the powder is ten grains to three drachms.

Pharmaceutic Preparations. OLEUM CUBEBA; *Oil of Cubebs.* This is procured by distilling the coarsely powdered berries with water, when they will yield about fifteen per cent. of a clear volatile oil, which is lighter than water, and seems to possess all the valuable properties of the fruit itself. It is

patient breaks out with a copious sweat, which they promote till the cure is effected. M. Lawson remarks, that it is curious, that in so many countries, which have no communication with each other, this species of piperaceæ is used as a remedy for venerial affections.

composed of carbon and hydrogen, in the same proportion as in the oil of turpentine; its formula is C^{15}. H^{12}. On keeping, deposits of camphorous crystals are formed, whose primary form is the rhombic octohedron. They possess the same odor of the cubeb, as well as its medical properties. The phenomena of crystallization are here dependant on the absorption of oxygen to produce, with the carbon, the water of crystallization.

Oil of Cubebs is an excellent and very convenient substitute for the powder. The dose, in the commencement of its use, is from ten to twelve drops, to be gradually increased as long as agreeable with the stomach. It has been given, without any obviously bad effects, in quantities as large as a fluid drachm. It may be given in mucilage, or dropped on sugar. But the most common form of its exhibition in cases of gonorrhœa, is in connection with copaiva.

EXTRACTUM CUBEBA OLEIO RESINA: *Oleo-resinous extract of Cubebs.*—This is made by digesting ʒiij of the coarsely powdered berries, in Oj of Alcohol, for six days in the sun, and then decanting carefully, pressing the dregs, and filtering the products, and then evaporating the whole to the proper consistence. The spirit may be saved by means of a retort.

This extract possesses most of the strength of the powder, in a much smaller and more convenient form. The dose is from five to ten grains.

TINCTURA CUBEBA; *Tincture of Cubebs.* ℞. Take proof spirits Oij, coarsely powdered Cubebs ʒv. Macerate fourteen days and filter. The dose is ʒij three times a day, or more. Its application is in all cases in which the powder is indicated.

CARYOPHYLUS.—The Unexpanded Flowers.

Synonymes.—*Καρυοφυλλον, Greek;* Kerunfel, *Arab;* Gewurznelken, *Ger.*; Garofani, *Ital.*; Girofle Clous de Girofles, *Fr.*; Clavos de espicia, *Span.;* Cravo da India, *Portuguese*; Kruidnagel, *Dutch*; Cloves, *Eng.*

History.—We have but little account of the early history of our Clove. Paulus Ægineta and Myrepsius, however, mention it. It is thought by some, that as this is a native only of a few of the East India Isles, the Greeks and Romans probably did not find it very early. But although it is supposed by Royle, that they were not much acquainted with native plants east of the Bay of Bengal, yet it is certain that there are at least some articles that are peculiar to the most

eastern parts of Asia and the East Indies, with which they were well acquainted at a very early day.

The Clove tree is a native of the Moluccas, where it grew in considerable abundance before their conquest by the Dutch, who, from motives of monopoly, had them destroyed, except those on a few islands over which they held exclusive control.

It is stated, that just before the Portuguese took possession of Amboyna, the seeds of the tree were secretly carried to Amboyna, Ceram, &c., from Machian, and in fifty or sixty years, these islands were covered with young plants. On the conquest of these places by the Dutch, they extirpated them, with the exception of those in Amboyna, Ternate, and two or three other neighboring islands, in order that the product might not be too plentiful. In 1769, they ordered that the number of trees should not exceed 500,000, and a few years afterwards, one-tenth of these were ordered to be destroyed. "Notwithstanding, however, the jealous vigilance of the Dutch, a French governor of the Isle of France and of Bourbon, named Poivre, succeeded, in the year 1770, in obtaining plants from the Moluccas, and introducing them into the colonies under his control. Five years afterwards, the clove tree was introduced into Cayenne and the West Indies; in 1803, into the Island of Sumatra; and in 1818, into Zanzibar. It is now cultivated largely in these and other places; and commerce has ceased to depend on the Moluccas for supplies of this valuable spice."

Botany.—*Sex. Syst.* Icosandria Monogynia.—*Nat. Ord.* Myrtaceæ.

Gen. Char.—Tube of the *calyx* cylindrical; limb four-parted. *Petals* four, adhering by their points in a sort of calyptra. *Stamens* distinct, arranged in four parcels, inserted in a quadrangular, fleshy hollow, near the teeth of the calyx. *Ovary* two-celled, each cell containing twenty ovules. *Berry*, when ripe, one or two-celled, one or two-seeded. *Seeds* cylindrical or semi-ovate; *cotyledons* thick, fleshy, concave externally, sinuous in various ways internally; *radicle* arising from the centre of the cotyledons, straight, spurious, hidden by the cotyledons.—*Trees. Leaves* opposite, coriaceous, dotted. *Cymes*

terminal, or in the forking of the branches; somewhat corymbose.—(*De Cand.*)

Spec. Char.—A most beautiful tree, with a trunk from fifteen to thirty feet high. "It has a pyramidal form, is always green, and is adorned throughout the year with a succession of beautiful rosy flowers. The stem is of hard wood, and covered with a smooth, grayish bark. The leaves are about four inches in length by two in breadth, obovate-oblong, accuminate at both ends, entire, sinuated, with many parallel veins on each side of the midrib, supported on long footstalks, and opposite to each other upon the branches. They have a firm consistence, a shining green color, and when bruised, are highly fragrant. The flowers are disposed in terminal corymbose panicles, and exhale a strong, penetrating, and grateful odor."

Description.—Cloves consist of the unexpanded flowers of the clove tree, which are collected with the hands, or beaten down with reeds, in their proper season, and then quickly dried. Thus, when the commodity is not much handled, the long calyx contains the undeveloped corolla within its projecting points in a spherical form. The clove is something more than half an inch in length, and bears the fancied resemblance of a nail, and hence its name, from the French, *clou* (*a nail.*) The best cloves are of a very dark brown color, perfect in their parts, not much shriveled, of a penetrating odor, exceedingly pungent taste, and which, when bruised, exude a small quantity of oil. Those brought from the East Indies, are usually the most esteemed.

Impurities.—Cloves are never adulterated with other substances, but a fraud is sometimes practiced by distilling their oil, and then dried and put into market. Cloves thus treated, are of a paler color, weaker flavor, and exude no oil on being pressed.

Analysis.—"Trommsdorff obtained from 1000 parts of cloves 180 of *volatile oil*, 170 of a *peculiar tannin*, 130 of *gum*, 60 of *resin*, 280 of *vegetable fibre*, and 180 of *water*. M. Lodibert afterwards discovered a *fixed oil*, aromatic, and of a green color, and a *white resinous substance*, which crystallizes in fasciculi, composed of very fine diverging silky needles,

without taste or smell, soluble in ether and boiling alcohol, and exhibiting no alkaline reaction. This substance, called by M. Bonastre, *caryophylin*, was found in the cloves of the Moluccas, of Bourbon, and of Barbadoes, but not in those of Cayenne. Berzelius considers it a stearoptene, and probably identical with that deposited by the oil of cloves when long kept. M. Dumas has discovered another crystalline principle, which forms in water distilled from cloves, and is gradually deposited. Like caryophylin, it is soluble in alcohol and ether, but differs from that substance in assuming a red color when touched with nitric acid. M. Bonastre proposes for it the name of *eugenin*. (*Jour. de Pharm.*, xx, 565). Water extracts the odor of cloves with comparatively little of their taste. All their sensible properties are imparted to alcohol, and the tincture, when evaporated, leaves an excessively fiery extract, which becomes insipid when deprived of the oil by distillation with water, while the oil which comes over is mild. Hence, it has been inferred that the pungency of this aromatic depends upon a union of the essential oil with the resin."

Physiological Effects.—The physiological effects of cloves are very analagous to those of ginger, and differ little from the same of capsicum, only that they are not so powerful.

Therapeutic Properties and Use.—Like its physiological effects, the therapeutic properties of this article also bear a similarity with the same of capsicum and zingiber, and may be used in the fulfilment of the same indications. Its aromatic properties, in many instances, reccommend it in preference to either, as an ingredient of compounds or an accompaniment of other articles, the effects of which it is designed to modify or promote. The dose of the powdered cloves is from *gr.* v to *gr.* x, but may, with impunity, be taken in much larger quanties.

Pharmaceutic Praparations.—INFUSUM CARYOPHYLI; *Clove Tea.* ℞ Cloves, ʒij; Boiling Water, Oj. Macerate for two hours in a covered vessel; strain, and sweeten with white sugar. *Dose*, f ʒj to f ʒij.

Action. Use.—Excellent in flatulent cholic, weak stom-

ach, gout, dyspepsia, and, in general, such cases in which an active stimulant is required.

OLEUM CARYOPHYLLI: *Oil of Cloves.* This is prepared by distillation with water, and consists of two varieties—one heavier, the other lighter than water: both possessing all the active properties, taste, and peculiar odor of cloves. These two varieties of oil are usually mixed together, and form the oil kept in the drug-stores. When fresh, it is of a light yellow color, but when old, becomes brownish or of a brandy color. It is exceedingly pungent, considerably volatile, and will thicken by evaporation. It is soluble in alcohol, ether, concentrated acetic acid and the fixed oils. Its composition, according to Ettling, is *Carbon* 74·6279, *Hydrogen* 8·1531 and *Oxygen* 17·2189. Cloves abound in oil, and will yield four ounces to the pound, by repeated cohobations.

Action. Use.—Stimulating and rubefacient. Internally, it may be used for the same purposes for which the cloves are prescribed. It is considerably used in the formation of cathartic pills, to prevent their griping, and promote their operation. Put into a carious tooth it will often check it from aching. But by far the most important use of the oil of cloves is as a rubefacient; it enters into various liniments and bathing preparations. The *dose* is from four to six drops on sugar.

TINCTURA CARYOPHYLLI: *Tincture of Cloves.* ℞ Cloves, in coarse powder, ʒij; Alcohol, Oj. Macerate three days, and filter. *Dose*, ♏x to fʒj. Useful in sore throat, colds, pain in the breast and stomach, flatulence, colic, etc.

ESSENTIA CARYOPHYLLI: *Essence of Cloves.* ℞ Oil of Cloves, ʒij; Alcohol, Oj. Shake together. The dose and use of this is the same as those of the tincture.

CINNAMOMUM.

SYNONYMES.—*Κιννάμωμον, Greek;* Canella, *Ital, Port.;* Caneel, *Dutch, Dan.;* Canelle de Ceylon, *Fr.;* Kanahl Zemmet, *Ger.;* Cynamom, *Pol.;* Canela, *Span.;* Koriza, *Russ.;* Cinnamon, *Eng.*

HISTORY.—Cinnamon was known to the ancients. The Kinnemon of Exodus, xxx: 23, is our cinnamon. According to Herodotus, it seems that the Greeks learned the name κιννάμωμον from the Phœnicians.

Botany.—*Sex. Syst.* Enneandria Monogynia.—*Nat. Ord.* Lauraceæ.

Gen. Char.—*Flowers* hermaphrodite or polygamous, panicled or fascicled, naked. *Calyx* six-cleft, with the limb deciduous. *Fertile stamens* nine, in three rows; the inner three with two sessile glands at the base: *anthers* four-celled, the three inner turned outwards. Three capitate *abortive stamens* next the centre. *Fruit* seated in a cup-like calyx. *Leaves* ribbed. *Leaf-buds* not scaly.—*Lindley.*

Spec. Char.—There are a number of species which yield the cinnamon of commerce, the most important are the following:

1. C. Zeylanicum or *true cinnamon tree.* This is a native of the Island of Ceylon. Royle gives the following description from Nees, of this species: "The cinnamon tree of Ceylon is about thirty feet high. The root has the odor of cinnamon as well as that of camphor, and yields this principle upon distillation. The *twigs* are somewhat four-cornered, smooth, shining, and free from any downiness. The *leaves* are liable to variation, ovate or ovate-oblong, terminating in an obtuse point, triple or three-nerved, that is, there are three principle nerves, which sometimes remain separate to the very base, but usually approach each other a little above the base, but without uniting; there are moreover in many cases, two shorter nerves external to these. *Leaves* reticulated on the under side, smooth, shining, the uppermost the smallest, with a good deal of the taste of cloves. The leaf-buds are naked. *Pannicles* terminal and axilary. *Flowers* usually bi-sexual, rather silky. Perianth six-cleft, segments oblong, the upper part deciduous. Fertile stamens nine in three rows, the three inner with two sessile glands at the base. *Anthers* ovate, four-celled, the three interior opening outwards Three abortive capitate *stamens* (staminodia) in the interior of all. *Ovary* one-celled, with a single ovule. *Stigma* disk-like. *Drupe* (or berry) one-seeded, seated in the cup-like, six-lobed base of the perianth. *Seed* large, with large oily cotyledons, embryo above. Native of Ceylon, now cultivated elsewhere, as on the Malabar coast, in Java, Cayenne, &c."

2. C. Aromaticum.—This species affords a tree of about the same size and description as the former. The leaves however "differ" somewhat "in being oblong-lanceolate and pointed, and in exhibiting under the microscope a very fine down upon the under surface. The footstalks and extreme twigs are also downy," and the flowers are disposed in narrow silky pannicles. The tree grows in China Sumatra, and probably elsewere in the East of Asia.

Description.—The cinnamon of commerce consists of several varieties, depending on the species of the plant from which it is obtained. These varieties are usually and justly considered separately.

α. Ceylon or True Cinnamon: Cinnamomum Zelenicum.—This occurs in long cylindrical fasciculi, consisting of numerous quills, the

larger enveloping the smaller, which are about three feet long. They are of a light brownish-yellow color, smooth, nearly as thin as paper, somewhat pliable or tough, breaking with a splintery fracture. Its odor is exceedingly pleasant, and its taste sweet, aromatic, pungent, and slightly astringent. It yields but little oil, but what it *does* yield, is of a very superior quality, having an exceedingly fragrant and grateful taste.

This variety of cinnamon bears a very high price, and is hence not generally kept in the drug stores of this country. It pays a duty of three shillings per pound. It is known by inspection and tasting. It may be observed, however, that this variety of cinnamon also admits of different sorts, and is hence distinguished in the London market into *firsts*, *seconds* and *thirds*, which are known by the thickness of the bark, flavor and taste. The more inferior sorts are thicker, more pungent, darker colored, and somewhat bitter to the taste. Pereira says that Ceylon cinnamon may be known by its quills being cut obliquely at the bottom, while the other kinds are cut transversely.

β. Cassia, or Chinese Cinnamon.—This article, which is also sometimes called *Cassia Lignea*, supplies our market under the name of Cinnamon, when brought from any other port except Canton or other Chinese ports. When imported from the latter places it enters the custom house as cassia. This is obviously produced by a different species from that yielding the true cinnamon. It is supposed to be the exclusive product of the *C. Aromaticum* already described.

As found in our market, cassia usually is in single tubes of various sizes, from an eighth to a full inch in diameter. The tubes are very rarely more than double, and are thus distinguished from the true cinnamon. Sometimes the bark is rolled upon itself in several folds, but again it is not even completely quiled, It is of a darker red color than the true Ceylon cinnamon ; and is also thicker, rougher, denser, and breaks with a much shorter fracture. This, although its taste is somewhat similar to the other, is much less sweet, and less aromatic and grateful. But, on the other hand, it is much more pungent and permanently stimulant.

This is the kind of cinnamon kept in our shops or drug stores, and is much cheaper than the Ceylon cinnamon. It is not much inferior to the other as a medicine, being stronger and more permanent in its effects. This is the variety of cinnamon that furnishes much of the cinnamon oil of our shops.

Besides these three varieties, there are others, of less importance, as 1. The *Tellicherry* or *Bombay* cinnamon, which, however, is produced in small quantities, and perhaps seldom imported to this country; 2. The *Madras* or *Malabar*, which is of like character with the *cassia;* 3. The *Java*, which is said to be equal in quality to the *Ceylon;* 4. The *Cayenne*, which is not much known as yet.

Production.—In Ceylon, Java, and other places, the cinnamon tree is cultivated in what are called *cinnamon gardens*. The principal gardens on the former island lie in the neighborhood of Columbo (Percival.) At peeling time, the *Choliahs*, or *peelers*, select proper trees, and cut off such branches as are three years old, and which are straight and smooth. These branches are usually from half an inch to two inches in diameter. They are peeled by making longitudinal incisions through the bark, only two, opposite each other, on the smaller ones, and three or four on the larger. The bark is then raised by means of a peeling-knife. When it does not readily peel off, this is facilitated by friction, with the knife-handle. In twenty-four hours after, the outer bark is scraped off, and the quills, of the Ceylon cinnamon, are introduced within one another, thus forming a congeries of quills of considerable magnitude. After the bark is completely dried, it is tied up in bundles, with pieces of split bamboo twigs.

Commerce.—The amount of cinnamon imported is very astonishing. It seems, according to Dr. Wood, that the treasury returns, from the year 1820 to 1829, show an average annual import of six hundred and fifty-two thousand pounds from China, twelve thousand pounds from England, nine thousand pounds from the British West Indies, three thousand pounds from the West Indies, and small quantities from other ports, with an addition of twelve thousand nine hundred and thirty-eight pounds brought one year from the Philippines.

Analysis.—According to Bucholtz, 100 parts of *cassia lignea* contain 6·8 of *volatile oil*, 4·0 of *resin*, 14·6 of *gummy extractive*, 64·3 of *lignin* and *bassorin*, and 16·3 of *water*, including *loss*. Vauquelin made a comparative analysis of the two cinnamons of Ceylon and Cayenne, and found the following to be constituents of both, viz: *Volatile oil*, *tannin*, *mucilage*, *coloring matter*, *resin*, *an acrid*, and *ligneous fibre*. For the composition of the volatile oil, see *Oleum Cinnamomum*. Sesquichloride of iron precipitates the tannin of the infusion of cinnamon in the form of the *tanate of iron*, which is of a greenish floculent consistence. The solution of gela-

tine also causes a precipitation of the tannin, and so perhaps will the acetate of lead.

Physiological Effects.—The physiological effects of true cinnamon well serve as an example of those of the spices generally. On the mouth, it evinces a pungent, stimulating effect, more acrid, but not so powerful and permanent, as that of capsicum. In the stomach, it is warming and diffusive, producing a gentle glow over the body, and an acceleration of the pulse. The general functions of the system are promoted, but more particularly those of the digestive apparatus. Externally, it is actively rubefacient.

Therapeutic Properties and Use.—Cinnamon is a valuable aromatic stimulant, which, from its very agreeable taste, is preferable to most other articles of this class. Capsicum, zingiber, and perhaps a few others, only are more valuable, because they are more permanent in their effects. Cinnamon is serviceable in all cases in which a pure stimulant is indicated, as in cases of feeble vital re-action. Low and putrid fevers, palsy, choleras, rheumatic and gouty affections, &c., require medicines of this class. Cinnamon is also carminative, and will relieve pain in the stomach and bowels. It is valuable as an adjuvant to other stimulants, and which are less pleasant to the taste. The dose of the powder is *gr.* x—*gr.* xxx.

Pharmaceutic Preparations.—OLEUM CINNAMOMI.—*Oil of Cinnamon.*—The oil of cinnamon, like the bark, consists of different varieties; the chief of these, however, are those of the Ceylon cinnamon and the cassia, or Chinese cinnamon. Some writers have treated these under different heads, (which applies also to the bark,) but as their properties are so very nearly alike, the author cannot see the propriety of this plan.

Oil of cinnamon is prepared from the inferior sorts of cinnamon—such as will not pay exportation, and such as have been damaged in curing. It is obtained by distillation with water. The bark, in the first place, is coarsely ground, and then macerated for a few days in sea-water, before distillation. The product is a light and a heavy oil, the former of which, separates on the top of the water; the latter gradually precipitates, for ten or twelve days, to the bottom of the receiver. The water, however, still retains a little of the oil,

and makes a saving to use it in subsequent distillations. Eighty pounds of the bark, when fresh, yield about two and a half ounces of the lighter oil, and five or six of the heavy. When the bark is old it yields less, by about one eighth or tenth.

Fresh oil of cinnamon is of a light yellow color, but becomes deeper or reddish as it gets older. It has all the flavor, odor, and taste of the bark, and possesses all its medical virtues, except its slight astringent property. It is exceedingly pungent and acrid to the taste, more so than capsicum.

Oil of Cassia, or Chinese cinnamon, is still more pungent than that of the Ceylon cinnamon, and its taste is also more lasting; but it, like the bark, is less spicy and aromatic, or fragrant. It is isomeric with the true cinnamon oil.

Cinnamon is composed of $C^{18} H^{7} O^{2}$–|–H, and is regarded by chemists as a Hydruret of Cinnamyle. When exposed to the air, it absorbs oxygen, and thus some cinnamic acid is formed, as well as some resin.

Use.—It is a very powerful and active stimulant, serviceable in all cases in which the bark is indicated. The dose is from ♏j—♏v. It is one of the most valuable rubefacients, and makes an ingredient of many rubefacient preparations.

AQUA CINNAMOMI: *Cinnamon Water.* ℞ Bruised Cinnamon lb. jss (℥xviij. *Ed.* ℔j *Dub.*) or Oil of Cinnamon ℥ij *Lond.* (℥iij *Dub.*) Proof Spirit f℥vij, *Lond.* (Rectified f℥iij *Ed.*) Aq. Cong. ij; (q. s. to prevent empyreuma) macerate for one day, and distil off Cong. j.

℞. Oil Cinnamon f℥ss.; Carbonate of Magnesia ℥ss.; Distilled Water Oij. U. S.

Action. Use.—Cinnamon Water is chiefly used as a vehicle for other less pleasant medicines. It is, however, carminative, and somewhat stimulant. That prepared by means of sugar or magnesia will sometimes spoil by keeping.

SPIRITUS CINNAMOMI. *Spirit of Cinnamon.* ℞. Oil of Cinnamon ℥ij; Proof Spirit Cong. j; Water, Oj. Mix and distil with a slow fire, one gallon.

Action. Use.—A stimulant. Dose f℥j to f℥iv.

TINCTURÆ CINNAMOMI. *Tincture of Cinnamon.* ℞. Cinnamon in coarse powder ℥iijss.; Proof Spirit, Oij; Macerate twelve or fourteen days, and filter, or proceed by percolation.

Action. Use.—A stimulant more powerful than the spirit. *Dose*, f℥j to f℥iij.

TINCTURA CINNAMOMI COMPOSITA. *Compound Tincture of Cinnamon.* ℞. Bruised Cinnamon, (in fine powder if percolation be followed,) ℥j; Cardamom in coarse powder, ℥ss.; Long pepper (black will do) powdered ℥ijss.; Ginger, ℥ijss.; Proof Spirit Oij; Macerate for fourteen days and strain. Percolation affords the best means of preparing this tincture.

Use. An excellent aromatic cordial. *Dose*, from f℥j to f℥iij.

ESSENTIA CINNAMOMI: *Essence of Cinnamon.* ℞. Dissolve ℥ij Oil of Cinnamon in Oj Alcohol.

PULVIS CINNAMOMI AROMATICUS: *Aromatic Cinnamon Powder.* ℞. Cinnamon, ℥ii; Cardamom, ℥jss.; Ginger, ℥j.; Long Pepper, (black will do,) ℥ss.; Pulverize separately and mix.

Action. Use.—Carminative, and aromatic. *Dose gr.* x to *gr.* xxx.

CONFECTIO AROMATICA: *Aromatic Confection.* ℞. Cinnamon, Nutmegs, each ℥ij; Cloves ℥j; Cardamom Seeds ℥ss.; Saffron ℥ij; Prepared Chalk ℥xvi; White Sugar ℔ ij. Pulverize and mix. This mixture may either be kept in powder and made into a pulp as used, or it may at once be made up by working in ℔j of Aqua. The advantage of making it into a pulp, as it is wanted, is that in this way fermentation is avoided, which sometimes takes place when it is all made up at a time. The Endinburgh College orders the *Aromatic powder* to be made up with syrup of Orange Peel, and leaves out the Chalk. The U. S. Pharmacopia orders the powder to be made up with Syrup of Orange Peel and Clarified Honey.

Action. Use.—Aromatic confection is slightly stimulant, carminative, and antacid, when not containing acids. *Dose*, *gr.* x to ℥j.

EMPLASTRUM AROMATICUM: *Aromatic Plaster.* ℞. Cinnamon Bark, powdered, ℥vj; Frankincense, (*Thus.*,) ℥iij; Essential oils of Alspice and Lemons, of each, ℥ij; Yellow Wax, ℥ss.; melt the Frankincense and Wax together, and strain; when they are beginning to thicken by cooling, mix in the powder of Cinnamon, rubbed up with the oils, and keep close. When spread, it should be exposed to heat as little as possible, to prevent the evaporation of the essential oils.

Action. Use.—This forms an excellent application to the epigastrum in dyspepsia and gastric irritability. It allays pain and nausea, and expels flatus.

MYRISTICA.—The Fruit.

Synonymes.—Noix Muscade, *Fr.*; Muskatnuss, *Ger.*; Noce Moscata, *Ital.*; Nuez Moscada, *Span.*; Nutmegs, *Eng.*

Botany. — *Sex. Syst.* Diœcia Monodelphia. — *Nat. Ord.* Myristicaceæ.

Gen. Char.—Male: *Calyx* none. *Corolla* bell-shaped, trifid. *Filament* columnar. *Anthers* six or ten, united. Female: *Calyx* none. *Corolla* bell-shaped, trifid, decidous. *Style* none. *Stigmas* two. *Drupe* with a nut involved in an arillus, with one seed. (*Willdeno*).

Spec. Char.—"A tree twenty to thirty feet high. *Leaves* aromatic, oblong, accuminate, smooth, simply nerved. *Flowers* pale yellow, in axilary racemes. *Fruit* pyriform, about the size of a peach, smooth, dihiscing by two nearly equal longitudinal valves, and exposing the fleshy, scarlet arillus (*mace*), closely embracing the shell, within which is contained the kernel (*the nutmeg*)." This latter is of about the size of a plum, or about eight or ten lines in diameter, rather oblong, or oval, in shape. Their taste is aromatic, spicy, and oily. *Mace*, or the investing membrane of the nutmeg, in shape is flat, membranous, irregularly split; is soft, or flexible, of a reddish, or orange-yellow, color, and has the taste and smell of nutmegs.

Nutmegs abound in a concrete oil, which may be obtained by heat and pressure. It is solid when cool. This oil is usually called *oil of mace*.

Mr. Bonastre, it is said, on analyzing nutmegs, obtained, from 800 parts, 120 parts of a *white, insoluble, oily substance* (*stearine*); 38 of a *colored soluble oil* (*olein*); 30 of *volatile oil;* 4 of *acid*, 12 of *fecula*, 6 of *gum*, 270 of *lignin;* 20 parts *lost*. The volatile oil of nutmegs is, like most essential oils, obtained by distillation with water. Alcohol and ether take up the active, or medical properties, of either mace or nutmegs.

Medical Properties and Use.—Nutmegs and mace have both been used as aromatic stimulants and tonics; but are not much esteemed by most of the new school practitioners, as they are generally regarded as being somewhat narcotic in their effects. The author has never used them under cir-

cumstances which would admit of judging clearly on this point. But as the new views of medicine will not admit of narcotics, it is certain, that as soon as it is once clearly established, that the drug is really narcotic in its effects, it will inevitably be rejected from the Materia Medica of this school. The dose of either mace or nutmeg is from *gr.* v—*gr.* xx of the powder.

CARDAMOMUM.—The Seed.

Synonymes.—Kardemomen, *Ger.*; Cardameme, *Fr.*; Cardamomo, *Ital., Span.*; Ebil, *Arab*; Kakelah seghar, *Persh.*; Capalaga, *Malay*; Gujaratii elachi, *Hindoost.*; Cardamom, *Eng.*

History.—"Cardamons were probably the καρδαμωμον of the Greeks, as they are produced in the same tract as pepper, though it is difficult to prove the point. A great variety are known, and have been ably examined by Dr. Pereira in his Elements; but it is equally difficult to refer them to their respective plants. There is no doubt, however, that the officinal Cardamom is produced in Wynaad and Coorg, on the coast of Malabar, and by the plant so fully described and figured by Mr. White, and communicated by the Directors of the East India Company to the Linnean Society (v. Trans. x. p. 229), as well as by Dr. Roxburgh. (Fl. Indica, ed. Wall. i. p. 68). It was formed into a new genus, *Elettaria*, by Dr. Maton, where it is best retained until a re-examination of the family is made by a competent botanist."

Botany.—*Sex. Syst.* Monandria Monogynia.—*Nat. Ord.* Scitimineæ. (*Brown.*) Zingiberaceæ. *Lindley.*

Gen. Char.—*Corolla* with inferior border unilabiate. *Anther* double, naked. *Capsule* berried, three-celled. *Seeds* a few, or numerous, arilled.—(*Roxburgh, Asiat. Research.* vol. xi, p. 350.)

Spec. Char.—There are various species that contribute in furnishing the Cardamoms of commerce. The following is the description of the *Elettaria cardamomum*, which produces the true, or officinal, drug: "*Rhizoma* with numerous fleshy fibres. *Stems* from six to nine feet high. *Leaves* lanceolate, acuminate, pubescent above, silky beneath. *Scapes* or flowering racemes, from the base of the stem compoundly flexuose,

procumbent. Outer rimb of the *corolla* in three oblong lobes, inner a single lip. *Anther* of two distinct lobes. *Filament* with two transverse lobes at the base, emarginate, and simple at the summit. *Capsule* of three cells and three valves, with a central receptacle. *Seeds* rough tunnicated.

It has a tuberous horizontal *root*, beset with numerous fibres, and "sending up from eight to twenty erect, simple, smooth, green, and shining, perennial *stems*, which rise from six to twelve feet in height, and bear alternate and sheathing *leaves*. These are from nine inches to two feet long, from one to five inches broad, eliptical-lanceolate, pointed entire," with short footstalks and strong midribs. The scape proceeds from the base of the stem, and rests upon the ground, with the flowers disposed in the form of a pannicle.

DESCRIPTION.—A number of different varieties of cardamoms are found in market, among which the following are the most important:

α. ROUND CARDAMOM: (*Amomum cardamom.*)—This is a product of Sumatra, Java, and other East India Islands. The fruit is roundish, about the size of a cherry, rather ovate, with three convex sides, somewhat striated longitudinally. They have an aromatic camphorous smell.

β. JAVA CARDAMOM: (*Amomum maximum.*)—This variety of the fruit has received its name from the Island Java, but improperly, as it seems not to be produced by this alone. The capsules are oblong or oval-oblong, and sometimes ovate, from three-fourths of an inch to an inch and a half in length, and about eight lines broad, being usually flattish on one side and convex on the other. They have a feeble aromatic taste and smell.

γ. CEYLON CARDAMOM: (*Elettaria major.*)—This, which is variously called *wild cardamom*, *C. medium*, *C. majus*, *C. longum*, &c., is a lanceolate oblong capsule, acutely triangular, more or less curved, with flat and ribbed sides, about an inch and a half in length, and, perhaps, four or five lines in breadth. This variety has an aromatic but peculiar odor, and somewhat spicy flavor.

δ. MADAGASCAR CARDAMOM: (*Amomum Augustifolium.*)—The species producing this variety is a native of Madagascar, growing in marshy ground. The capsule is larger than any of the rest, ovate, pointed, flattened on one side, striated longitudinally, with a broad, circular umbilicus or spot at the bottom, surrounded with an elevated, notched and corrugated margin. It has an aromatic flavor analagous to that of the Malabar cardamom.

ε. GRAINS OF PARADISE: (*Amomum grana-paradisi.*) alias *malaguretta pepper*, *guinea grains.*—This consists of small seeds of a round or ovate form, angular, or cuneiform. They are minutely rough, white within, but brown without. When rubbed between the

fingers they emit a feebly aromatic odor, and to the taste they are exceedingly pungent and peppery.

θ. Lessor Cardamom: (*Elettaria Cardamomum.*)—This is the officinal cardamom. It is divided into three sorts, called the *shorts*, *short-longs*, and *long-longs*. The first of these is from three to six lines long, and from two to three broad, and somewhat more coarsely ribbed than the other sorts. This is the most esteemed. The second, or *short-longs* is from five to seven lines in length, and about the same breadth as the former. The *long-longs* has a seed from three-quarters of an inch to an inch in length, and of a width about equal to that of the other varieties. Both the latter varieties are sometimes somewhat accuminate and generally more pale in color than the shorts.

Analysis.—In 1834 Trommsdorff analyzed the small cardamom, and obtained the following results: *essential oil* 4·6, *fixed oil* 10·4, a *salt of potash*, (malate? *Percira*), combined with *a coloring matter* 2·5, *fecula* 3·0, *nitrogenous mucilage* with *phosphate of lime* 1·8, *yellow coloring matter* 04, and *woody fibre* 77·3.

Medical Properties and Use.—Cardamoms are among the most agreeable, and non-acrid, pleasant tasted, and sweet-flavored aromatic stimulants, and cordials. But they are most valuable, only as an adjunct to less pleasant and more powerful remedies. They are, hence, seldom used alone, but generally in combination with cathartics, stimulants, and tonics, to modify their tastes and effects, as well as favor their operation. When taken in substance the dose is from *gr.* v. to *gr.* xx.

BENZOIN ODORIFERUM.—The Bark and Berries.

Synonymes.—Laurus Benzoin, *Linn.*; Spice Bush, *Eng.*; Fever Bush, *Vul.*

Botany.—*Sex. Syst.* Icosandria; Enneandria, *Linn.*—*Nat. Ord.* Lauraceæ, *Linn.*

Gen. Char.—*Calyx* four to six-parted. *Corolla* none. *Nectaries* three. *Stamens* varying from three to fourteen, in two or three rows, inner series barren—often dioecious. *Fruit* succulent, seated on the permanent calyx.

Spec. Char.—An indigenous shrub, growing from four to ten feet in height, and delighting in moist, rich soil, or river bottoms. *Leaves* cuneo-obovate, entire, sub-pubescent beneath. *Flowers* in clustered umbels, appear before the leaves.

Berries oval, of a shining crimson color when ripe. All parts of the shrub have a spicy agreeable flavor, which is the strongest in the bark and berries.

Medical Properties and Use.—A very pleasant, spicy stimulant and tonic. Useful, in decoction, as a drink in fevers. It has been considered a specific for intermittents. The berries have been highly recommended as a stimulant in rheumatism. By distillation, the branches, bark, and berries yield essential oil containing all the stimulant virtues, but not the tonic. The *dose* of the latter is ℥x; that of the infusion f℥iij.

Order II.—VOLATILE STIMULANTS.

There is much uniformity in the therapeutic effects of those stimulants whose virtues are dependant upon an essential oil. They all acquire, also, about the same menstrua, and are, therefore, fully entitled to the character of a separate order.

The articles comprised in this order, although very serviceable in many varieties of disease, are not generally much relied upon in violent attacks, which require very potent and permanent stimulants.

The volatile stimulants are peculiarly indicated in many affections, both chronic and acute, particularly those that implicate the functions only, as in cases of dyspepsia, colic, hysteria, amenorrhœa, and many nervous derangements. But their effects are very transient, and when given as substitutes *for*, or auxiliaries *to* the more powerful stimulants, they must be given in frequent doses.

As has been remarked above, the virtues of these plants reside in an essential oil; this, therefore, is most commonly used alone, instead of the entire substance, as in other cases. This oil is obtained by distillation with water. Alcohol is the proper *menstruum*. But, while combined with gummy and extractive matters, as they exist in the plants, they will be taken up, to a considerable extent, by water, particularly when at an elevated temperature. This is illustrated in the solution of the essential oils in water by the interposition of sugar, etc.

CAMPHORA.

Synonymes.—Camphora Officinarum. (Nees); Canfora, *Ital.*; Kampher, *Ger.*; Camphre, *Fr.*; Kampher, *Danish*; Kamfer, *Dutch*; Alcanfor, *Portuguese*; Kamfora, *Polish*; Kanfora, *Russian*; Kanfor, or Alcanfor, *Span*; Kamfer, *Sweedish*; Kaphoor, *Arab*; Camphor, *Eng.*

Botany.—*Sex. Syst.* Enneandria Monogynia.—*Nat. Ord.* Lauraceæ.—(*Lindley.*)

Gen. Char.—*Flowers* hermaphrodite, pannicled, naked. *Calyx* six-cleft, papery, with a deciduous limb. *Fertile stamens* nine, in three rows, the inner with two, stalked, compressed glands at the base; *anthers* four-celled, three outer turned inward, the inner outward. Three *sterile stamens*, shaped like the first, placed in a whorl alternating with the stamens of the second row; three others stalked, with an ovate, glandular head. *Fruit* placed on the obconical base of the calyx.—(*Lindley.*)

Spec. Char.—*Leaves* triple-nerved, shining above, glandular in the axils of the veins. *Panniclcs* axillary and terminal, corymbose, naked. *Flowers* smooth on the outside.—(*Nees.*)

Young *branches* yellow and smooth. *Leaves* ever-green, oval, accuminate, attenuate at the base, bright green and shining above, paler beneath. *Petioles* from one inch to one and a half inches long. *Panniclcs* axillary and terminal, corymbose. *Flowers* small, yellowish-white. *Berry* round, blackish-red, size of a black currant. *Seed* solitary.—(*Percira.*)

The flowers and fruits of some of the species of the Laurus genus, present such striking differences in their structure, that botanists have been induced to make new arrangements of them; accordingly the camphor, cinnamon, and sassafras trees have been separated from the Laurels by Nees von Esenbeck, and made the examples of a distinct genus.

The Camphor tree is an ever-green, grows to a considerable size, is straight below and branched. All parts emit a camphorous odor when bruised. *Wood* white, fragrant; much used in China for making trunks, boxes, &c. *Branches* somewhat lax, smooth, with a greenish-bark. *Leaves* alternate, with long petioles, ovate-lanceolate, rather coriaceous, smooth, shining, and bright-green above, paler beneath, with a sunken

gland opening by a pore beneath, at the axils of the principal lateral veins. *Leaf-buds* scaly. *Perianth* six-cleft, with a deciduous limb. *Stamens*, fertile ones, nine in three rows, the three inner supported at the base with two stipulate compressed glands. *Anthers* four-celled, opening by as many ascending valves, the three interior looking outwards, the others opening inwards. Three sterile stamens subalternate with those of the second row, the three others stipulate, each with an ovate head. *Drupe* situated in the truncate cup-like base of the perianth.—(*Royle.*)

History and Preparation.—It is not certain when camphor was first known; we have no certain evidence that the ancient Greeks and Romans had a knowledge of it. Bauhin, Alston,* and others, however, state that Aetius speaks of it. Avicenna and Serapion mention it; and Simeon Seth, in the eleventh century, described it. The Arabians, perhaps, had the earliest knowledge of it.

The camphora officinarum is a native of Eastern Asia, and is found abundantly in China, Japan, and Cochin-China. It was introduced into Java from Japan, and is now cultivated there. Many of the Botanical Gardens of Europe contain specimens of it. The camphor is found in every part of the tree, even in the leaves and flowers. It exists in grains in the wood, and is obtained by chopping up the wood and heating the chips with water in iron boilers, to which an earthen head, containing straw, is attached. The camphor sublimes and condenses on the straw. As thus obtained, it is brought to Europe, where it is further sublimed and purified.

Although the camphora officinarum yields all the camphor of commerce, yet it is not the only species of this genus that yields it. It is thought that every individual species of the entire laurus genus yields camphor. It sometimes oozes from the bark of the root of the cinnamon tree, in the form of oily drops, which gradually concrete into white grains. These are called *caphura baros Indorum;* when it exudes in this way from the bark of the camphor tree, it is named *camphora rudis* (Parr.) Moreover, we find that the species of other genera produce it; as, for instance, the more tender vegeta-

* Lect. on Mate. Med., vol. ii, p. 406.

bles, *thyme*, *peppermint*, *sage*, and many of the labiate plants. Camphor is not, therefore, considered a peculiar abstract constituent, but like *gum*, *resin*, extractive, &c., is an absolute organic principle or element.

Description.—The drug, as it appears in Europe in its *crude* or *unrefined* state, consists of two varieties, called *Dutch*, or *Japan Camphor*, and the ordinary *crude*, or *Chinese Camphor*, so named from the parts whence they are imported.

α. Dutch Camphor.—This is imported in tubs covered by matting, and each surrounded by a second tub, secured by twisted hoops of cane. The tubs contain about one cwt. or more, each. The camphor consists of grains of a pinkish color, which adhere in the formation of various-sized masses. The grains are larger than those of the Chinese camphor, and the drug sublimes easier, or at a lower temperature, and hence usually bears a better price.

β. China Camphor.—This comes in square boxes, lined with lead foil, holding from one and a quarter to one and a half cwt. each. This sort consists of dirty grayish grains, sometimes more or less wet, but at others in a better condition, and even equal to the Dutch camphor.

Purification.—When camphor is brought to Europe, it is further sublimed and purified by means of vessels called bomboloes, from *βομβυλιος*, *bombola*. They are made of glass, of an oblate spheroid shape, about twelve inches in diameter, furnished with a short open neck. The *bombolo* is filled with the crude camphor, and then placed in a sandbath, and heated, so as to melt the camphor, when lime is added, and the heat raised so as to make the liquid boil. The vapor condenses on the upper part of the vessel, and as the process advances, the sand is gradually removed from the top downwards, so as to favor the condensation of the vapor. In from forty to forty-eight hours the process is usually completed, when the vessels (they usually have a number in use at a time) are removed, their mouths closed with tow, and water sprinkled over them, by which the glass is cracked and disengaged, when each will present a large cake of beautiful camphor, weighing, perhaps, a dozen of pounds. The impurities together with a small portion of camphor, are retained by the lime, from which the latter is again obtained in a manner somewhat similar to that by which it is first procured from the wood.

Physical Properties.—Camphor, as it occurs in its refined state, is in large hemispherical cakes, perforated in the middle, or variously broken in pieces. It is translucent, solid at ordinary temperatures, very aromatic, of a crystalline granular nature, and bitter, aromatic, pungent, and cooling taste. It is rather unctious to the touch, and moderately tenacious, but still is somewhat friable, and with the addition of a little alcohol, may be readily pulverized. Its fracture is shining, and its texture crystalline. It is extremely volatile, and, in this respect, is very analagous with the essential oils—indeed, it is nothing less than an essential oil, that becomes solid at the ordinary temperature. At a little lower temperature the oil of anise also solidifies. Unlike most of the essential oils, when left to evaporate in the open air it disappears without leaving any residue. The vapor, when it condenses, as is evinced when kept in glass bottles, forms crystals of camphor, of a flat octohedron form, or, if the process is more slow, they may arrange themselves in hexagonal plates.

The specific gravity of camphor varies from 0·9857 to 0.996, being lighter than water. According to Turner, it melts at 288° F., and boils at 400.° It is inflammable, and burns with a brilliant flame, produces much smoke, showing that it abounds with carbon, and leaves no residue. Water dissolves it very sparingly: according to Berzelius, only one thousandth part of its weight is taken up. Alcohol takes up 75 per cent. of its weight, which is mostly precipitated in fine powder on the addition of water. It is also soluble in ether, the volatile and fixed oils, and strong ascetic acid.

Analysis.—When camphor is confined, by admixture, with pure clay, so as to prevent volatilization, and then suddenly heated, a thin volatile oil is formed, possessing the common characteristics of the camphor, as to taste, smell, &c. This process leaves a remnant of a large proportion of uncombined carbon and camphoric acid, while an uncertain quantity of carbonic acid and carburetted hydrogen escapes. Dumas makes its formula 1 eq. of camphogen ($C^{20} H^{14}$) and 2 of water. Its ultimate constitnents are, $C^{10} H^{8} O$, or 78·94 per cent. of carbon, 10·53 of hydrogen, and 10·53 of oxygen.

The formula of the *Borneo Camphor** is $C^{20} H^{18} O^{2}$.

Chemical Peculiarities.—Camphor, different from most vegetable substances, suffers no sensible change from age, nor does it suffer decomposition in volatilization, or even when subject to the highest temperature to which it can be exposed in close vessels. It is not, like *most* of the essential oils, converted into resin by the oxygen of the atmosphere, or by the action of nitric acid. When nitric acid is repeatedly distilled from camphor, the latter is converted into *camphoric acid*, and various camphorates. When camphor is dissolved in nitric acid, a nitrate of camphor is formed, which is commonly called *camphor oil*. *Camphrone* (composed of $C^{30} H O$), is formed by passing the vapor of camphor over red hot lime.

Physiological Effects.—Much difference of opinion exists among those of the profession who have experimented with this article on the healthy subject, especially with regard to its influence over the functions of circulation and calorification. While some have considered it to promote these functions considerably, others have even asserted that it is sedative in its influence. The weight of evidence, however, is certainly in favor of the former views. Its influence over the nervous system is well marked—it is anti-spasmodic and nervine. When long continued, or taken in large doses, it excites the brain and exhilerates the spirits. It is considered injurious when taken in over doses. The mischief is dependant on its effects on the brain.

Therapeutic Properties.—Camphor is very little used as an internal remedy by some practitioners of the reformed schools, as the safety of its operation, they think, has not yet been fully demonstrated. By others, however, it has been used as a stimulant, in asphyxia and syncope, and as an anti-spasmodic in hysteria, epilepsy, and puerperal convulsions. As an anodyne it has been employed in dysmenorrhæa, untimely labor pains, and distressing after pains The author has found it very prompt in cases of the latter kind. ℞. Pul. Camph. *gr.* x; Pul. Lobelia *gr.* x. Mix. *Dose*, *gr.* v—*gr.* x.

* This is produced by a very large forest tree, (*Dryobalanops aromaticus*) found on the islands of Borneo and Sumatra. It is found in concrete masses, occupying longitudinal fissures in the hearts of the trees.

Dr. Pereira, of London, gives the following enumeration of maladies in which camphor has been found useful: 1, fever (typhoid); 2, inflammatory diseases (last stage); 3, exanthemata; 4, mania; 5, spasmodic affections; 6, irritation of the urinary and sexual organs; 7, poisoning; 8, chronic rheumatism and gout; 9, cholera.

The chief employment of camphor, among botanic physicians, is as an external application, in frictions, and in liniments and embrocations.

The dose of camphor is from *gr.* v to *gr.* x; but is often given in smaller doses, even *gr.* j, in some cases.

Pharmaceutic Preparation.—TINCTURA CAMPHORA: *Spirit of Camphor.*—℞. Camphor ʒiv; Alcohol Oij; shave down and dissolve. This corresponds very nearly with all the authorized formula. In the country it is very common, to dissolve the camphor simply in whisky, when it is called *camphire.*

Use.—This is commonly used as a liniment, for headache. It produces a grateful sense of coolness as it evaporates, and is anodyne and soothing in its effects. In domestic practice, it is usually the first remedy in many cases of emergency, as in syncope, contusions, hysteria, &c., when it is used either internally, or externally, applied to the nostrils, or rubbed over the parts affected, as the circumstances may require. The dose is fʒss. to fʒj.

TEREBINTHINA.

Synonymes.—*Τερμβινθος, Greek;* Terpentin, *Ger.;* Terebenthine, *Fr.;* Trementina, *Ital., Span.;* Turpentine, *Eng.*

History.—Turpentine was used by the ancients. Theophrastus and Dioscorides speak of it. It is an article of considerable importance, in the arts as well as in medicine, and, hence, has become an object of extensive trade and commerce.

Botany.—*Sex. Syst.* Monæcia Monadelphia—*Nat. Ord.* Conifereæ or Pinaceæ.

Gen. Char.—The Pinus genus of Linnæus contains all the different species that yield turpentine. But the genus has been thought far too comprehensive, and has, hence, been

divided, by other botanists, into three distinctive genera, viz: *Pinus*, *Abies*, and *Larix*.

Gen. Pinus.—*Flowers* monœcious. *Catkins* racemose. *Filaments* short. *Anthers* crested, two-celled, bursting longitudinally, (or *stamens* two; *anthers* one-celled). *Catkins* solitary, or from two to three. *Scales* imbricated, with membranous bractlets. *Ovules* two, at the base of the scales, collateral, inverted, their points lacerated and directed downwards. *Scales* of the cone hard, woody, and truncated, hollowed at the base for the reception of the seeds. *Seeds* prolonged at the base into a membranous wing. *Leaves* evergreen, usually acicular, in fascicles, surrounded at the base by a membranous tubular sheath.

Spec. Char.—There are various species of pinus, both European and American, that contribute largely in furnishing the various turpentines of commerce.

1. Pinus sylvestris, (*Linn*, L. D.) Scotch Fir. Red Deal.—*Leaves* in pairs. Young *cones* stalked, recurved, ovate-conical. *Wing* thrice as long as the seed. (Lamb, Pin. t. l. Nees von E. t. 79.) Native of Scotland, Norway, woods of Europe, north of the Alps.—This species yields much Turpentine, Pitch and Tar.

2. P. maritima, *Dec.* (P. Pinaster of Lambert,) (Nees von E. t. 76, 77.) Is abundant on the southern coasts of Europe, as well as of England, and in the south of France in the department of the Landes. It yields Bourdeaux Turpentine, Gallipot, Pitch, and Tar.

3. P. palustris, (*Lambert.*) The Swamp Pine and Long-leaved Pine. A large tree, spreading from the State of Virginia to the Gulf of Mexico. "This tree furnishes by far the greater proportion of Turpentine, Tar, &c., consumed in the United States, or sent from them to other countries."—*Wood and Bache.*

4. P. pinea, (*Lamb.*) and P. *Cembra*.—The Siberian Stone Pine, are interesting, as the seeds of both, sometimes called *Pine-nuts*, are eaten, as are those of *P. Geradiana*, in Affghanistan and Tibet. *P. longifolia*, (Lamb.) is an Himalayan species; which yields a very fine Turpentine, resembling pure white granular honey; much used by the natives of India in medicine, and called *bireeja*, &c.—*Royle.*

5. P. Teda, (*Willd.*) "*Leaves* in threes, elongated, with elongated sheaths; *strobiles* oblong, conical, deflexed, shorter than the leaf; *spines* inflexed."—The variety called *Old field pine* or *loblolly* of the Southern States, grows abundantly in Virgina and the southern parts of Pennsylvania. It is a large tree with a spreading top, and leaves about six inches long. It yields turpentine in abundance.

Gen. Abies.—*Flowers* monœcious.—Males. *Catkins* solitary. *Anthers* bursting transversely.—Females. *Catkins* simple. *Scales*, (or *carpels*), imbricated, thin at the apex, round-

ed, flat, instead of being hollowed for the seeds; when ripe, falling from the axis. *Leaves*, solitary in each sheath, never fascicled. In other respects agreeing with pinus.

Spec. Char.—Of this genus there are also a number of species that yield medical products of the turpentine character.

1. ABEIS EXCELSA, *Dec.* E. (*Pinus Abies*, Linn) L. D. Norway Spruce Fir.—*Leaves* scattered, tetragonal. *Cones* cylindrical, pendulous; the scales rhomboidal, flattened, jagged, and bent backwards at the margin.—Northern parts of eastern Europe, Alps, northern parts of Asia.—(Nees von E. t. 80.)—Yields Abietis Resina by spontaneous exudation. *Royle.*

2. A. PICEA, (Lindl) The Silver Fir, with distichous leaves and erect cones.—A native of the mountains of Central Europe. Yields Strasburgh Turpentine.

3. A. BALSAMEA, (*Marsh*) E. (*Pinus balsamea*, Linn. L. D.) Canadian Balsam and Balm of Gilead Fir. Leaves solitary, flat, subpectinate, suberect above. Accuminate apex of the scales of the cone when in flower reflexed.—Northern parts of America.—Lamb. Pin. t. 41. Nees von E, t. 82.

4. A. CANADENSIS, (Lindl.) Hemlock Spruce Fir. This is said to exude a Turpentine similar to that of the foregoing. *A. nigra*, the Black Spruce Fir, is interesting as yielding the essence of Spruce.

GEN. LARIX, (*Tourn*), *Larch.*—*Flowers* monœcious. *Catkins* and *cones* lateral.—MALES. *Catkins* simple, ovate. *Anthers* numerous, with their filaments united into a thick column, crested, bursting longitudinally. *Leaves* when first expanding, in tufted fascicles, becoming somewhat solitary by the elongation of the new branch.

Spec. Char.—Some few medical turpentines are yielded by some of the species of this genus. The two following are among the most important species.

1. LARIX EUROPÆA, *Dec.* (*Abies Larix*, Lam. E., *Pinus Larix*, Linn, D.) The Larch is a lofty tree, with wide spreading branches; when well grown the extremities droop gracefully. The *leaves* deciduous. *Flowers* reddish. Cones ovate-oblong. Edges of scales reflexed, lacerated. Bracts panduriform. (*Lambert.*—Nees von E. 83. St. and Ch. 75.)—A native of the Alps, much cultivated in this country. Yields Venice Turpentine, and a kind of Manna called "Manna de Briançon."—*Royle.*

2. LARIX (or Cedrus) DENDARA, (Deodar and Kelon,) Himalayan Cedar, is an elegant and lofty tree, hardy, and yielding valuable timber. "It has been extensively introduced into England by the East India Company, and is interesting as having been long employed in medicine by the Hindoos, and known even to Avicenna. (*Hindoo Med.* 36.) Its Turpentine, known by the name of *kelon-ke-tel*, is in great repute in the Northwest of India, from its stimulant properties and power of healing deep-seated ulcers, as in elephants and camels."

DESCRIPTION.—The turpentines of commerce are various and require separate descriptions. Some of them are the

simple products of the trees, others are the subjects of various pharmaceutic preparations. Some, also constitute a regular *trade* in their manufacture.

This is the most convenient place, perhaps, also, to consider various other preparations and products of the trees that constitute these genera. They all properly belong to the class, stimulants, although some of them would be more properly arranged in different orders.

VIRGIN TURPENTINE: *Terebinthina Virginiana.* This is chiefly the product of the *P. Palustris* and *P. Tæda.* It consists of the collections of the first tappings, and is clear of dirt and other impurities. Its color is white, tinged with yellow; it is translucent or semi-transparent, of an agreeable aromatic odor, and a pungent, bitterish taste, and a semi-fluid, or in cold weather, soft, solid consistence. It is collected by cutting hollows in the trunks of the trees, which excavations collect the turpentine as it exudes from the wounded surface. The common *white turpentine* is of this same kind, but is collected later in the season and with less care. It is of a yellowish-white color, and a taste and smell like the above. It commonly contains more or less impurities, as bits of bark, sand and dirt. Its consistence is about the same as that of the virgin turpentine.

Action. Use.—Turpentine is a permanently stimulant diaphoretic and diuretic, but promotes, more or less, all the secretions. Its power as an anthelmintic and diuretic has already been spoken of.

The medicine is not much used as a general stimulant, and its internal exhibition is chiefly in view of a local influence over some particular parts that may be the subjects of chronic disease. Thus, its application is mainly in affections of the urinary organs, and intestines, as cystirrhœa, gleet, gonorrhœa, leucorrhœa, mucous diarrhœa, colic, etc. The *dose* is *gr.* x—*gr.* xxx; taken in pills; or f3j—f3ij of the tincture.

Its topical applications are much more important. It serves as a base of many plasters, ointments, and salves. It is an important constituent of various *irritating*, *strengthening*, *adhesive*, *detergent*, *digestive*, and *healing plasters*, *discutient* and *healing ointments*, and *salves*, available in the treatment of chronic inflammatory affections of parts, simple tumors, cancers, scrofula, carbuncles, cuts, burns, etc.

EUROPEAN TURPENTINE: (*Terebinthina Vulgaris.*)—This article either exudes spontaneously, or from incisions, from most of the pine tribe, as also from *Pistacia Terebinthus*. It consists of resin intimately mixed with a volatile oil, known in its separated or distilled state as Oil of Turpentine. In time, all Turpentines become converted into Resins, from the evaporation of the oil and by its oxidation. "They all soften by heat, burn readily, are soluble in alcohol and ether, unite with the fixed oils, and resemble each other very closely in taste and smell; but differ in being more or less white or dark-colored, and in the odor and taste, being more or less agreeable. Water acquires only a little of their properties, but they may be made into an emulsion with eggs or vegetable mucilage."

In Europe, this turpentine is prepared chiefly from the *P. Sylvestris* and *P. Maritima*, in the maritime districts of the south-west of France. But at the present time, most of the drug consumed under this name in Europe, is imported there from this country, and is the product, chiefly, of the *P. Palustris* and *P. Tæda*. This article is viscid, semi-fluid, of a dull light yellowish color, with a warm, acrid, bitterish taste, and a slight trebinthinate odor. While fresh, it yields about seventeen per cent. of oil of turpentine. That variety of the drug prepared in Europe, now more frequently called *Bourdeaux Turpentine*, from the place whence it is exported, is rather more white, turbid, and separates, on standing, into a transparent liquid and a granular honey-like semi-fluid. It is acrid and nauseous in taste, and of a disagreeable smell; it yields about twenty per cent. of oil. It may, like our own turpentine, be solidified by means of magnesia. Its composition is *volatile oil* (oil of turpentine,) *pinic acid*, *sylvic acid*, *resin*, and *bitter extractive*. The Bordeaux Turpentine is not imported into this country.

Action. Use.—Same as the foregoing.

CANADIAN TURPENTINE. *Terebinthina Canadensis.*—This article, which is commonly called "*Balsam of Fir*," is obtained from the *Abies Balsamea* in Canada, and the State of Maine, by puncturing the small vesicles which exist between the bark and wood of the trunks of the *fir tree*. As the turpentine runs out of the broken blisters, it is collected in bottles. While fresh, and in bottles, this turpentine is of a tenacious fluid consistence resembling honey; is transparent, and slightly tinged with yellow. When exposed to the air, it gradually becomes hard and solid by the evaporation of its volatile oil, and the absorption of oxygen. Its taste is some-

what acrid, slightly bitter, and strongly terebinthinate; its odor is peculiar, agreeable, and much like the turpentines generally.

The composition of the Canadian turpentine, according to the analysis of Bonastre, is *Volatile Oil* 18·6, *Resin*, easily soluble in alcohol, 40·0, *Subresin* difficulty soluble 33·4, *Fibrous caoutchouc*, like Subresin 4·0, *Acetic acid* traces, *Bitter extractive*, and *Salts* 4·0.

Action. Uses.—This article possesses the common properties of the other turpentines, and being rather more active, and, while in a fluid state, more conveniently taken, is more exhibited internally. It is used in the treatment of affections of the urinary organs, particularly those characterized by mucous discharges, as gonorrhœa, cystirrhœa, leucorrhœa, gleet, syphilis, &c. It is also considered available in pectoral diseases, as pains in the breast, and incipient phthisis. In plasters and salves, it is also much used. The dose is from a half a tea-spoon-ful to a tea-spoon-ful.

VENICE TURPENTINE: (*Terebinthina Veneta.*)—The genuine Venice Turpentine is the product of the *Larix Europæa*. It is procured by boring into the trunks of the trees, and adapting to each hole a wooden gutter, which conveys the turpentine into vessels.

The larch or *Venice* turpentine is a thick and consistent fluid, transparent, but more commonly slightly cloudy, and of a yellowish-green tint, and an odor which is peculiar, not very agreeable, terebinthinate. Its taste is acrid and bitter. It has little or no tendency to concrete, and hence is always rather thin, and is kept in bottles.

This turpentine is procured in Switzerland and the French province of Dauphiny. The *larch* grows abundantly upon the Alps and the Jura Mountains. The drug has received its name from the circumstance that it was formerly an extensive article of Venetian commerce.

Very little Venice turpentine is brought to this country, and what is commonly sold in the drug shops under this name, is a spurious article, made by dissolving rosin in oil of turpentine. Its color is much darker than that of the genuine article.

Action. Use.—Properties much the same as those of the last spoken of. It is regarded by some to be more detergent, and is used more in view of this property, in cutaneous affections. The dose is from f ʒss. to f ʒj.

The virtues of the factitious drug may be inferred from its ingredients, *resin* and *oil of turpentine*.

Besides these turpentines here mentioned, there are others that are spoken of in some works on Materia Medica; but as they do not occur in our market, or at least very seldom, it is perhaps unnecessary to take up more room on the subject. Among the most important of those unnoticed, are, 1. the CHIAN TURPENTINE, the produce of the *Pistacia Terebinthus*, growing on the island of Chio; 2. STRASBURG TURPENTINE, which is the produce of the *Abies Picæ*, growing on the mountains of Switzerland and Germany; 3. DAMARRA TURPENTINE, derived from the *Pinus Damarra*, growing in the East Indies; 4. DOMBAYA TURPENTINE, produced by the *Dombeya Excelsa*, an inhabitant of Chili.

OLEUM TEREBINTHINÆ: *Oil of Turpentine.*—This article, which, in commerce, is called *Spirits* or *Spirit of Turpentine*, is prepared from the common, or any other varieties of turpentine, by distillation. Our American turpentine will generally yield about sixteen per cent. of the oil. It is usually distilled with water, in a common copper still, over an open fire, but may be distilled alone with a higher heat. The latter way, however, renders the product liable to be empyreumatic. The distilled product is found to consist of the oil of turpentine floating on water, while the residue in the still is resin.

To obtain oil of turpentine absolutely pure, it should be redistilled from a solution of caustic potassa. The following process embraces the particulars of the courses recommended by the Edinburg and Dublin schools:

Prep.—Cautiously distil *Oil of Turpentine* Oj. (℔ij by measure D.) with *Aqua* Oiv., (as long as oil comes over with the water, E., till Ojss. of oil is obtained, D.,) or agitate it with one eighth of Alcohol. Mr. Flocton redistils from a solution of caustic Potash, to get rid of all traces of resinous and acid matters.—*Pereira.*

"This purified Oil is limpid, colorless, with a powerful penetrating odor, and pungent bitterish taste. Sp. Gr. 0·865; boils at about 312°, but, as volatilization proceeds, at 350°. Sp. Gr. of its vapor, 4·764. It is very inflammable, producing much black smoke. It is slightly soluble in water, more readily in Ether and in Alcohol; miscible in all proportions in the fixed oils, dissolves resins and fats, and is one of the few solvents of Caoutchouc. When moist and exposed to great cold, it deposits crystals, which are a Hydrate of the

Oil. Sulphuric Acid chars it, Nitric Acid and Chlorine set it on fire. It absorbs Hydrochloric Acid Gas, and a substance called *artificial Camphor* ($C^{20} H^{16} H Cl$) is produced. The composition of Oil of Turpentine is $C^{5} H^{4}$. When exposed to the air, it absorbs Oxygen; therefore, Oil which has been long kept, usually contains some. Oil of Turpentine is now considered to be composed of two different, but isomeric *oils*, as the changes in the boiling point seem to indicate. One of these, or that which combines with the Hydrochloric Acid Gas, has been called Radical Oil of Turpentine, and also *Camphene*."*

Action. Use.—The oil contains all the active medical properties of turpentine. It is not so much used for its stimulant effects internally, as externally. Applied to the skin, it proves powerfully rubefacient, and is very extensively used as an agent of this kind. It serves as an ingredient in a great many different liniments. It is rather too severe, however, to be applied to delicate parts in its pure state, and should always be compounded with other articles, according as the circumstances controlling its application may indicate. Its anthelmintic and diuretic powers have been spoken of in the proper places. The dose of oil of turpentine is from half a tea-spoon-ful to a tea-spoon-ful, as a stimulant and diuretic; but when used as an anthelmintic, a table-spoon-ful or more is given, especially when the expulsion of the tape-worm is the object of its use.

RESINA: *Re in.* When any of the Pinic Turpentines are subjected to distillation, with or without water, the Volatile Oil rising when heated, leaves behind it a solid resin, which is often called Colophony, (Fr. *Colophane*,) from the Greek χαλοφονια, but more usually *Black Rosin*, though it is only of a brownish-yellow color, semi-transparent, and a little empyreumatic. When the distillation is not carried quite so far, or if more water be added during the process, and agitated with it while in fusion, some of it becomes incorporated with the Resin, which latter, in consequence, becomes opaque, or of a whitish color. This is the *Resina flava* of Pharmacy, or *Yellow*, sometimes called *White Resin*. The incorporated water escapes by evaporation, or it may be expelled: the Resin then becomes of a pale-yellow color, and transparent.

The consistence of Resin is solid, and it is rather transparent, very brittle, with a glassy fracture; is a little heavier

* Royle, Ther. Mat. Med., p. 568.

than water, differs in color according to its purity, possesses a weak terebinthinate odor and taste, melts at a moderate heat, becomes decomposed at a *higher*, producing both an oil and a gas, and burns with a smoky flame. It unites, when in fusion, with wax, fats, and fatty oils, also spermaceti; is readily dissolved by Alcohol, Ether, and many volatile oils, and is insoluble in water. The strong acids decompose it: the alkalies unite with it, and form soaps. Instead of being simple, it is found to be a compound of two acid bodies, one called *Sylvic*, the other *Pinic acid*, and of a neutral resinous principle. The Sylvic acid is more soluble in cold and diluted Alcohol, and may thus be separated from the other. It crystallizes in small, quadrangular, rhombic prisms, is colorless, insoluble in water, soluble in Ether, strong hot Alcohol, and in volatile oils. Pinic acid ($C^{20} H^{15} O^{2}$) is considered isomeric with the *Sylvic*, and has many of the same properties. A third acid, the *Pimaric*, has been detected in the Bordeaux Turpentine. The acid of Colophony, called the *Colophonic acid*, is considered somewhat different, being of a brown color, and is sparingly soluble in Alcohol.

Action. Uses.—Mild Stimulant; used externally, but chiefly on account of its adhesive properties, in various Cerates, Unguents, and Emplastra.

PIX ABIETIS: *Burgundy Pitch.* This article is obtained from the *Abies excel a*, or Norway Spruce, and the *Abies picea*, or European Silver Fir. It is obtained by removing portions of the bark, so as to lay bare the wood, and the flakes of concrete resinous matter, which form upon the surface of the wound, having been detached, are melted in hot water, by means of large boilers, and then strained through coarse cloths, while hot. The pitch receives its vulgar name from the province of Burgundy, in the east of France.

Pure Burgundy pitch is hard, brittle, quite opaque, of a yellowish, or brownish-yellow color, and a feeble terebinthinate taste and odor. As brought into this country, it is generally mixed with impurities, which require it to be melted and strained before using.

Action. Use.—A slight stimulant, and rubefacient when applied to the skin, in the shape of a plaster. It is chiefly used in making stimulating and strengthening plasters and healing cerates. It has been remarked, that Burgundy pitch plasters have produced inflammation and sores. This may be accounted for from its *mechanical* effects, it being impervious, and thus confining all the impure matters that collect under them.

ABIES RESINA; L. *Thus*, D. Resin of ABIES EXCELSA, E. (*Pinus abies*, Linn.) L. D. The Resin of the Norway Spruce Fir may be arranged with the Turpentines, as being a spontaneous exudation, and with the Resins as having lost by evaporation most of its Volatile Oil. It used to be called *Thus*, or "Frankincense," as it still is in the D. P. It is collected in the form of concrete tears, which are hard and brittle, but soften readily at the temperature of the body. It is of a light yellowish or brownish-yellow color externally, lighter within, slight terebinthinate odor and acrid bitter taste. The substance which the French called *galipot* or *barras* is the concretion produced on the Pine of the Landes, late in the year or in winter, when the collection of Bourdeaux Turpentine has ceased. A very fine Resin is spontaneously yielded by the Himalayan *Pinus Marinda*."—*Royle*

Action. Use.—Slightly stimulant. Used mostly in making plasters.

PIX CANADENSIS: *Canada Pitch.*—Canada Pitch is procured from the *Abies* or *Pinus Canadensis*, or hemlock spruce of the United States and Canada. The hemlock does not abound so much in turpentine as most other species of the pinaceæ. The process for procuring the pitch is somewhat different from that adopted in collecting it from other trees. The tree, while thrifty, or young, seldom yields much of this product, and it is only when it is beginning to decay that it will justify any efforts at the collection of pitch. The latter is now exuded spontaneously through the cracks of the bark, which, when thus well encrusted, is stripped off, broken into fragments, and boiled with water. The melted pitch rises to the surface, and is skimmed off. It consists of dark colored, brittle masses, which, on being broken, present fragments of bark and some other impurities interspersed through their substance. From these the pitch is purified, in the shops, by melting and straining through canvass. Thus prepared, it is hard, brittle, opaque, of a dark yellowish-brown color, of a slight peculiar odor, and little taste.

PIX LIQUIDA: *Tar.*—This article has been employed in medicine from very early times. It is prepared by submitting the roots and branches of different pine trees to a smothered combustion. The resinous matter is melted, and also somewhat altered by the heat, and the tar flows out as a viscid and tenacious semi-fluid, of a brownish-black color, having a bitter, resinous, and a little acrid taste, and an empyreumatic odor. It is a very complex mixture of resin and oil of turpentine, both somewhat modified, and some empyreumatic oil, char-

coal, and pyroligneous acid, with various products of the destructive distillation of the wood. By subjecting it to distillation, oil of tar and pyroligneous acid are obtained, and the tar water, by agitating it with aqua. Tar is soluble in ether, alcohol, and the fixed and volatile oils. Several kinds of it yield creosote, paraffin, eupion, &c. When the whole of it is evaporated, black pitch is left.

Action. Use.—Tar, taken internally, is alterative and stimulant; applied externally, it promotes a healthy action in indolent ulcers, and in some cutaneous diseases; is also an excellent application to burns, whether recent or not. The vapor is sometimes inhaled in chronic bronchial affections.

AQUA PICIS LIQUIDÆ:—*Tar Water.*—℞. Mix Tar by measure ℔ij, with Aq. Cj, agitating with a wooden stick for a quarter of an hour. When the pitch has subsided, filter, and keep in well stoppered vessels.

Action. Use.—Medical properties same as the above. Much esteemed by some in bronchial affections and phthisis.

LINIMENTUM (TEREBINTHINATUM E.) TEREBINTHINÆ, L. D.; (U. S.) *Turpentine Liniment.*—Shake together till mixed *Oil of Turpentine* f℥xvj., (f℥v. E. ℔ss. D.,) *Camphor* ℥j. L. (℥ss. E.,) *Soft Soap* ℥ij. L. (Resin Ointment ℥iv. E. ℔j. D.) (Melt the Ointment, and mix with it gradually the (Camphor, E.) Oil of Turpentine, E. D.) (till a uniform Liniment be obtained, E.)

℞. *Oil of Turpentine* Oss., *Resin Cerate* ℔j. Add the Oil to the melted Cerate and mix them, U. S.

Action. Use.—Stimulant Liniment, but chiefly used by applying lint soaked in it, to burns and scalds.

ENEMA TEREBINTHINÆ, L. E. D. *Turpentine Enema.* ℞. Mix together *Oil of Turpentine* f℥j. (℥ss. D.) with *Yolk of Egg* q. s., and gradually add *Barley Water* f℥xix. L. (*Water* (not higher than 100° F.) ℥x. D. f℥xix. E.)

Action. Use. Anti-spasmodic; Anthelmintic in cases of Ascarides.

UNGUENTUM PICIS LIQUIDÆ, L. E. D., U. S. *Tar Ointment.* ℞ Melt together *Tar* ℔j. (℥v. E. ℔ss. D.,) *Suet* ℔j. L. (℔ss. D. Bees' Wax ℥ij. E.) Express through linen, L. (a sieve, D. Stir briskly while it concretes in cooling, E.)

Action. Use.—Stimulant. Useful in Ringworm and some Ulcers.

PIX (ARIDA, E.) NIGRA. *Pitch.* Pitch is left after the distillation of the liquid parts of the Tar. It is well known from its black color and firm texture, and consists of many of the same constituents as Tar.

Action. Use.—Stimulant and Alterative. Used in Ichthyosis in doses of *gr.* x.—ʒj. in pills.

UNGUENTUM PICIS NIGRÆ, L. *Pitch or Black Bascilicon Ointment.* ℞ Melt together *Black Pitch*, *Wax*, *Resin*, aa. ʒix., *Olive Oil* fʒxvj. Express through linen.

Action. Uses.—Stimulant application to Porrigo or to indolent ulcers.

EMPLASTRUM PICIS, L. E. *Burgundy Pitch Plaster.* ℞ Take *Burgundy Pitch* ℔ij. (℔iss. E.,) *Resin* ℔j. (ʒij.E.) and *Bees' Wax* ʒiv. (ʒij. E.;) melt them together with a gentle heat, then add *Resin of Spruce Fir* ℔j. L., *Expressed Oil of Nutmegs* ʒj. L. (Oil of Mace ʒss. E.,) *Olive Oil* fʒij. (fʒj. E.,) *Aq.* fʒj. (fʒij. E.;) mix well, and boil till the mixture acquires the proper consistence.

Action. Use.—Warm Rubefacient Plaster to the chest and joints, &c.

CERATUM RESINÆ, L. (U. S.) UNG. (RESINOS E.) RESINÆ ALBÆ, D. *Resin Cerate, or Basilicon Ointment.* ℞ With a gentle heat melt together *Resin* ℔j. (ʒv. E., (U. S.) white Resin ℔ij. D.) *Wax* ℔j. (ʒij. E. (U. S.) Lard ʒviij. E. (U. S.) ℔iv. D.;) then add *Olive Oil* fʒxvj. and press the Cerate while hot through linen, L. D. (Stir the mixture briskly while it cools and concretes, E.)

Action. Use.—A mild stimulant, applied to foul or indolent ulcers.

SASSAFRAS.—The Bark of the Root.

Synonymes.—Laurus Sassafras; Sassafras Officinale.—Sassafras, *Ger., Fr.*; Sassafrasso, *Ital.*; Sasafras, *Span.*

Botany.—*Sex. Syst.* Enneandria Monogynia.—*Nat. Ord.* Lauraceæ.

Gen. Char.—Diœcious. *Calyx* six-parted, membranous; segments equal, permanent at the base. Males *fertile stamens* nine, in three rows, the inner with double-stalked, distinct glands at the base. *Anthers* linear, four-celled, all looking inwards. Females, with as many sterile stamens as the males, or fewer, the inner often confluent. *Fruit* succulent,

placed on the thick fleshy apex of the peduncle, and seated in the torn unchanged calyx.—(*Lindley.*)

Spec. Char.—A forest tree, peculiar to North America. In the north, the tree is rather small; but in the middle and southern States, it grows from thirty to sixty feet in height, and from one to two feet in diameter. The bark is rough, or deeply furrowed, and of a whitish gray, or light ash color, on the trunk and branches; but that on the twigs is smooth, and of a deep green color. The leaves vary much in their shape and size; on young shrubs, they are mostly entire, eliptical or oval, but some have a lobe on one side. On the bushes or trees, they are generally three-lobed. Their mean length is about four or five inches, and their breadth from two to three. They are pubescent, and prominently veined. The flowers, which are often diœcious, and appear before the leaves, are small, of a pale yellow color, and disposed in racemes, arising from the branches below the leaves, and having linear bracts at their base. The corolla is divided into six oblong segments. The male flowers have nine stamens; the hermaphrodite, which are on a separate tree, have only six, with a simple style. The fruit is an oval drupe, about half an inch or more in length when mature, of a deep blue color, and is supported on a red pedicle, whose base is next to the berry.

The bark of the root is the medicinal portion. This is separated at pealing time, divested of its epidermis, and carefully dried. Among the most prominent of its *constituents*, are *volatile oil* and *camphor*.

Medical Properties and Use.—Sassafras is a stimulant, diaphoretic, antiseptic, annodyne, and, by some, it is considered detergent. In domestic economy, it is used as a tea by many, and is much esteemed in this way by some. In London it is carried about in the streets, at day-break, under the name of *saloop*. In practice, it is not much used alone, but is sometimes used as an ingredient in stimulating and diaphoretic powders, and sometimes in syrups. It is used in eruptive fevers, from an idea that it has a power of determining the humors to the surface. But it is applicable in all cases in which articles of this class are indicated. As an external

application, the powdered bark is esteemed in the form of a cataplasm to gangrenous parts, old sores, bruises, and flesh wounds. The dose of the powdered bark is from *gr.* xv to *gr.* xxx. The decoction is drank freely.

Pharmaceutic Preparations.—OLEUM SASSAFRAS: *Oil of Sassafras.*—This is procured by distilling the bark with water. It is at first colorless, but by age, it becomes yellowish. It is milky when fresh, if the water is not well separated. Water seems to act more on it than it does generally on essential oils. It seems to divide it into two oils, one lighter and the other heavier than water. By keeping, it deposits crystals of *stearoptene* (or, as commonly considered, *camphor.*) Oil of Sassafras is used as a stimulant and anodyne, and may be taken, dropped on sugar, or in the form of pills with crumb of bread, in doses of from ♏ v to ♏ x. It will afford relief in the distressing pain attending menstrual obstructions, and that following parturition. It is much used as a rubefacient, and for this purpose, it is of great value, when applied to painful swellings, sprains, rheumatism, &c., as it is not only rubefacient, but anodyne. It is also applied over gangrenous parts, to check the progress of mortification. In most of the stimulating and rubefacient liniments, as well as some balsamic compounds, it is a prominent ingredient.

ROSMARINUS.—The Flowering Tops.

Synonymes.—Rosemarinus Officinalis: Rosmarin, *Ger.*; Romarin, *Fr.*; Rosemarino, *Ital.*; Ronero, *Span.*; Rosemary, *Eng.*

Botany.—*Sex. Syst.* Diandria Monogynia.—*Nat. Ord.* Lamiaceæ, or Labiateæ.

Gen. Char.—*Corolla* unequal, with the upper lip two-parted. *Filaments* long, curved, simple, with a tooth.—*Willd.*

Spec. Char.—An ever-green shrub, about three or four feet high, with an erect stem, divided into many grayish colored, long, slender, branches. *Leaves* numerous, sessile, opposite, linear, something more than an inch long, entire, obtuse at the summit, revolute at the margins, of a firm texture, smooth and green on the upper surface, whitish and hoary beneath. *Flowers* pale-blue or white, rather large, few, in short, axillary, sub-sessile opposite racemes, arising in the axils of the leaves. *Filaments* shortly toothed near the base; *anthers*

linear, with two divaricating confluent cells. *Seeds* four in number, of an oblong shape, and lay naked in the calyx.

The rosemary bush is a spontaneous production of the countries bordering on the Mediterranean, and is cultivated in gardens, in Europe and this country. The flowering summits, which are the officinal portion, have a very strong balsamic odor, and were used by the ancients in making garlands, because of their beauty and agreeable flavor. For medical purposes, they must be collected when in full bloom, and carefully dried.

Medical Properties and Use.—The tops of rosemary are stimulant and carminative, and may be used as a substitute for other articles of this class. By some, the rosemary is regarded as an emmenagogue. It is prepared by infusion, and drank freely. Its active properties are chiefly dependant on a volatile oil that is given off in large quantities by distillation with water.

Pharmaceutic Preparations.—OLEUM ROSEMARNII: *Oil of Rosemary.*—When pure, it should be void of color, and possess in a high degree the peculiar flavor of the flowering tops of the tree. It is often adulterated with oil of turpentine, which may be detected by its odor when dropped on a hot stove, or by its not being completely soluble in alcohol.

Use.—Oil of rosemary is very pungent and stimulating, but is not much employed alone for internal use, being chiefly compounded with other articles, the flavor of which it improves. Its chief use is as a rubefacient, being usually formed into liniments and bathing drops, with other articles. When taken internally, the dose is from ♏ v to ♏ viii.

TINCTURA ROSMARINUS: *Tincture of Rosemary.*—Prepared, either by digesting the tops of the Rosemary in spirits, or by dissolving 3ij of the Oil in Oj of alcohol.

SPIRITUS ROSMARINUS: *Spirits of Rosemary.*—℞ Mix 3ij of the oil of Rosemary with Cong. j of Rectified Spirits, and Oj of Aq., and then distil over one gallon by means of a gentle heat.

These preparations are chiefly used to give flavor to less agreeable articles of this class.

LAVANDULA.—The Flowers.

Synonymes.—Lavandula Vera: Lavandel, *Ger.*; Lavande, *Fr.*; Lavandola, *Ital.*; Espilego alhucema, *Span.*: Lavender, *Eng.*

Botany.—*Sex. Syst.* Didynamia Gymnospermia.—*Nat. Ord.* Lamiaceæ.

Gen. Char.—*Calyx* ovate, somewhat toothed, supported by a bract. *Corolla* resupine. *Stamens* within the tube.—*Willdenow.*

Spec. Char.—The L. vera is the species that is supposed to afford the officinal *Lavender Oil.* This is a small shrub, seldom attaining a height of more than two or three feet, but has been seen six feet high. It has a woody stem, which is covered with a brown bark. The branches are herbaceous, quadrangular, pubescent, and are furnished with opposite, sessile, linear, entire, green or glauceous leaves. The flowers are small, blue, and arranged in interrupted whorls around the young shoots, thus forming terminal cylindrical spikes.

Lavender is a native of the South of Europe, growing on the dry barrens of Spain, Italy, and the South of France, but is cultivated in most of our gardens and yards. In this country it flowers in August. The flowers have a peculiar aromatic and very agreeable flavor. By distillation with water, they yield the officinal essential oil of lavender. The formula of the oil, which possesses all the virtues of the flowers, and which is the only part used as medicine, is C^{15} H^{14} O^{2} or $3C^{5}$ H^{4}–|–2 H O.

Medical Properties and Use.—The flowering tops of Lavender are stimulant, anti-emetic, stomachic, carminative, and aromatic, but are seldom used in their crude state. The oil or spirits are the most common preparations and forms in which the medicine is used. The dose of the oil is *gtt.* ij to *gtt.* v. That of the spirit, from f℥ss. to f℥ij. It is much used as a perfume for other medicines.

HYSSOPUS.—Flowering Tops.

Synonymes.—Hyssopus Officinalis; Hyssop, *Eng.*

Botany.—*Sex. Syst.* Didynamia Gymnospermia.—*Nat. Ord.* Labiateæ.

Gen. Char.—*Calyx* five-cleft, nearly equal. *Corolla* upper lip roundish and notched at the apex, the lower three-petalled, middle lobe sub-crenate. *Stamens* straight and distant.

Spec. Char.—*Stems* numerous, erect, quadrangular, woody below, somewhat branched above, about two feet high. *Leaves* opposite, sessile, lanceolate linear, pointed, punctate. *Flowers* violet colored, or blue, but sometimes white, turned chiefly to one side, and disposed in half verticellated, terminal, leafy spikes. Hyssop is a native of Europe, where, as well as in our country, it is cultivated in gardens.

Medical Properties and Use.—The flowering summits and leaves of this plant are gently stimulant, aromatic, carminative, and tonic. The virtues of the plant are chiefly dependant on a volatile oil, that may be obtained by distillation with water or spirits. The medicine may be taken in the form of infusion, or that of the essential oil. The dose of the latter is from *gtt.* iij to *gtt.* v. It is not very much used in regular practice.

HEDEOMA.—The Herb.

Synonymes.—Hedeoma Pulegioides, U. S.; Grotten-balsam, *Ger.*; Pennyroyal *Eng.*

Botany.—*Sex. Syst.* Diandria Monogynia.—*Nat. Ord.* Lamiaceæ, or Labiateæ.

Gen. Char.—*Calyx* bilabiate, gibbous at the base, upper lip three-toothed, lower two; dentures all subulate. *Corolla* ringent. *Stamens* two, sterile; the two fertile stamens about the length of the corolla.

Spec. Char.—This is a very common plant in this country, and scarcely needs any description. It has an annual, small, fibrous, yellowish-white *root*. The *stem* is from nine to fifteen inches in height, obscurely angular, terete, pubescent, and much branched. *Leaves* small, opposite, lanceolate-oblong, attenuated at the base, sparsely dentated, prominently veined, especially below, pubescent. *Flowers*, small, pale-blue, verticillate, on short peduncles. *Calyx* striated, pubescent, labiate, upper lip divided into two ciliated segments, the lower into three rounded lobes.

Its flowering time is from July to September. It is found in every part of the United States, growing on dry ground, on the road sides, in uncultivated fields and open woods.

This plant has been confounded, by authors, with the *mentha pulegium*, or English pennyroyal, which belongs to a different genus. But as the medical properties of the two plants do not differ very much, the mistake can do no harm.

Hedeoma has a peculiar and fragrant smell, and a pungent, warming taste, which is possessed by the entire plant. It readily imparts its virtues to boiling water, and alcohol.

Medical Properties and Use.—The medical properties of this plant are, stimulant, carminative, diaphoretic, and emmenagogue, The infusion, commonly called *pennyroyal tea*, is a very popular domestic remedy, and is drank freely in colds, pleurisies, fevers; eruptive diseases, such as rubaola and scarlatina, as well as in menstrual obstructions. The *constituents* of this plant are principally the same as those of the most of the labiate plants.

Pharmaceutic Preparation.—OLEUM HEDEOMA: *Oil of Pennyroyal.*—This is obtained by distillation with water. It is of a pale yellow color, and a specific gravity of 0·948. Its taste and smell resemble those of the mint tribes generally, though peculiar to this plant. Those that know the smell of the plant will readily distinguish it.

Use.—This oil is much used, in the new practice, as a rubefacient. It is an ingredient of most of the liniments, and other preparations that are designed to act as excitants and counter-irritants on the surface. By many, it is also used internally as a stimulant, diaphoretic, and carminative. It may either be taken alone, dropped on sugar, or it may be worked into a pill mass, and thus formed into pills. In colic pains, pain in the stomach, rheumatism, amenorrhœa, &c., it is of great value.

MENTHA PIPERITA.—The Herb.

Synonymes.—Menta piperita, *Ital.*; Pfefferminze, *Ger.*; Menthe poivree, *Fr.*; Pimenta piperita, *Spanish*; Peppermint, *Eng.*

History.—It is supposed that this species of the mint genus was not introduced into the Materia Medica until the

latter part of the last century. It is a native of Europe, but is cultivated, for its oil, in various parts of this country. The plant is also set out in gardens, about springs and sides of brooks, and other wet places, for domestic use, and as a medical herb. When thus set out, in favorable places, it will spread spontaneously from the seed and roots, and thus spread in marshes and other wet places. The genus received its name from *Minthe*, the concubine of Pluto, who, according to the Heathen Mythology, was changed by Proserpine into a plant belonging to the genus now bearing her name.

Botany.—*Sex. Syst.* Didynamia Gymnospermia.—*Nat. Ord.* Lamiaceæ.

Gen. Char.—*Calyx*, campanulate or tubular, five-toothed, equal, or somewhat two-lipped, with the throat naked inside, or villous. *Corolla*, with the tube inclosed, the limb campanulate, nearly equal, four-cleft: the upper segment broader, nearly entire, or emarginate. *Stamens*, four, equal, erect, distant; *filaments*, smooth, naked *anthers*, with two parallel cells. *Style*, shortly bifid, with the lobes bearing stigmas at the points. *Achenia*, dry, smooth. (Bentham.)

Spec. Char.—*Stem*, smooth, branched, angular. *Leaves*, petiolate, ovate-oblong, acute, serrate, entire, smooth. *Spikes*, lax, short, obtuse, interrupted at the base. *Calyx*, five-cleft, slender, smooth at the base; teeth hispid.

The *root* is creeping; the *stem* from one to two feet high, nearly erect, quadrangular, and generally purplish at the top. The Corolla is funnel-shaped, and of a white or purplish color.

Description.—As kept in the drug stores, peppermint consists of the dried herb, put up in packages by the Shakers. The leaves are usually more or less broken up in packing. The herb is of a moderately green color, and of an agreeable flavor, peculiar to the mints.

Analysis.—The principal constituents of peppermint are *volatile oil*, *resin*, *camphor*, a *bitter principle*, *tannic acid*, and *woody fibre*.

Physiological Effects.—When taken into the stomach, peppermint acts as a stimulant, the pulse quickens a little,

and becomes fuller, and is accompanied with a pleasant warmth of the system. In the mouth, it produces a sense of coolness on respiring. This is in part dependant on the camphor it possesses. If the portion is repeated, or increased, perspiration will ensue.

THERAPEUTIC PROPERTIES AND USE.—Peppermint is a valuable stimulant, diaphoretic, stomachic, carminative and anodyne. In fevers, when nausea prevails, and other stimulants disagree, peppermint will usually be available. Its anodyne, carminative, and stimulating properties combined, render it of great service in pains in the stomach and colic, which are dependant on the confinement of wind. The dose is from *gr.* x—*gr.* xxx of the powder; but it is best taken in a liquid form.

PHARMACEUTIC PREPARATIONS AND USE.—INFUSUM MENTHÆ PIPERITÆ: *Infusion of Peppermint.* ℞ Dried peppermint herb ʒj, boiling water Oj; infuse for thirty minutes in a covered vessel; strain and sweeten. This is the most common way in which peppermint is taken, and is a very popular diluent, stimulant, and diaphoretic drink, under the name of *peppermint tea*, which is used in most cases of sickness. It is drank ad libitum, according to the object of its use.

OLEUM MENTHÆ PIPERITÆ: *Oil of Peppermint.* This is prepared by distilling the recently dried herb with water. It yields about one per cent., but varies much; in warm and dry seasons it yields more than in cold and wet. The oil, when fresh, is nearly colorless, but as it acquires age, it becomes deeply tinged with yellow. It has the mint odor much stronger than the herb. Held under the eyes, its evaporation produces a sense of coolness, like that experienced on tasting it. Its specific gravity is about 0·902, and its boiling point about 365° F.

Oil of peppermint is composed of C^{21} H^{20} O^{2}. On long standing, it deposits *stearoptene*, or camphor, the formula of which seems to be C^{10} H^{10} O.

The oil possesses the same virtues as the plant, but more concentrated. It is taken in doses of from *gtt.* ii—*gtt.* x, on sugar. It is rubefacient, and, from the cooling sensation it produces, is well adapted to relieve headache, by applying it to the temples and forehead.

ESSENTIA MENTHÆ PIPERITÆ: *Essence of Peppermint.* ℞ Oil of peppermint fʒij; Alcohol Oj; shake together until the oil is dissolved. This may be used in all cases in which the

oil would be prescribed, as in flatulency, pain in the stomach, colic, &c.

AQUA MENTHÆ PIPERITÆ: *Peppermint Water.* ℞ Oil of peppermint ʒiij; proof spirit ʒvij; water *Cong.* ij. Mix and distil one gallon. Dose f3j—f3iij.

Use. The same as the essence.

Commonly, peppermint water is made by dissolving a drachm of the oil in four pints of distilled water, by means of a little white sugar, spirit, or carbonate of magnesia.

ELÆOSACCHARUM MENTHÆ: *Mint Sugar.* ℞ Mix *gtt.* xxx or *gtt.* xxxx of the oil of either of the mints with ʒj of the powder of the whitest sugar.

ROTULÆ MENTHÆ: *Mint Drops.* These are plano-convex, or button-like masses, made of white or fancy colored sugar and the oil of peppermint.

MENTHA VERIDIS.—The Herb.

SYNONYMES.—Grune Munze, *Ger.;* Menthe a epi, *Fr.;* Menta Romana, *Ital.;* Yerba Buena Puntiaguda, *Span.;* Spearmint, *Eng.*

BOTANY.—*Sex. Syst.* Didynamia Gymnospermia.—*Nat. Ord.* Labiateæ.

Gen. Char.—Vide M. Piperita.

Spec. Char.—*Root* perennial, creeping. *Stem* inclining, or upright, angular, branched. *Leaves* sub-sessile, ovate-lanceolate, entire, unequally serated, smooth; those under the flowers are all bract-like, pubescent, rather longer than the whorls. *Spikes* cylindrical, loose. Its flowering season is in August; the stamens are long, and the corolla purple. It is a native of Europe, but is cultivated in gardens, or grows wild in our pastures, meadows, marshes, and the sides of streams. It should be cut in dry weather when in full bloom, and carefully dried. The smell and taste of spearmint somewhat resemble peppermint. It yields an essential oil by distillation with water, possessing the virtues of the plant. Its compostion is the same as that of peppermint. The entire plant is officinal.

MEDICAL PROPERTIES AND USE.—Spearmint is a valuable stimulant, carminative, diaphoretic, anti-emetic, anti-spasmodic, and is considered anthelmintic. The herb or oil may be used in the same way, and for the same purposes as pep-

permint. The *dose* of the powder is from *gr.* xx to *gr.* xxx. But it is generally taken in the form of an infusion or tea. The *dose* of the oil is is from *gtt.* iij to *gtt.* x.

MONARDA.—The Herb.

SYNONYMES.—MONARDA PUNCTATA, Horsemint, *Eng.*

BOTANY.—*Sex. Syst.* Diandria Monogynia.—*Nat. Ord.* Lamiaceæ.

Gen. Char.—*Calyx* five-toothed, cylindric, striate. *Corolla* ringent, with a long cylindric tube, *upper lip* linear, nearly straight and entire, involving the filaments; *lower lip* reflected broader, three-lobed, the middle lobe longer, (*Nutall.*)

Spec. Char.—*Root* perennial. *Stem* upright, about two feet high, branched, obtusely angled, downy, whitish. *Leaves* oblong, lanceolate, entire, remotely serate, punctate, pubescent. *Flowers* yellow, spotted with red or brown, disposed in whorls, provided with lanceolate colored bracts, longer than the whorl.

This is an indigenous plant, growing wild in light sandy or gravelly soils, in open woods and new grounds, in most of the States. It yields a pungent essential oil, possessing the smell, taste and virtues of the plant. The leaves and flowering heads are officinal. Its composition is about the same as that of peppermint.

MEDICAL PROPERTIES AND USE.—Monarda is an agreeable stimulant and carminative, useful in all cases in which the other mints are applicable. The oil is a good rubefacient. The *dose* of the oil is from *gtt.* iij to *gtt.* x. The herb is usually taken, prepared by infusion in boiling water, and drank freely *ad libitum.*

ORIGANUM.—The Herb.

SYNONYMES.—ORIGANUM VULGARE; Origan, *Fr.*; Gemeiner Dosten, Wohlgemuth, *Ger.*; Origano, *Ital.*; Oregano, *Span.*; Origanum, *Eng.*; Marjoram, *Vul.*

BOTANY.—*Sex. Syst.* Didynamia Gymnospermia.—*Nat. Ord.* Labiateæ, *Jussieu.* Lamiaceæ, *Lindley.*

Gen. Char.—*Strobile* four-cornered, spiked, collecting the ca-

lyces. *Corolla* with the upper lip erect and flat, the lower three-parted, with the segments equal.—*Willd.*

Spec. Char.—An indigenous, perennial plant, with erect, purplish, downy, four-sided, trichotomous stems, which grow usually about eighteen inches high, with opposite, ovate, entire leaves, which are slightly pubescent below, and of a deep yellowish-green color. *Flowers* numerous, rose-colored, disposed in round pannicled spikes, having ovate reddish bracts. *Calyx* tubular, five-toothed. *Corolla* funnel-shaped; upper lip erect, bifid, obtuse; lower one trifid, blunt, spreading. *Anthers* double. *Stigma* bifid and reflexed.

The plant grows on road sides, in uncultivated fields, and thin woods, throughout most parts of the Middle States. It flowers from June to October.

Medical Properties and Use.—A mild stimulant, diaphoretic, aromatic, and tonic. This is a very good article for a change, when it is wished to substitute a milder article for the more active and powerful stimulants. It is very pleasant to the taste, and agrees well with the stomach, and may hence be long continued without causing a repugnance to its taste. As an ingredient in stimulating compounds, it serves a good purpose in improving the flavor and taste of the medicines. It is applicable in all cases in which an aromatic or stomachic stimulant is required. The dose is from *gr.* xx to *gr.* xxx, taken by infusion in boiling water. Its principal *constituents* are *volatile oil, resin, tannic acid, a bitter principle,* and woody fibre; but its active properties are chiefly dependant on the volatile oil.

Pharmaceutic Preparation.—OLEUM ORIGANI; *Oil of Common Marjoram.* This is obtained by distillation from the herb with water. As it appears in the drug stores, it has commonly a reddish-brown color, but this mostly disappears on redistillation. Its taste is pungent, and its odor the same as that of the plant. A hundred pounds of the herb will usually yield about eight ounces, but the proceeds are much dependant on the character of the season and culture of the plant.

Use.—Oil of Origanum is an active stimulant and rubefacient. Its principal use is as an ingredient in rubefacient liniments, and bathing mixtures, but is sometimes used internally as a stimulant, stomachic, and carminative. The dose is from

℥ iv to ℥ vi, on sugar. Its composition, according to Kane, is C^{50} H^{40} O.

ORIGANUM MAJORRANA.—The Herb.

! Synonymes.—Majorinum Hortensis; Marjolaine, *Fr*; Majoran, Wurstkraut, *Ger.*; Maggiorana, *Ital.*; Mejorana, *Span.*; Sweet Marjoram, *Eng.*; Pot Marjoram. *Vul.*

Botany.—*Sex. Syst.*—Didynamia Gymnospermia.—*Nat. Ord.*—Labiateæ *Jussieu* Lamiaceæ. *Lindley.*

Gen. Char.—Vide Origanum.

Spec. Char.—" This species of Origanum has a perennial root with numerous stems, which are woody, branching, four-sided, and a foot and a half high. The leaves are sessile, in pairs, ovate, obtuse, entire, downy, and of a pale green color. The flowers are small, white, and appear successively between the bracteal leaves, which are numerous, and form round compact spikes, of which three or four are placed at the extremity of each peduncle. The corolla is funnel-shaped, with the upper lip erect, and roundish, the under divided into three pointed segments."

The plant is a native of Asia and Africa, and is much cultivated in Europe and America as a garden herb.

Its active properties depend on a volatile oil, which it yields to distillation with water. The other *constituents*, like those of *O. vulgare*, are *tannic acid*, *resin*, *bitter matter*, and *woody fibre*.

Medical Properties and Use.—This, like the other species, possesses mild, stimulating, and aromatic properties; and, like it, may be used in all cases in which such articles are indicated. It is taken without much reference to quantity, being prepared by infusing in boiling water, and then drank freely.

OLEUM ORIGANI MARJORANÆ: *Oil of Sweet Marjoram.*—This oil in appearance, taste and smell, much resembles that of the *O. vulgare* when re-distilled, but is something more agreeable than the latter. It is used in the same way, and for the same purposes as that.

MELISSA.—The Herb.

Synonymes.—Melissa Officinalis: Melisse, *Ger., Fr.;* Melissa, *Ital.;* Torongil, *Span.;* Balm, *Eng.*

Botany.—*Sex. Syst.* Didynamia Gymnospermia.—*Nat. Ord.* Lamiaceæ, or Labiateæ.

Gen. Char.—*Calyx* dry, nearly flat above, with the upper lip sub-fastigiate. *Corolla*, upper lip somewhat arched, bifid; lower lip with the middle lobe cordate.—*Willd.*

Spec. Char.—*Root* perennial. *Stem* branched, from one to two feet high. *Leaves* ovate, acute, cordate at the base, crenate. *Flowers* white, in axillary unilateral racemes. *Calix* thirteen-nerved, sub-campanulate, slightly ventricose in front, two-lipped, upper lip flat, truncate, with three short broad teeth, lower with two-lanceolate teeth. *Corolla*, upper lip concave, lower spreading, trifid, with apices of stamens connivant under the upper lip of the corol; *anther-cells* divergent.

Balm is a native of France, or the South of Europe, but is cultivated in gardens in this country. Its *constituents* are about the same as those of the *Origanum.*

Medical Properties and Use.—Balm is a mild stimulant, and aromatic, possessing, also, diaphoretic properties. Its medical properties are almost entirely dependant on its volatile oil, which it yields only in small quantities by distillation with water. The watery infusion is its most common preparation, which is drank freely as a stimulant and diaphoretic.

THYMUS.—The Herb.

Synonymes.—Thymus Vulgare: Thyme, *Eng.*

Botany.—*Sex. Syst.* Didynamia Gymnospermia.—*Nat. Ord.* Labiateæ.

Gen. Char.—*Calyx* sub-campanulate, throat closed with hairs. *Corolla*, upper lip flat, emarginate, lower lip longer.

Spec. Char.—*Leaves* numerous, erect, linear, ovate, revolute. *Flowers* small, in a whorled spike. A native of Europe, but is cultivated in gardens in this country. The *thymus seryllum*, or wild thyme of Europe, has similar properties to this. Both have a peculiar, grateful odor, which is dependant on its vo-

latile oil. The herbaceous portion is cut when in bloom, and dried for use, as a domestic remedy.

Medical Properties and Use.—*Thyme* is mildly stimulant and aromatic, but is seldom used in general practice. In domestic practice, it is used in the form of a warm infusion to promote perspiration, relieve headache, &c. By some, it is employed as tea at table.

SALVIA.—The Herb.

Synonymes.—Salvia Officinalis: Sauge, *Fr.;* Salbey, *Ger.;* Salvia, *Ital., Span.;* Sage, *Eng.*

Botany.—*Sext. Syst.* Diandria Monogynia.—*Nat. Ord.* Lamiaceæ, or Labiateæ.

Gen. Char.—*Calyx* tubular, striated, two-lipped, upper lip two to three-toothed, lower lip two-cleft. *Corolla* ringent. *Filaments* affixed transversely to a pedicel.

Spec. Char.—There are several species that possess about the same medical properties. The *salva officinalis,* or common garden sage, is a perennial plant, about two feet in height, and has a branching shrubby stem, furnished with numerous, opposite, petiolate, ovate lanceolate, crenulate, wrinkled, grayish-colored leaves; which, as well as the flowers, have a peculiar fragrant odor and warming aromatic, bitterish, and slightly astringent taste. The flowers are blue, variegated with white and purple, and are disposed on long terminal spikes. Sage is a native of Europe, but is cultivated in most of our gardens. The several varieties differ chiefly in the size and color of their flower.

Medical Properties and Use.—Sage has mildly stimulant properties united with tonic, and slightly astringent. The infusion is used with other preparations as a gargle in aphtha, &c.; and is also used as a common drink during convalescence from fevers, and in various other affections. Sage was highly esteemed by the ancients, but is not very extensively used in general practice, except in the form of a gargle and wash for sore mouth, relaxation of the uvula. For this purpose, it is usually prepared with some more powerful astringent, as geraneum maculatum, or myrica cerifera, and sweetened with honey, and sometimes vinegar is added.

CALAMUS.—The Rizomæ.

Synonymes.—Acorus Calamus; Calamus Aromaticus: Acorus vrai, Acorus odorant, *Fr.;* Kalmuswurzel, *Ger.;* Calamo aromatico, *Ital., Span.;* Sweet Flag, *English.*

Botany.—*Sex. Syst.* Hexandria Monogynia.—*Nat Ord.* Acoraceæ.

Gen. Char.—*Receptacle* spadix-like, cylindric, covered with florets. *Corolla* six-parted. *Style* none. *Stigma* insignificant. *Capsule* three-celled, three-seeded.

Spec. Char.—*Rizome* horizontal, fleshy, jointed, with a layer of bristly fibres at the joints, beset with numerous fibres below, white within, externally whitish, and tinged on the planes with yellow or green. It has a peculiar odor, and spicy aromatic and pungent taste. *Leaves* radical, sheathing at the base, long, sword-shaped, smooth, green above, reddish, variegated with red, green and white at their base or junction with the rizome. The scape resembles the leaves, but is something longer, and sends out from one side near the middle of its length the spadix, which is crowded spirally with small flowers.

Calamus is an indigenous plant, growing in wet, swampy places, in most parts of the U. S. Its flowering time is in May or June. According to Trommsdorff, its composition is as follows: 0·1 per cent. of *volatile oil*, 2·3 *soft resin*, 3·3 *extractive*, with a little *chloride of potassium*, 5·5 *gum*, with some *phosphate of potassa*, 1·6 *starch* analogous to inulin, 21·5 *lignin*, and 65·7 *water*.

Medical Properties and Use.—Calamus is a stimulant tonic, possessing in some degree the virtues of the aromatics. It is also carminative, and has been used with success in flatulency, pain in the stomach, and in colicy affections, especially among children. As an adjuvant to tonic and laxative medicines, it is of considerable benefit in dyspepsia, dysentery, and other affections of the alimentary canal. In domestic practice, it is often boiled in milk, and taken freely. The root is also chewed by some. The watery infusion is prepared by scalding an ounce of the root in a pint of water. The dose of this is a wine-glass-ful or more.

Order III.—FRAGRANT VOLATILE STIMULANTS: CARMINATIVES.

The order of stimulants called *fragrant volatile*, embraces the umbelliferous tribe, which are very agreeable to the taste, and acceptable to the stomach. They are valuable on account of their carminative virtues. These are dependant upon their peculiar power to excite the muscular contractions of the stomach and intestines, which, owing to atony, occasioned by their being a long time in a state of over-distention, are incapable of contracting readily, and hence remain in a tympanic state. The peculiar stimulating virtues of *carminatives* seem to overcome this atony of the muscles, or, at least, they so influence the nerves of these organs, as to excite the latter to contract, and thus they expel the wind that is pent up within them.

The active properties of the fragrant volatile stimulants reside in an essential oil, and hence alcohol and ether are their proper menstrua. Experience proves, however, that all essential oils, as already stated, while combined with gum and extractive matter, will be taken up by water, especially when the latter is at the boiling temperature, thus *infusions* or *teas* are very common forms in which our stimulant and carminative herbs are taken. But all officinal preparations besides the oils and the dry preparations, are made with alcohol. The essential oils of the fragrant stimulants are also obtained by distillation with water.

FŒNICULUM.—The Seed.

Synonymes.—*Μαραθρον*, *Gr.*; Fenchel, *Ger.*; Fenouil, *Fr.*; Finnocchio, *Ital.*; Xinojo, *Span.*; Fennel, *Eng.*

Botany. — *Sex. Syst.* Pentandria Digynia.— *Nat. Ord.* Umbelliferæ.

Gen. har.—*Calyx*, a tumid, obsolete rim. *Petals*, roundish, entire, involute, with a squarish, blunt lobe. *Fruit*, tapering. *Half Fruits*, with five prominent bluntly keeled ridges, of which the latteral are on the edge, and rather broadest. *Vittæ*, single in the channels, two on the commissure. *Involucre*, none.—*Lindley.*

Spec. Char.—There are several species of fennel that are possessed of analogous properties.

1. Fœniculum Dulce: *Sweet Fennel. Stem* somewhat compressed at the base. *Radical leaves* somewhat distichous. *Segments* capillary, elongated. *Umbels* of 6 to 8 rays, *Dec.* This is a smaller plant than the following, and is an annual; but its fruit is much larger, some nearly 5 lines in length, less compressed, somewhat curved and paler, with a greenish tinge.—A native of the south of Europe, cultivated in our gardens as a pot-herb, and for garnishing "*finnochio dulce*, turionibus edulibus."

2. Fœniculum Vulgare: *Wild Fennel. Root* biennial, or perennial, tapering. *Stem* annual, three to four feet high, roundish at the base, filled with pith. *Leaves* decompound. *Segments* capillary and elongated. *Flowers* umbelliferous, yellow, small. *Umbels* large, from thirteen to twenty rays. *Fruit* oblong, small, dark colored, odoriferous.—An European plant, growing wild on sandy and chalky soil.

Medical Properties and Use.—One of our best carminatives and aromatic stimulants; very valuable as an adjunct to other less pleasant medicines. *Dose*, ʒss.—ʒj.

Pharmaceutic Preparations.—Oleum Fœniculum Dulcis: *Oil of Sweet Fennel.* This is prepared simply by distilling the bruised seed with water.

Action. Use.—Same as the seed.

Aqua Fœniculi: *Fennel Water.* ℞ Bruised seeds of *Fœniculum dulce*, ℔j. Aq. q. s. to prevent empyreuma. Distil Cj.

Action. Use.—A mild carminative and aromatic, useful as a vehicle.

ANISUM.—The Seed.

Synonymes.—Pimpinella Anisum. U. S. E. Anissame, *Ger.*; Graines d'anis, *Fr*; Semi d'aniso, *Ital*; Semiente de anis, *Span.*; Anison, *Arab*; Anise Seed, *Eng.*

Botany.—*Sex. Syst.* Pentandria Digynia.—*Nat. Ord.* Umbelliferæ.

Gen. Char.—*Fruit* ovate-oblong. *Petals* inferior. *Stigma* nearly globular, (*Willd.*)

Spec. Char.—*Stem* about a foot high, smooth. *Radical leaves* heart-shaped, rather roundish, lobed, incised; *stem leave* biternate. *Segments* linear, lanceolate, rather wedge-shaped, acuminate. *Umbels* on long stalks, many-rayed without involucres. *Flowers* small, white. *Calyx* obsolete. *Petals* obcordate, with an inflexed point. *Fruit* ovate, one line and a half

long, covered with a few scattered hairs. *Carpels* with five filiform equal ridges. *Interstices* with three or more vittæ. *Stylopodium* tumid. *Styles* of the fruit recurved, (*Nees and Eberm.*, 275).

Description.—The fruit commonly called *aniseed*, is ovoid, of a greenish-gray color, and slightly downy; the taste is warm, sweetish, and aromatic; the odor penetrating but agreeable, resembling the star-anise. It is cultivated in Malta and the south of Spain, and also in Germany, also in our gardens. The kernel contains three and five-tenths per cent. of *fixed oil*, and the inner firmly-adhering seed-coat about three per cent. of *volatile oil* of *anise*, on which its properties chiefly depend.

Therapeutic Properties.—Agreeable carminative, and much used for flavoring condiments.

OLEUM ANISI; *Oil of Anise.*—This is obtained by distillation, with water, from Aniseed. It is of a bright yellow color, and has the strong odor and taste of Anise. Much is imported from abroad; but that which is said to come from the East Indies is probably produced by some other plant. It solidifies very readily at 50°, from containing a large proportion of Stearoptene.

Action. Uses.—Stimulant aromatic, stomachic, useful in flatulent colic, in doses of ♏ v—♏ xv.

SPIRITUS ANISI, L. (COMPOSITUS) D. *Spirit of Anise.*—℞ Mix bruised Anise ʒx (and bruised seeds of Angelica aa. ℔ss. D), Proof Spirit Cj; and Aqua Oij (q. s. to prevent empyreuma. Macerate for twenty-four hours, D.); with gentle heat, L. Distil Cj.

CARUM.—The Seed.

Synonymes.—Carui, L. E., Carum Carui; Carvi, *Fr.*, *Ital.*; Gemeiner Kummel, *Ger.*; Alcaravea, *Span.*; Caraway Seed, *Eng.*

Botany.—*Sex. Syst.* Pentandria Digynia.—*Nat. Ord.* Umbelliferæ.

Gen. Char.—*Fruit*, ovate-oblong, striated. *Involucre*, one-leaved. *Petals*, keeled, inflexed-emarginate.—*Willd.*

Spec. Char.—A biennial, about two feet high. *Root*, fusiform. *Leaves*, bipinnate. *Leaflets*, cut into linear segments. *Involucre*, wanting, or of one leaf. *Involucel*, none. *Calyx*, ob-

solete. *Petals* obcordate, with a narrow acute inflexed point. *Fruit* aromatic, oblong, a little curved, brownish colored. *Carpels* with five filiform ridges. *Interstices* with single vittæ. *Stylopodium* depressed.—Grows in meadows and pastures; cultivated in gardens.

DESCRIPTION.—The fruit, or officinal portion, is about two lines in length, slightly curved, with five longitudinal ridges, which are of a light yellowish color, while the interstices are of a dark brown.

Caraway seeds have a pleasant odor and a warm aromatic taste, owing to the presence of about five per cent. of volatile oil, which may be dissolved by alcohol or distilled off with water.

THERAPEUTIC PROPERTIES AND USE.—Stimulant carminative, much used in confectionary. Its oil and spirit as corrective adjuncts, the water as a vehicle.

OLEUM CARUI, L. E. D.: *Oil of Caraway.* Obtained by distilling with *Aq.* the (bruised, E.) fruit of *Carum Carui.*

SPIRITUS CARUI, L. E. D.; *Spirit of Caraway.* ℞ Take *bruised Caraways* ʒxxij (℔ss. E. ℔j D.) *Proof Spirit* Cj (Ovij E.) *Aq.* Oij L. (q. s. to prevent empyreuma, D.) Mix. (Macerate for two days, (24 hours, D.) in a covered vessel, add *Aq.* Ojss. E.) with gentle heat, L. Distil Cj (Oviij E.)

AQUA CARUI, L. E. D.: *Caraway Water.* ℞ Take *bruised Caraway Seeds* ℔j, pour on *Aq.* q. s. to prevent empyreuma. Distil Cj. Same as Aq. Anethi, L.

ANETHUM.—The Seeds.

SYNONYMES.—ANETHUM GRAVEOLENS; Aneth a odeur forte, *Fr.*; Dill, *Ger.*; Aneto, *Ital.*; Aneldo, *Span.*; Dill, *Eng.*

HISTORY.—Dill (*ανηθον*), a native of the south of Europe and of the Oriental region, was well known to the ancients.

BOTANY.—*Sex. Syst.* Pentandria Dyginia.—*Nat. Ord.* Umbelliferæ.

Gen. Char.—*Fruit* nearly ovate, compressed, striated. *Petals* involuted, entire.—*Willd.*

Spec. Char.—An annual plant, one to two feet high, every part smooth and glaucous, stem finely striated. *Leaves* tripinnated, with fine capillary segments like those of the Fen-

nel, petioles broad and sheathing at the base. *Umbels* long-stalked, without general or partial involucres. *Calyx* margin obsolete. *Petals* varnished, yellow, roundish, entire, involute. "*Fruit* lenticular, flat, of a bright brown color on the rather convex back, surrounded by a pale membranous margin. *Carpels* or half fruits with equi-distant filiform ridges, the three dorsal acutely keeled, the three lateral more obsolete, and passing into the margin. *Vittæ* broad, solitary, filling the whole channels, two on the circumference."—Much cultivated in the East, but also in the U. S. as a domestic remedy and condiment.

DESCRIPTION.—"The flattened elliptical fruits, commonly called seeds of the Dill, with their brown and slightly convex backs and pale membranous margin, are easily distinguished from the other officinal fruits. Both the plant and the fruit are much used in the East as condiments and articles of diet. The plant is hence mentioned in the New Testament among the things tithed; but it is translated Anise. The carpels have a bitter but aromatic taste, owing to the presence of volatile oil which is stored up in the vittæ, making them useful as carminatives."

THERAPEUTIC PROPERTIES AND USE.—Dill is an aromatic and carminative, very agreeable to some persons. It is used in the same way as the other carminatives generally.

PHARMACEUTIC PREPARATIONS.—OLEUM ANETHI: *Oil of Dill.*—℞ Distil with *Aq.* bruised fruit of *Anethum graveolens.*

Action. Uses.—Odor and taste aromatic. Used for making Aqua Anethi. Carminative in doses of ♏ v.

AQUA ANETHI, L. E.: *Dill Water.*—℞ Mix bruised *Dill seeds* ℔jss. (℥xviij E.) *Aq.* Cij. *Proof Spirit* f℥vij (rectified, E. f℥iij E.) Distil Cj.

Action. Uses.—Aromatic, and much given to infants to relieve flatulence, and used as a vehicle for active medicines.

ANGELICA.—The Root, Herb, and Seed.

SYNONYMES.—Engelwurzel, *Ger.;* Angelique, *Fr.;* Arcangelica, *Ital.;* Angelica, *Span.;* Archangel, *Eng.*

BOTANY.—*Sex. Syst.* Pentandria Digynia.—*Nat. Ord.* Umbelliferæ.

Gen. Char.—*Fruit* elliptic, compressed, somewhat solid and corticate; ridges three, dorsal, acute, intervals grooved, margin alated. *General involucre* none. (*Sprengel.*) *Umbel* large, many-rayed, spreading; *umbellet* dense, sub-hemispheric; *involucell* about eight-leaved. *Calyx* five-toothed. *Petals* inflected. *Nuttall.*

Spec. Char.—There are two officinal species of angelica:

1. A. Atropurpurea: *Masterwort.* This is a thrifty indigen ous herbaceous plant, growing from three to ten feet in height. *Root* perennial, large, purplish. *Stem* smooth, herbaceous, large, hollow, and often as thick as the wrist. Leaves very large, tri-ternate, and supported on long hollow petioles. *Flowers* umbeliferous, greenish-white.—Grows wild, in meadows and other open places, in a rich soil, in various parts of the U. S. Flowering time in June and July. The entire plant has a strong and peculiar, but not unpleasant odor.

2. Angelica Archangelica: *Garden Angelica.* This is a biennial plant, native of Europe, but cultivated in our gardens.

Root large, pungently aromatic. *Stem* three to five feet high, hollow, striated rather glaucous. *Foliage*, stalks and even flowers of a bright green. *Leaves* two or three feet wide, bipinnated or biternate. *Leaflets* ovate, lanceolate sharply and closely serrated, all sessile, partly decurrent, terminal one trifid. *Petioles* much dilated at the base. *Umbels* terminal, globular, with dense secondary umbels. *Involucre* of two or three linear bracts, secondary one of about eight linear lanceolate bracts. *Calyx* minutely five-toothed. *Petals* ovate, entire, accuminate, incurved. *Fruit* nucleated. *Car-pels* or half-fruits with three dorsal thick-keeled ridges and two marginal ridges dilated into broad wings. *Interstices* without vittæ. *Seed* free, with numerous vittæ. *Nees and Eberm.*

Description.—In its recent state, the root of the first named species of angelica is acrid, and is, by some, said to be poisonous. But in the dried state its acrid properties are dissipated. As it occurs in market, it is either split up into longitudinal sections, or is cut transversely. Its odor is not as strong as that of the recent root. The seed is flat, about two or three lines in diameter, swelled in the centre, and has an aromatic taste and peculiar odor.

Medical Properties and Use.—The root and seed of both species of angelica are used for medical purposes, and likewise the herb of the species last described. The virtues they possess are those of an elegant stimulating aromatic and carminative, applicable in most cases in which articles of this class are indicated.

CUMINUM.—The Seed.

Botany.—*Sex. Syst.* Pentandria Digynia.—*Nat. Ord.* Umbelliferæ.

Gen. Char.—*Fruit* ovate, striated. *Partial umbels* four. *Involucres* four-cleft. *Wood.*

Spec. Char.—An annual plant, about six or eight inches high, with a round slender stem; numerous narrow, linear, pointed, smooth *leaves*, which are of a deep green color. *Flowers* white, or purple, disposed in umbels of few rays. *Involucres* with three or four linear leaflets. *Fruit*, or *seed*, oblong, plano-convex, or flat on one side and convex, furrowed or rough on the other, about one sixth of an inch in length, and of a bright brown color. Each has seven longitudinal ridges. The odor of the seed is peculiar, strong and durable; the taste warm, bitterish, aromatic, and somewhat disagreeable.

Medical Properties and Use.—Cumin seed possesses about the same medical virtues of the umbellifera generally, being stimulant, aromatic, and carminative. As a stimulant it is rather more powerful than most of those yet described in this order. It abounds in an essential oil, which possesses all its active properties. The dose of the oil is from ♏ v to ♏ xx; that of the powdered seed is from *gr.* xv to 3ss.

CORIANDRUM.—The Seed.

Botany.—*Sex. Syst.* Pentandria Dygynia.—*Nat. Ord.* Umbelliferæ.

Gen. Char.—*Corolla* radiate. *Petals* inflex, emarginate. *Universal involucre* one-leafed. *Partial involucres* halved. *Fruit* spherical.—*Willd.*

Spec. Char.—An annual plant, with an erect, round, smooth, branched stem, about two feet high. *Leaves* compound, upper ones thrice ternate, with linear pointed leaflets; the lower ones are pinnate, with the pinnæ cut into irregular serrated lobes, resembling A. Petroselinum. *Flowers* white, or of a crimson lake, small, and arranged in terminal umbels.

Fruit globular, small, and possessing a peculiar aromatic taste and flavor.

Medical Properties and Use.—Coriander may be regarded as among the mildest of our aromatic stimulants and carminatives. Its chief use is as an adjunct to other remedies, to cover their unpleasant taste or smell. When taken alone, the dose is from ʒj to 3j of the powdered seeds. It yields an essential oil, by distillation, which possesses its virtues.

DAUCI FRUCTUS.

The seed of the common carrot is a good carminative, sometimes used in domestic practice. The root makes a good cataplasm.

Order IV.—GUM-RESINOUS STIMULANTS.

This order is well distinguished by the physical character of its articles, which are concrete productions of various species of plants. They are called *gum-resins*, because of their partaking of the nature of both *gums* and *resins* in their essential properties. They are more permanent in their effects than any other order of stimulants, and also combine with their stimulant properties the virtues of a tonic. This circumstance explains, in part, the cause of their more permanent stimulant powers.

The gum-resinous stimulants are quite available in the treatment of many varieties of disease. Their solvents are alcohol and water. Alcohol dissolves the resin, and water the gum. The alcoholic solutions, called *tinctures* are the most valuable, being generally the most active, as the stimulant virtues of this order of medicaments abound most in the resinous portions.

MYRRHA.

Synonymes.—Balsamodendron Myrrha, *Μυρρα*, *Σμυρνα*, *Greek;* Bowl, *Hindoo;* Mirra, *Ital., Polish, Portuguese, Span.;* Myrrha, *Ger.;* Myrrhe, *Fr.;* Mirrhe, *Dutch;* Myrre, *Danish;* Myrha, *Swedish;* Murr, *Arab.*

History.—"The earliest notice of Myrrh occurs in the

Old Testament, (Gen. xxxvii: 25), from which it appears that this gum-resin was an object of trade with the Eastern nations more than three thousand five hundred years ago. In the Hebrew language it is termed *Mur*, in allusion to its bitterness. The Greeks, who were well acquainted with it, called it *Σμυρνα;* or in the Æolic dialect, *Μυρρα*. Hippocrates, (*See Dierbach, Arzneim des Hippok., p.* 224), employed it in medicine in several diseases; and Dioscorides (*lib.* i: *cap.* 77), describes several kinds of it, the most esteemed being the Troglodytica. Some of the ancient poets tell us that the name of this gum-resin was derived from Myrrha, the daughter of Cinyras, king of Cyprus, who fell in love with her own father, and after having criminal intercourse with him, fled to Arabia, where she was changed into a tree which still bears her name."

The ancients seem, however, not to have had a knowledge of the tree which yields the *gum-myrrh*, although the drug was so extremely popular with them. Nor were the moderns better informed, until about the year 1825, when Ehrenberg returned from his travels in various parts of Asia and Africa, with Hemprich; and who brought with him a specimen of the tree which has been described and figured by Nees von Esenbeck in his *Beschriebung Officin Planzen*, where he observes that his friend Dr. Erenberg collected, from off this tree "*schr shœnæ Myrrh*," (very pretty Myrrh). He describes the tree to belong to the Balsamodendron genus.

The tree, according to accounts, is found in Arabia Felix, near Gison, growing in thickets, among the acaciæ and euphorbia. A species of Balsamodendron, said to yield myrrh, is reported to grow in Africa. Johnson says, that during his travels in Africa, he found two varieties in Adel. Other statements, also, go to show that myrrh is collected, for exportation, on the borders of the Red Sea. Dr. Malcolmson, in a communication from Aden to Dr. Royle, states that it is exported in native boats from different ports on the Red Sea, but chiefly from Berbera, Zela, and Massowah, and adds that there is no myrrh produced in Arabia. The East Indies now furnish the most myrrh.

The gum exudes spontaneously from cracks in the bark on

the trunk of the tree, near the ground, and flows freely on the ground and stones below. The natives also bruise the bark with stones, to promote its exudation.

Botany.—*Sex. Syst.* Octandria Monogynia.—*Nat. Ord.* Terebenthinaceæ.

Gen. Char.—*Flowers* irregular. *Calyx* four-toothed, persistant. *Petals* four, linear-oblong; æstivation induplicate-valvate. *Stamens* eight, inserted under the annular disk; elevated warts between the stamens. *Ovary* one. *Style* one, short, obtuse. *Berry* or *drupe* ovate, acute, with four sutures, one or two-celled; *cells* one-seeded.—Oriental trees giving out balsam. *Leaves* pinnated; *leaflets* three to five, sessile, without dots, (*De Cand.*)

Spec. Char.—*Stem* shrubby, aborescent; *branches* squarrose, spinescent. *Leaves* ternate; *leaflets* obovate, obtuse, obtusely tooth-letted at the apex, the lateral smooth. *Fruit* accuminate, (*Nees*).

A small shrubby tree, with whitish gray bark, and yellowish white wood, both of which have a peculiar odor. The branches are rough, beset thinly with thorns, and terminate with spines. The leaves are ternate, consisting of three ovate lobes, the two lateral of which are smaller. The fruit is oval, pointed, longitudinally furrowed, of a brown color, somewhat longer than a pea, and surrounded, at the base, by the four-toothed persistant calyx.

Description.—Myrrh is a gum-resin that occurs in various sized, irregular pieces. Some varieties consist of tears, either separate or agglutinated. It is usually of a reddish-brown and semi-transparent appearance. Some impure and bad specimens are dark, or blackish. Others, again, are almost transparent. When fractured, it presents a shining and fresh appearance. When it is well dried out, and is cold, it will pulverize pretty easily; but when warm, it becomes tenacious. It is inflammable, but not actively so, and is not fusible by heat. Its specific gravity is about 1·36. The taste is bitter, and peculiarly aromatic. Its odor is strong and durable.

Few drugs present more of a variety in quality, as it is not only liable to contain dirt, and sand, and bark, but is

often very much adulterated with pieces of bdellium and various other gums of the sort. Bdellium is more soft and waxy, and will soften more by the application of heat; even the heat of the hand will soften it. It is bitter and somewhat acrid.

Myrrh is only partially soluble in water, alcohol, or ether. Water takes up its gummy and extractive matters. Alcohol and ether dissolve, to some considerable extent, the resin and oleaginous principles in which the virtues of the drug chiefly reside. If nitric acid be added to the watery solution, the latter is turned red, and potash increases the solvent power of water, causing it to decompose the resin.

The drug is usually imported in chests, containing from one to two hundred weight. That brought from Turkey has generally been considered the best, and an inferior article was brought from India. But at the present time nearly all the myrrh is imported from the East Indies, so that the names, *Turkey Myrrh* and *India Myrrh*, as designating quality, are not any longer appropriate. It may be supposed, from the manner in which it is collected, that a difference of quality in the drug will obtain; thus we find that the chests in which it is imported sometimes contain the article of two or three qualities, when it is termed *myrrh in sorts*. But these are sometimes sorted out, and thus we have myrrh of the *first*, *second*, and *third* quality. The first quality alone should be used as medicine; it is of a uniform reddish-brown color, semi-transparent, has a very strong odor, and is clear from impurities.

Analysis.—Myrrh contains a *volatile oil*, *resin*, *gum*, and *various* kinds of *salts*.

Volatile Oil.—This is a peculiar production, having the common characteristics of essential oils, with the peculiar aroma and taste of the myrrh. When fresh, it is clear, but becomes yellowish by keeping. It is heavier than water, and is soluble in alcohol, ether, and the fixed oils. Exposed to the air, it partially evaporates, leaving a thick, varnish-like residuum. It may be procured by distillation with water, but not with alcohol.

2. Resin.—This is hard, without odor, insoluble in ether, soluble in caustic alkali. The resin and oil unite with facili-

ty, forming a soft resin, which is supposed by some, (Pereira, Royle,) to be an elementary principle, like the hard resin. This *soft resin* is odorous, and partially soluble in ether, and alcohol.

3. Gum.—This is composed of *bassorin*, and *arabin*;—the former insoluble in water,—the other soluble. The latter forms a precipitate when alcohol is added to the watery solution.

Myrrh was analyzed by Pelletier, in 1816,* and by Braconnot, in 1819,† and by Brande, (Dic. Mat. Med. Lon. Ed. 1839, p. 366.) The following tables exhibit their results:

PELLETIER.	
Volatile Oil } Resin, }	34
Gum, soluble and insoluble,	66
	100

BRACONNOT.	
Volatile Oil,	2·5
Resin,	23·0
Gum, soluble,	46·0
Gum, insoluble	12·0
Loss,	16.5
	100 0

BRANDE.	
Volatile Oil,	2·60
Resin, soft	22·24
Resin, hard	5·56
Gum, soluble,	54.38
Gum, insoluble, (*Bassorin*,)	9·30
Salts (benzoates, malates, phosphates, sulphates, and acetates of potash and lime,	1·36
Impurities and Loss,	4·55
	100·00

Physiological Effects.—The most prominent effects of myrrh on the healthy system, when taken into the stomach, in moderate doses, are at first an agreeable warmth, which if the dose is repeated, is gradually extended to the whole body; the pulse is quickened and rendered stronger. It increases muscular activity, (Pereira,) and gives firmness to the solids. Its occasional use promotes assimilation, and expec-

* Ann. de Chein, ixxx 45.

† Ibid ixvii 52.

toration. It seems also to exert a specific action on the uterine system, and is hence, considered emmenagogue. In over doses, it produces nausea and headache. Locally, it acts mildly, as an astringent, and stimulant.

THERAPEUTIC PROPERTIES.—This article has been variously regarded by therapeutists, with respect to its most prominent effects as a medical agent. Some have considered it most active as an expectorant; (Murray) some as an emmenagogue, and anti-spasmodic, and others as a stimulant, tonic, and anti-septic. Parr considered it a narcotic bitter, and moderate sedative.

Its most obvious effects, however, without doubt, are those of a stimulating tonic, as is well evinced in the popular use of its tincture.

The medicine is particularly indicated in all cases of feeble vital reaction, as in malignant, putrid, and pestilential disorders. It is very serviceable in the epidemic cholera, and cholera morbus; also in dysenteria, typhus, and in malignant scarlatinia. In phthisis pulmonalis, chronic catarrh, and in humoral asthma, it is highly esteemed by many practitioners.

Its popularity as a medicine in amenorrhœa and chlorosis, is of considerable antiquity, and, without doubt, will still continue, as must necessarily be expected from an active stimulating tonic.

It is a common remedy in rheumatism, and is often indiscriminately administered in unsettled pains in the chest, side and abdomen.

As a local application, it is of great service in aphthea, malignant anginosa, ulcerated and spongy gums, and mercurial sore mouth. In various ill-conditioned sores, ulcers, fistulas, cancers, &c.; it proves itself a remedy of great value; the tincture, of a proper strength, should frequently be applied by means of a sponge, cloth, or syringe, as the case may require. It cleanses the sore, corrects the fetor, and stimulates the parts to a healthy action.

PHARMACEUTIC PREPARATIONS.—TINCTURA MYRRHÆ: *Tincture of Myrrh.*—℞ Myrrh in coarse powder, ℥iij; Rectified Spirit, Oij: Macerate eight or ten days and filter. The U. S. Dispensatory directs Myrrh, bruised, ℥iv; Alcohol, Oij: Macerate

fourteen days and filter through paper. This is the most common form in which Myrrh is used. The dose is f 3j.

TINCTURA MYRRHÆ COMPOSITUM: *Compound Tincture of Myrrh.* ℞ Myrrh, in coarse powder, 3iij; Alcohol, or fourth-proof Brandy, Oij; Capsicum, 3ss.: Macerate ten days, or boil in a water-bath ten minutes, and when clear, decant.

Use.—The compound tincture of Myrrh is applicable in all cases in which the myrrh itself is indicated, but will be found much more stimulating, prompt, and permanent in its effects. Besides its internal use, it is also much employed in the form of a liniment, for various painful swellings, bruises, rheumatism, &c. The dose is 3ss. to 3j.

PILULÆ MYRRHÆ: *Myrrh Pills.*—℞ Myrrh, 3iv; Carbonate of Potassa, 3ij; good rye Whisky, Oij: bruise the Myrrh, add the whole together, boil in a water bath fifteen minutes, and filter; evaporate to the consistence of an extract, and form into pills. Dose from one to three. Useful as a tonic in amenorrhœa, chlorosis, dyspepsia, and general muscular debility. The U. S. Dispensatory gives a formula for a *Tonic Myrrh Pill* that contains Ferrium, and is regarded by the old school practitioners, as one of their most active and valuable tonics in all cases of amenorrhœa and chlorosis. But this formula is not recognized by the new schools of Medicine. Mineral tonics are not considered necessary, while our vegetables of this class answer our purpose so promptly and efficiently. Aloes is also combined with Myrrh, to form tonic and emmenagogue pills.

AMMONIACUM.—The Gum-Resin.

SYNONYMES.—DOVEMA AMMONIACUM. Ammoniak, *Ger.;* Ammoniaque, *Fr.;* Ammoniaco, *Ital.;* Amoniaco, *Span.;* Ushek, *Arab.;* Semugh belshereen, *Persian.;* Ammoniac, *Eng.*

HISTORY.—Much uncertainty is involved in the history of this drug. Prof. Royle has collected the following facts, which will, no doubt, be interesting to many readers: "Ammoniacum is described by Dioscorides, 3 c. 88, (or 98,) as the produce of a plant called *Agasyllis*, *Metopium* of Pliny, which grows in Cyrenaic Africa, near the temple of Jupiter Ammon, whence it derives its name. Mr. Don supposed this to be a corruption of Armoniacum: it is so written in some old books. Jackson, in his account of Morrocco, states that the

Ammoniacum plant, which he calls *Feshook*, grows in Morocco, near Al-Araish. The Hon. Fox Strangways favored Dr. Lindley, as well as the author, with the fruit of a *Ferula*, which was marked as that of *Fusogh*, or Gum Ammoniac, obtained by him from Tangier. Some of these were sent to Dr. Falconer, by whom they were grown in the Saharunpore Botanic Garden, and the plant found to be identical with *Ferula Tingitana*. Dr. Lindley had previously determined the fruit to be that of the same plant. In his Flora Medica, he refers the *Feshook* of Jackson, t. 7, to *F. orientalis*, with a query. But the ammoniacum of commerce of the present day is a product of Persia, and obtained from Bombay, having been previously imported there from the Persian Gulf, whence probably a portion is also carried up the Red Sea, and thus reaches Europe by the Levant. Capt. Hart (Trans. Med. Soc. of Calcutta, i. p. 369) found the plant in the plains between Yezed-khast and Kumisha, on the road from Shiraz to Ispahan, or on the border of the provinces of Fars and of Irak Ajemi. Lt. Col. Johnston saw the plants growing at Mayer and Yezed-Khast, and collected specimens of the plant, with its fruit and gum. Lt. Col. Wright obtained specimens at the same place, which he gave to the Linnean Society, and which Mr. Don described. M. Fontanier (Merat and De Lens, i. p. 25) also obtained it at Yezd-Cast in Faristan, which appears to be the same place. Maj. Willock informs the author that the *ooshak* plant is only to be met with in the province of Irak, in dry, gravelly plains, where it is exposed to an ardent sun. Sir John M'Neil found it on the low hills near Herat, and Dr. Grant at Syghan, to the north of Bamean, where the same dry climate prevails. In the same kind of country, but more to the eastward, many other Umbelliferæ were found by Dr. Falconer, together with *Narthex Assafœtida* and *Prangos pabularia*. M. Fontanier says Gum Ammoniac exudes naturally at the axils of the umbel and upon the tumid apices of the peduncles. Willdenow concluded, erroneously, that ammoniac was produced by *Heracleum gummiferum*."

Botany. — *Sex. Syst.* Pentandria Digynia. — *Nat. Ord.* Umbelliferæ.

Gen. Char.—*Epigynous disk* cup-shaped. *Fruit* slightly compressed from the back, edged, with three distinct, filiform, primary ridges, near the middle, and, alternating with them, four obtuse secondary ridges, the whole enveloped in wool. *Vittæ* one to each secondary ridge, one to each primary marginal ridge, and four to the commissure, of which two are very small.—*Lindley.*

Spec. Char.—*Root* large, perennial. *Stems* seven to nine feet high, about four inches in circumference at the base, clothed with glandular down, (*Don,*) smooth, (*Fontanier,*) glaucous, with the habit of Opopanax Chironium. *Leaves* large, petiolate, somewhat bipinnate, two feet long; pinnæ usually three pairs, each pair rather remote; lower leaflets distinct, superior ones confluent, deeply pinnatifid; segments oblong, mucronate, quite entire, or rarely a little lobed, coriaceous, veined beneath, one to five inches long, and one-half to two inches broad. *Petiole* ribbed, pubescent, much dilated, and sheathing at the base. *Umbels* proliferous, racemose, partial umbels globose, on short peduncles, usually disposed in a spicate manner. Neither general nor partial involucre. *Peduncles*, terete, wooly. *Flowers* sessile, immersed in wool. (*Lindley.*) Margin of calyx five-toothed, teeth acute, membranous. *Petals* white, ovate, with an inflexed point. *Disk* large, fleshy, cup-shaped, with a plicate, rather lobulate margin. *Stamens* and styles yellow, the latter complanate, recurved at the apex. *Stigmas* truncate. *Ovary* densely woolly. *Fruit* elliptic, compressed from the back, surrounded by a broad flat edging. *Mericarps*, with three distinct filiform ridges near the middle, and alternating with them four obtuse secondary ridges (two of the primary ridges confluent with the margin. *Vittæ*, one to each secondary ridge, one to each primary marginal ridge, and four to the commissure, of which two (the exterior ones) are very small.—(*Don, Lindley, and Royle.*) The only species.

Description.—The ammoniac is the concrete juice of the plant, which exudes from the latter, when mature, in consequence of the wounds inflicted by an insect that attacks it in great numbers, piercing it in every direction. The juice

soon dries and is picked off and sent *via.* Bushire, to India, and other parts of the world.

The drug comes either in tears or in aggregate masses, and in both cases is mixed with impurities. The variety in tears is preferable, as it may be picked, and thus the impurities can be removed. The tears are of an irregular shape, commonly more or less globular, yellowish without, and whitish within, compact, homogenous, and brittle when cold. Its fracture is shining and conchoidal. The masses are rather of darker color and less uniform consistence, appearing, when broken, as if composed of whitish tears embedded in a darker substance, which also contains foreign substances, as above mentioned, consisting of dirt, sand, various seeds, and other vegetable matters.

Ammoniac has a peculiar odor, and a slightly acrid, bitter, and sweetish taste. When heated it softens, but does not melt. It burns with a light flame, and a resinous, and slightly alliaceous odor. When triturated with water, it forms a milky emulsion, which, however, becomes clear on standing.

Medical Properties and Use.—Ammoniac is stimulant, and expectorant, diaphoretic, and in large doses, cathartic, sometimes diuretic, and emmenagogue. Its stimulant properties, however, predominate. Its chief application, according to the history of its medical character, is in chronic catarrh, asthma, and "other pectoral affections, attended with deficient expectoration." It is also applied externally, in the shape of a plaster, and in this way has been thought to be useful as a discutient or resolvent, in white-swellings, and other indolent tumors. It may be given in the form of emulsion or pills. The dose is from ten to thirty grains.

GUAIACUM.

Guaiacum, although regarded as belonging more properly to the class *alteratives*, very justly merits a notice of its stimulant virtues here. The author has been much pleased with its effects in rheumatism. In some instances, he has found the most difficult cases of the chronic variety of this painful complaint, yield to the effects of this article, with astonishing

promptness. A rheumatic case of particular interest, occurred in his practice, in the fall of 1839, in which the usual means of treatment seemed not to afford any relief, although the patient was the subject of very thorough treatment, applied under the directions of several eminent physicians, for a number of weeks. The author, presuming that the patient had a pretty good knowledge of the course pursued, as is generally the case with persons long the objects of medical attention, was induced, from the critical character of the case, to inquire as to what had been the principal remedies used. On finding that guaiacum had not been tried, he was induced to test its virtues in this *peculiar* case. The effect was of the most striking character. The same day very considerable relief was obtained, and in four days, the subject of so much suffering was completely restored, excepting a sense of stiffness and debility, which could but have been expected after so long a prostration.

As a stimulant the medicine is very diffusive and permanent in its effects, and may be used with confidence in rheumatism, gout, syphilis, gonorrhœa, amenorrhœa, and various visceral obstructions. The dose is from *gr.* x—*gr.* xxx. When employed in rheumatism, gout, and amenorrhœa, it is well to give it in combination with the *botrophis*.

There are other resinous substances that may be arranged into this order of stimulants, some of which, however, have found a place, as the article just spoken of, in other classes. Among those made officinal are the following:

1. Assafœtida.
2. Galbanum.
3. Sagapenum.
4. Opopanax.

Order V.—ALCOHOLIC AND ETHERIAL STIMULANTS.

The various *spiritous* stimulants form a very distinct order. They are chiefly characterized by their peculiar essential properties, and their exhilerating and intoxicating effects. They are the results of the vinous fermentation, and mostly procured by distillation.

Spiritous stimulants although more used than any other kind, by the old school practitioners, are not so favorably regarded by medical reformers. They are considered rather pernicious in some of their effects, and hence, have been altogether rejected, as medicines, by some. They are very quick and diffusive, but transient in their stimulant effects.

The wines, which are less inebriating than the distilled liquors, and which unite a tonic power with their stimulant virtues, are the most valuable of this order. They are much esteemed by a large portion of our profession.

But, while these agents are comparatively little esteemed in a *medical* point of view, they are of incalculable importance in pharmacy. This is clearly apparent in almost every part of the work.

ALCOHOL.

Synonymes.—Arak, *Hindoo;* Alcoole, Acquavite rettificata, *Ital.;* Alcohol, Espiritu rectificato de vino, *Span.;* Rectificirter Weingeist, *Ger.;* Esprit de vin, *Fr.*

History.—It is uncertain when distilled liquors were first known. By some (Morewood) it is supposed that the Chinese had a knowledge of the process of distillation long before the rest of Asia, Africa, and Europe. Albucasis, who is supposed to have lived in the twelfth century, is stated to have taught the mode of procuring spirit from wine.* Yet it is certain that the art was known long before his day. Raymond Lully, in the thirteenth century, was acquainted with the *spirit of wine*, which he called *aqua ardens*, and understood the mode of depriving it of water by means of carbonate of potash. Alcohol is now extensively manufactured in every part of the world, and is procured from all substances that contain sugar.

Preparation.—The formation of alcohol occurs when ether and water meet in the nascent state, as when some of the acid salts of ethyle are heated, or otherwise decomposed. But, practically, it is produced entirely from sugar (or the elements forming it,) by the fermentative process. Thus, any of the vegetable juices containing sugar, as the juice of the

*Gmelin, *Handbuch d. Chimie*, Bd. ii, p. 274.

grape, currant, peach, &c., as well as that of all the grains, will soon enter into fermentation, if kept in a temperature ranging between 40° to 85°, and will give off a large quantity of carbonic acid, while the sugar totally disappears, and alcohol is found in its place. The alcohol is then separated, by means of distillation, and is afterwards rectified. Hence, the preparation of alcohol may properly be considered as consisting of three stages: 1. that which is characterized by the production of a fermented vinous liquor; 2. that which consists, in the preparation from this, an ardent spirit; 3. that in which the spirit is rectified or separated from foreign matters.

1. *Production of Vinous Liquor.*—The fermentative process evinces different peculiarities, that are marked by its several stages; thus starchy liquids, under proper circumstances, become saccharine (process termed *saccharine fermentation*,) and then sugar, in turn, when mixed with water and nitrogenous matter (*ferment*) as yeast, is converted into carbonic acid and alcohol, the process being termed *vinous fermentation.** The conditions necessary to the production of a vinous liquid, are the presence of *sugar* (or some substance capable of forming sugar, as *starch*,) a certain quantity of *water*, and a *ferment* (generally yeast,) together with a proper temperature.†

Turner thinks that cane sugar is converted into grape sugar before it is changed into vinous spirit: he says that "grape sugar, C^{12} H^{14} O^{14}, contains the elements of 2 eq. alcohol, 4 eq. carbonic acid, and 2 eq. water, 2 (C^4 H^6 O^2) –|– 4 CO^2–|– 2 HO; and, by very exact experiments, it has been proved that 100 parts of grape sugar yield only 47·12 of alcohol, 44·84 of carbonic acid, together 91·96 parts; the loss, 9·04 parts being the two eq. of water separated. On the other hand, cane sugar, C^{12} H^{11} O^{11}, requires the addition of one eq. of water to yield two eq. of alcohol, and four eq. carbonic

*Under certain circumstances, manite, lactic acid, and a peculiar mucillage, are formed by the action of the nitrogenous or albuminous principles of vegetable juices on the sugar. This change has been called the *viscous* or *mucillaginous* fermentation.—*Leibig.*

†Vinous liquids are capable of generating acetic acid, when the process is denominated *acetous fermentation*. Moreover, most vegetable substances are gradually converted into gases, and a substance called vegetable mould, constituting the process called *putrefactive fermentation*.

acid=2 (C^4 H^6 O^5)+4CO^2; and here, also, experiment has demonstrated, that 100 parts of cane sugar yield 53·727 parts of alcohol, and 51·298 of carbonic acid, together 105·025; the increase, or 5·025 parts, being due to the one eq. of water taken up to form dry grape sugar, C^{12} H^{12} O^{12}, into which cane sugar is converted before it undergoes fermentation. These facts prove that the ferment takes no direct part in the reaction, but only acts by inducing a state of change.

2. *Production of Ardent Spirits.*—It has been supposed that vinous liquors do not contain alcohol, but are merely capable of furnishing it by a new arrangement of their ultimate constituents, which were thought to take place on the application of heat. Brande, Gay-Lussac and Donovan have, however, proven that alcohol may be extracted from those liquors without the application of heat, and by such means as will not admit of its generation during the process. It is effected by precipitating their acid and coloring matter by means of subacetate of lead, and then separating the water by carbonate of potassa.

In vinous liquors, the alcohol, as already hinted, is combined with acids, coloring matter, considerable water, and in addition, a volatile oil. In its separation from these, we, in the first place, take advantage of its volatility, and hence, we adopt the process of distillation which deprives it of all matters except those which are capable of volatilization. The spirits thus obtained are variously called, according to the materials from which they are distilled: *e. g.*, that obtained from the expressed and fermented juices of the fruits, as grapes, currants, goosberries, &c., or from wine, is called *Brandy* (from Brandy-wine); that from fermented molasses, *Rum;* from cider, malted barley, rye, &c., *Whisky;* from malted barley and rye-meal, with hops, and then rectified from juniper-berries, *Holland Gin;* from malted barley, rye, or potatoes, rectified with turpentine, *common Gin;* from fermented rice, *Arrack;* from a decoction of malt and hops, *Ale* (*Beer*); and from a mixture of honey and water, *Mead*. Each of these liquors have an aroma peculiar to themselves, or the substances from which they were obtained; this is dependant upon the volatile oil they possess.

Ardent spirit, from whatever source it may be obtained, is composed of *water*, *alcohol*, *volatile oil* and sometimes *coloring matter*. The average amount of alcohol of a sp. grav. of 0·825 at 60°F., in some of the most important ardent spirits, according to Brande is expressed in the following table:—

	(*By Measure.*)	*Alcohol* (*by measure.*)
100 parts of	Brandy contain	55 39
" "	Rum, "	53·68
" "	Gin, "	51·60
" "	Whisky, (Scotch,)	54·32
" "	" (Irish)	53·90

2. *Rectification*.—The object now is to separate the pure spirit or alcohol from all other substances, and to procure what is called *oxyhydrocarbons* or *absolute alcohol*. This is done by repeated distillations, and by the use of carbonate of potash, or, what is better, chloride of calcicum, which, by their powerful affinity for water, keep it back while the alcohol distils over. The amount of potash or lime that is usually taken, is from ℔j to ℔iv, to the gallon, or one part of chloride of lime, made perfectly dry by exposure to a red heat, to three parts of spirit. The lime should first be pulverized, and when the spirit is thrown upon it, should be intimately mixed; when, after it becomes perfectly cold, it is ready to be put into the still.

In this country, alcohol is usually prepared from whisky. One hundred gallons of the latter will yield between fifty-seven and fifty-eight gallons of *rectified spirit* of a specific gravity of 0·835. The Edinburgh College directs a course by which anhydrous alcohol is at once obtained from rectified spirit. The process is as follows: "Take of rectified spirit *one pint*, [Imperial measure]: lime, *eighteen ounces*. Break down the lime into small fragments: expose the spirit and lime together, to a gentle heat in a glass mattress, till the lime begins to slake; withdraw the heat till the slaking is finished, preserving the upper part of the mattress cool with damp cloths. Then attach a proper refrigeratory, and with a gradually increasing heat distil off seventeen fluid ounces. The density of this alcohol should not exceed 796: if higher, the distillation must have been begun before the slaking of the lime was finished." Dr. Christison

gives assurance that if pure quicklime is used with the precautions mentioned in the Edinburgh formula, that rectified spirit of the density of 0·838, seventeen-twentieths of its volume of alcohol, of a density of 0·796, and if the first tenth be kept apart the rest may be obtained as low as 0·7942.

In estimating the specific gravity of alcohol, any hydrometer may be used, as their scale will always correspond with some particular specific gravity, and by reference to some appropriate tables, the per centage of absolute alcohol indicated in each case immediately appears. For this purpose, the table constructed by Lowitz, as improved by Thomson will answer well. This is given below, with notes marking the specific gravities of a number of officinal spirits.

100 *par.*		*sp. gr.*	100 *par.*		*sp. gr.*	100 *par.*		*sp. gr.*	100 *par.*		*sp. gr.*
A.	*W*	*at* 60°	*A.*	*W*	*at* 60°	*A.*	*W*	*at* 60°	*A.*	*W*	*at* 60°
100	0	·796α	76	24	·857	52	48	·912θ	28	72	·962
99	1	·798	75	25	·860	51	49	·915	27	73	·963
98	2	·801	74	26	·863	50	50	·917	26	74	·965
97	3	·804	73	27	·865	49	51	·920ι	25	75	·967
96	4	·807	72	28	·867	48	52	·922	24	76	·968
95	5	·809β	71	29	·870	47	53	·924	23	77	·970
94	6	·812	70	30	·871	46	54	·926	22	78	·972
93	7	·815γ	69	31	·874	45	55	·928	21	79	·973
92	8	·817	68	32	·875	44	56	·930	20	80	·974
91	9	·820	67	33	·879	43	57	·933	19	81	·975
90	10	·822	66	34	·880	42	58	·935×	18	82	·977
89	11	·825δ	65	35	·883	41	59	937	17	83	·978
88	12	·827	64	36	·886	40	60	·939	16	84	·979
87	13	·830	63	37	·889	39	61	·941	15	85	·981
86	14	·832	62	38	·891	38	62	·943	14	86	·982
85	15	·835ε	61	39	·893	37	63	·945	13	87	·984
84	16	·838ζ	60	40	·896	36	64	·947	12	88	·986
83	17	·840η	59	41	·898	35	65	·949	11	89	·987
82	18	·843	58	42	·900	34	66	·951	10	90	·988
81	19	·846	57	43	·903	33	67	·953	9	91	·989
80	20	·848	56	44	·904	32	68	·955	8	92	·990
79	21	·851	55	45	·906	31	69	·957	7	93	·991
78	22	·853	54	46	·908	30	70	·958	6	94	·992
77	23	855	53	47	·910	29	71	·960			

α. Alcohol of the *Ed.* p.
β. Alcohol of the *Dub.* p., nearly.
γ. Alcohol of the *Lond.* p.
δ. Lightest spirit obtained by ordinary distillation.
ε. Alcohol of the *U. S.* p.
ζ. Spiritus Rectificatus, *Lon. Ed.*
η. Spiritus Rectificatus, *Dub.*
θ. Spiritus Tenuior, *Ed.*
ι. Spiritus Tenuior, *Lond.*; Proof Spirit.
×. Alcohol Dilutum, *U. S.*

The practitioner, but more particularly the pharmaceutist, should acquaint himself well with this subject, as it is a matter of the greatest importance in the preparation of many of our compounds. This applies not only to the general appearance and physical characters of the preparation, but may very materially effect the therapeutic properties, or virtues of the article prepared.

Purity.—It is unfortunate that the alcohols of the several pharmacopias differ so very materially in their strength, as some confusion is liable to arise on the part of those inexperienced in pharmacy. The alcohol of the U. S. Pharmacopia, at a temperature of 60°, is of a specific gravity of 0·835; that of the London P. 0·815; that of the Dublin P. 0·810; while that of the Edinburg P. is 0·794–6: all being thus a great deal stronger than that of the U. S. When liquors, at a temperature of 60°, have the specific gravity of 0·920, they are denominated in commerce *proof spirit*. If they are lighter than this, they are said to be above proof; if heavier, below proof; and whatever per centage of pure water, or of spirit of 0·825, is necessary to bring the sample to the standard of proof spirit, shows the number of degrees it is above or below proof.

Besides its specific gravity, there are other means of adjudging pure alcohol; it should be colorless, transparent, and not rendered turbid on the addition of water. Its taste and smell are peculiar, and somewhat resembling wine. It should not possess either an acid or alkaline reaction, and should admit of complete volatilization. If any of the *oil of corn spirit* be present, which is often the case, the addition of a little colorless sulphuric acid will indicate its presence, by showing a red tinge. Nitrate of silver, according to Vogel, is a more delicate test for the oil. If it be mixed with spirit, and exposed to solar light, it becomes red if any oil be present, but undergoes no change of color if the spirit be pure.

Properties.—Alcohol is a limpid, colorless, volatile, inflammable liquid, having a penetrating, or pungent, but agreeable odor, and strong burning taste. When free from water, its specific gravity, at a temperature of 60°, is 0·795. Its boiling point is 172°, and it has never yet been made to freeze. It

is inflammable, and burns without smoke or residue. The products are carbonic acid and water. Its flame, when weak, is of a yellowish color, but, when strong, is bluish. The color of the flame, however, may be variously tinted: as yellow, by chloride of sodium; whitish-violet, by chloride of potassium; green, by salts of copper, or boracic acid; carmine-red, by chloride of lithium; and crimson, by chloride of strontium.

Alcohol combines readily, and in all proportions, with water and ether, and is one of the most general solvents that we possess.

Analysis.—The primary *constituents* of alcohol are $C^4 H^6 O^2$. Its proximate principles being etherine, and water=$C^4 H^4$ -|-2 H O.

Physiological Effects.—*α. On Vegetables.*—When freely applied, in its full strength, to vegetables, it proves injurious, and if continued, is destructive to many. Pereira considers its effects on plants analogous to those of hydrocyanic acid.

β .On Animals generally.—In a diluted condition it, at first produces the usual signs of a stimulant or excitant, which is soon followed with a marked impression on the brain, which is characterized by an exhileration of the spirits,—intoxication,—and, if the dose is repeated, stupor and insensibility. Alcohol in a pure state, acts as a corrosive on tender parts; and, like all other excessively acrid, and corrosive articles, will produce inflammation, convulsions and death, when injected into the veins, or thrown into the stomach in considerable quantities. Pereira collects the following statements in regard to various experiments with alcohol of full strength. "Leeches, immersed in spirit, die in two or three minutes. Their bodies are shrivelled or contracted, and, before death, they make but few movements; the head and tail of the animal are drawn together. Fontana, (*Treatise* on the Venom of the Viper, translated by J. Skinner, vol. ii, p. 371, *et seq.*) found, that when half the body of a leech was plunged in spirit, this part lost all motion, while the other half continued in action. The same experimentalist observed, that spirit killed frogs, when administered by the stomach in doses of forty drops, or when injected beneath the skin, or applied to the brain or spinal marrow. Plunging the

heart of this animal in spirit, caused its motion to cease in twenty seconds. Applied to the right crural nerve of a frog, it destroys the power of moving in the right foot, on the application of stimulus. Monro, (*Essays and Observations*, Physical and Literary, vol. iii, p. 340), observed, that alcohol, applied to the hind legs of a frog, rendered the pulsations of the heart less frequent, and diminished sensibility and mobility. Fontana, (*Op. cit.*, p. 336, *et seq.*), states, that turtles were killed by spirits administered by the stomach or by the anus, or injected beneath the skin: before death, the animal be motionless; applied to the heart of these animals, it destroys the contractility of this viscus. Some very interesting experiments were made, with spirit, on birds, by Flourens. This distinguished physiologist administered six drops of alcohol to a sparrow, whose skull he laid bare. In a few minutes the animal began to be unsteady, both in walking and flying. After some time a dark-red spot appeared upon the skull, in the region of the cerebellum, and became larger and deeper colored, in proportion as the alcohol more powerfully affected the animal. * * * The effect of alcohol on fishes is analogous to that on other animals. If a little spirit be added to water, in which are contained some minnows, (*Cyprinus phoxinus*, Linn.), the little animals make a few (spasmodic?) leaps, and become incapable of regaining their proper position in the water, but float on their sides or back. If removed into pure water they soon recover.

"The mammals on which the effects of alcohol have been tried, are dogs, cats, horses, rabbits, and guinea-pigs. The principal experimentalists are Courtan, (*Philosophical Transactions for* 1712); Fontana, (*Op. supra cit.*); Viborg, (*Abhandl. fur Thierarzta*, Theil II, quoted by Wibmer, Die Wirkung, etc.); Brodie, (*Philosophical Transactions for* 1811); and Orfila, (*Toxicologie Generale*). The results of their experiments may be thus briefly expressed:—Four drachms of alcohol injected into the jugular vein of a dog, coagulated the blood, and caused instant death, (*Orfila*). Introduced into the stomach of cats, dogs or rabbits, it produces an apoplectic condition, (*Brodie* and *Orfila*); this state is preceded,

according to Orfila, by a strong excitement of the brain. The same experimentalist found that alcohol acts with less energy when injected into the cellular texture than when introduced into the stomach; from which he infers, that its first effects are the result of the action which it exerts on the extremities of the nerves; though he admits that ultimately it becomes absorbed. On examining the bodies killed by introducing alcohol into the stomach, this viscus has been found in a state of inflammation."

Although it is certain that pure alcohol in *considerable doses* or when long continued in *small doses*, either pure or diluted, must necessarily prove very injurious; yet, every one, it is presumed, must certainly discover that most of these experiments come far short of doing justice to this important subject, as they not only fail of elucidating all the facts that have been obtained by the same trouble, but are eminently, calculated to lead to unjustifiable or false inferences. In the first place, the complete immersion of a leech in alcohol is an improper and unfair experiment, as the animal is not only totally deprived of the necessary elements of its existence, which circumstance, though alone insufficient to produce death so soon, may nevertheless contribute to the destructive effects of a spirit so much concentrated, and applied as with an intent to kill. Who does not know how vastly the circumstances of the application of the article of experiment will affect the result. No surprise is evinced on the death of *other* animals who may be subjected to a change of elements, however congenial the instrument of mischief may be when properly applied! These remarks, apply equally, in some respects, to some of the rest of these experiments; as, for instance, *plunging the excised heart of a frog into alcohol*. Moreover, the injection of alcohol or any other substance, into the jugular vein of any animal affords no fair opportunity of judging its true physiological effects, as the injection of pure water, in the same way, has been known, in numerous instances, to produce death, while it would not,

for a moment, be supposed that the water is really poisonous to the subject of experiment.*

γ. *On Man.*—The effects of alcohol on the human body, depend very much upon its state of purity, the substance with which it is combined, the quantity taken, and the constitution and habits of the individual taking it.

When the spirit is much diluted, as when yet in combination with the vegetable juices, as the wines, porter, &c.; or even when diluted with water, in the character of whisky, it is sometimes taken for years, without any indications of immediate mischief. When combined with other materials, as medical substances, it has, as is well known by daily observation, in innumerable instances, not only been a safe potation, but has been even of the greatest benefit to the system. If taken in very small quantity, little more than a transient stimulating impression will be observed, and if the constitution and habits of the individual taking it are good, its effects are still more modified.

A large quantity of pure alcohol, when taken into the stomach, will produce the most *violent symptoms*, which often end in death, in a very few minutes. Inflammation of the stomach, paralysis, apoplexy, and delirium, are among the common symptoms of an over-dose. Besides its dynamic effects, which may be more intimately associated with the nervous system and brain, it evinces a chemical agency. Alcohol possesses a powerful affinity for water, and by combining with it, will thus disturb the relation existing between the elements of the tissues. It coagulates liquid albumen, and fibrine, and converts the parts which contain these principles in a solid or less elastic, and flexible state. In this way its mischievous effects not only implicate the constituents of the blood, but many of those in every part of the system.

The remote effects of ardent spirits are marked first by an

* No experiment is of any value, unless all the circumstances which can in any way affect the results, are carefully taken into account. It is easy to percieve that minor circumstances may elude our observation, while the most important contingencies often unobservedly control the results. The author has known an individual, who, to save a sheep from the *struggles of death*, poured down a decoction of *Lobelia Inflata*, and afterwards declared it a *poison*, because the sheep died in an instant after the draught was forced down!

excitement of the vascular and nervous systems. The pulse is increased in frequency, the face becomes flushed, the eyes animated, the general spirits exhilerated, and the intellectual functions excited. The individual, according to his disposition, or temperament, becomes talkative, joyful, enthusiastic, boisterous;—care disappears, engagements change, and whatever notions may now be entertained, will be enthusiastically acted out. Sometimes the most emphatic protestations of love and friendship are frequently made, and the most prodigious liberality is practiced, while a remarkably independant spirit rules throughout. The ideas now revolve with the greatest rapidity, and are sometimes lofty and sublime, but again not unfrequently lead to various indiscretions. These exhilerating and bouyant feelings are what all drinking men are in quest of: the unfortunate drinks to drown his grief; the coward to attain courage; "the *bon vivant* for the sake of enjoying the society of his friends;" the drunkard to gratify his appetite, and while none would wish to transcend these bounds, a fearful fate, alas! too often, will ensue.

When the liquor is pushed further, intoxication or drunkenness will ensue. This condition is characterized by a disordered state of the intellectual functions with very obvious physical derangements. A delirium now sets in, varying in its characteristics with different individuals, depending on the temperament, &c. Thus Macknish, in his *Anatomy of Drunkenness*, has the following classification of drunkards:

1. The *sanguinous drunkard*, with whom every thing is full of life and prospect; 2. The *melancholy drunkard*, with his portentious mein, and wretched despondency; 3. The *surly drunkard*, that quarrels with every one; 4. The *phlegmatic drunkard*, who sleeps and wallows continually; 5. The *nervous drunkard*, who is controlled by passion; 6. The *choleric drunkard*, who is ever burning with fury.

In excessive drunkenness, there is usually more or less coma, often apoplexy, and not unfrequently distressing delirium, or *delirium tremens*.

One of the most marked characteristics attending the continued use of ardent spirits, is that the drinker contracts a

growing appetite for them, which has destroyed some of the most brilliant talents, and ruined many of the best men in the world.

Much inquiry has been made in reference to the modus operandi of spiritous liquors; and although it has been supposed that it produces its specific effects through nervous action alone, yet it is now clearly demonstrated that it is absorbed into the circulation, and that it is probable that much of its effects upon the brain is dependant on its direct action upon this organ. "Tiedmann and Gmelin (*Uber die Wege auf welchen Substanzen aus den Magen ins Blut gelangen:* Heidelberg, 1820,) recognized the odor of it in the blood of the splenic vein, though they were unable to detect it in the chyle. A similar observation is reported by Magendie. (*Element. Compend. of Physiology*, by Dr. Milligan, p. 248—1823.) Dr. Percy also found it in the blood of animals to whom he had administered it. He likewise detected it in the urine and the bile. Moreover, the recognition of the odor of alcoholic liquors in the breath of individuals who have swallowed them, as well as their detection by their smell in the fluid contained in the ventricals of the brain, in the pericardium, &c., proves indisputably that alcohol becomes absorbed. Dr. Cooke (*Treatise on Nervous Diseases*, i, 222: Lond., 1820,) states, on the authority of Sir A. Carlisle, that, in one case, the fluid of the ventricles of the brain had the smell, taste, and *inflammability* of gin. Dr. Christison (*Treatise on Poisons*, p. 853, 3d ed.,) has questioned the correctness of this observation, on the ground that gin, of sufficient strength to take fire, could not enter the blood-vessels without coagulating the blood. But the objection appears to me to be groundless; for I find that a small quantity of undiluted commercial gin may be added to white of egg without causing either coagulation or the slightest opacity. Dr. Ogston (*Edinburg Medical and Surgical Journal*, vol. xl.) has confirmed the testimony of Carlisle, and states that, in one case, he found about four ounces of fluid in the ventricles, having all the physical qualities of alcohol. Dr. Parcy (*Op. supra cit.*) has recently set the question at rest, and satisfactorily proved the accuracy of the above statements, by his experiments on animals. He

appears to think that some peculiar affinity exists between the substance of the brain and the spirit; more especially as, after analyzing a much larger quantity of blood than can possibly exist in the cranium, he could generally obtain much more alcohol from the brain than from this quantity of blood. He was unable to determine whether or not the fluid of the ventricles contained any alcohol."*

Medical Properties.—Alcohol is a very active and powerful stimulant, but is very little used alone as a medicine. It is not permanent in its effects, and, withal, the benefits of its use in this way are obtained at too great a sacrifice, as, at best, it cannot be said to be a harmless remedy. Nevertheless, there are a number of spiritous liquors which, while they contain only from ten to sixty per cent. of alcohol, as the wines, &c., possess other valuable properties that cause them to be esteemed as remedies; these will be considered under their appropriate heads. As an external application, diluted alcohol is sometimes used as an evaporating lotion.

Pharmaceutic Use.—In pharmacy and pharmaceutic chemistry, alcohol is a very important article. In the preparation of medicines, however, alcohol is seldom used in its full strength. Proof spirit (sp. grav. 920) and rectified spirit (sp. grav. 938) are generally used instead of absolute alcohol. It would be difficult to get along in pharmacy without alcoholic liquors, as the various *Tinctures*, *Spirits*, *Ethers*, *Ethereal Oils*, and *Resinous Extracts*, are all prepared with this menstruum. Vegetable juices and extracts are often preserved by simple admixture with alcohol.

The chemical use of this article, as well as the various pharmaceutic preparations embracing its agency, are noticed in their respective places throughout the work.

SPIRITUS VINI GALICI: *Brandy.*—This, as already stated, is obtained by distillation from wine. Its qualities are somewhat dependant on the varieties of the fruit that are used in its preparation. Ure states that an experienced dealer may recognize, individually, the brandies of Languedsc, Bordeaux, Armagnac, Cognac, Aunis, Saintonge, Rochelle, Orleans Barcelona, Naples, &c. Among the most celebrated of the French brandies, are those of Cognac and Armagnac. Pure and

* Pereira *Mate. Med. and Therap.* Amer. Ed., vol. xi, pp. 320–1.

genuine brandy has a peculiar, rich, vinous, aromatic flavor. The brandy of commerce is usually of a rich reddish-brown color, which is produced artificially with burnt sugar (caramel,) and, according to some, saunders' wood, by the dealers in the article. As usually sold, it is, perhaps, about ten per cent. under proof. Much of the brandy sold in this country for foreign brandy, is manufactured here. Ure, in his Dic. of Arts and Manufac., gives the following formula for the manufacture of this kind of brandy: "Dilute the pure alcohol to the proof pitch; add to every hundred pounds weight of it, from half a pound of argol [crude winestone] dissolved in water, a little acetic ether and French-wine vinegar, some bruised French plums and flavor-stuff from Cognac, then distil the mixture, with a gentle fire, in an alembic furnished with an agitator. The spirit which comes over may be colored with nicely-burned sugar [carmel] to the desired tint, and roughened in taste with a few drops of tincture of catechu, or oak bark."

Brandies are often mixed with diluted alcohol, and then colored and flavored so as to bring it as near in resemblance of the genuine as possible. *Grains of Paradise*, and other substances, are also sometimes added to improve the strength of those varieties that are diluted simply with water or whisky.

PHYSIOLOGICAL EFFECTS.—Idem ut Alcohol.

MEDICAL PROPERTIES, USE, ETC.—The medical properties and use of Brandy are much the same as those of Alcohol. It is, however, not so much employed as a menstruum as that article. It is most commonly used in making the tinctures of myrrh.

SPIRITUS SACHARI: *Rum.*—This spirit is obtained from the skimmings and drainings (molasses) of sugar, as well as the washings of pots in sugar manufactories. A good article of rum is transparent, and of a slight brown, or yellowish tint. It has a peculiar, and somewhat agreeable flavor, depending on its volatile oil. Its specific gravity is usually about 0·930, or ten per cent. under proof. Some of the West India rum has a very superior flavor, depending on pine-apples, slices of which are put into the puncheons that *contain* the spirit. The *Jamaica Rum* is usually the most esteemed.

The physiological effects and use of Rum are about the same as those of *proof spirit*. Owing to its flavor and mild taste, it is preferred for some purposes, especially in making

syrups that are intended for pulmonary diseases. Rum is considered rather more sudorific than most other ardent spirits.

SPIRITUS FRUMENTI COMPOSITUS: *Compound Grain Spirit.*—To this class of liquors belong *Gin*, *Whisky*, &c., the products of the fermented infusions of the various grains. Vide alcohol.

Their effects on the system are about the same as those of alcohol. *Gin* is rather more diuretic than the other spiritous liquors, owing to the oil of juniper that it contains, and is, hence, preferred, when preparations requiring spirits are made, and which are intended for *nephritic* affections or dropsical complaints. *Whisky* is the most common and the cheapest of these liquors, being manufactured in every part of the country, by simple distillation from the fermented infusion of any of the grains, without any addition or rectification. Gin and Whisky have a specific gravity that will average about 0·941 to 0·943, being twenty-two below proof, and containing from fifty to sixty per cent. of water. Good rye whisky will answer for many purposes in place of diluted alcohol; and, by country practitioners, is used very much to the exclusion of alcohol.

VINUM.

SYNONYMES—*Οινος, Greek;* Vino, *Ital*, *Span.*; Wein, *Ger.*; Vin, *Fr.*; Wine, *English.*

HISTORY.—Wine has been known from the earliest periods of antiquity. The sacred historian (Gen. ix, 20,) informs us that Noah planted a vineyard and drank wine, which was some four thousand years ago. Hippocrates used it in practice. It was one of his remedies on the memorable occasion of his staying the *plague* at Athens. Galen also employed it extensively in practice, and Homer, Herodotus, and other historians, speak of it. "The ancients," says Parr, "had a considerable variety of wines, and were peculiarly attentive to the management of the fermenting process." Pliny, Athenæus, and Varro, give details of their preparation by the ancients. The wines of the ancients, however, were so much varied by their management, that it is difficult to ascertain their real character and qualities. "In general, the Falernian (*vinum massicum*) was the more austere and strong wine;

the hock, probably, of the moderns; the cœcubum, the lighter nectar wine of warmer districts, though Galen speaks of a lighter, weak kind of Falernia, and in one place, the cœcubum as a more generous beverage than any old wine. The vinum sentinum, the favorite wine of Augustus, was light and grateful; we suspect of a weaker quality. The *Sabine* wines, 'vile Sabinum,' the common vin de pays, was occasionally under proper management, though light, generous, or it would not have been styled by Galen ευγενη Σαβινος. Horace mentions it as estimable at four years, and Galen remarks, that it was probably matured only in six.

"Of the Greek wines, the Pramnian and the Maronean were distinguished for their strength. Homer informs us that the Maronean required twenty parts of water to dilute it; and Hippocrates, except the copies err, orders an equal dilution of the Thasian wine. Pliny informs us that, at a later era, it was usual to mix eight parts of water to reduce it to the strength of common wine. The Cretan, the Chian, and the Lesbian wines, were rich and generous; the latter pleasant, and not heady."

The Persians, Armenians, Arabs, and Jews, ascribe their introduction to Nahusha, or Noah. The Greeks considered that Bacchus carried them from Asia to Greece and India, Saturn to Crete, Orestes, son of Deucalion, to Cicily, Osiris to Egypt, Janus to Italy, Geryon to Spain, &c.

Wine is now manufactured in most countries; but Italy, France and Spain, produce the most. The varieties now prepared from the many different species and varieties of grapes (which are much modified in their qualities by the climate, soil, and skill in cultivation,) as well as the mixture of the juice, are almost innumerable. Rafinesque states that France produces five hundred different kinds; Italy seven hundred; Spain and Portugal six hundred; Germany and Hungary one hundred; Greece and Turkey three hundred; Persia one hundred; Thibet and China two hundred; Egypt and Barbary one hundred and fifty; South Africa thirty; Atlantic Islands fifty; North America sixty; and South America thirty.

Botanical History.—The *Grape-vine* belongs to the Lin-

næan system Pentandria Monogynia; and to Lindley's *Nat. Ord.*, Vitis.

Gen. Char.—*Calyx* somewhat five-toothed. *Petals* five, cohering at the point, separating at the base, and dropping off like a calyptra. *Stamens* five. *Style* none. *Berry* two-celled, four-seeded; the cells or seeds often abortive (*De Cand*). The species vary, and present us innumerable varieties. The following description will serve for that of the oriental grape: "A hardy, exceedingly variable *shrub*. *Leaves* more or less lobed, smooth, pubescent or downy, flat or crisp, pale or intensely green. [Tendrils opposite to each foot-stalk, solitary, spiral.] *Branches* prostrate, climbing or erect, tender or hard. *Racemes* loose or compact, ovate or cylindrical. *Fruit* red, pale, or white, watery or fleshy, globose, ovate or oblong, sweet, musky or austere. *Seeds* variable in number, or sometimes the whole of them abortive." (*De Cand.*) It is said that not less than fourteen hundred varieties are cultivated at the Luxambourg gardens.

All our American plants agree in being humble trailing vines in their youth, but susceptible of living from one hundred to three hundred years, and of becoming very large, and as tall as the tallest trees that support them; the *bark* is fibrous, the *wood* hard, *branches* knotty, *leaves* very variable, but always more or less cordate or reniform at the base, and toothed on the margin, with five-branched nerves and deciduous stipules. *Flowers* in bunches thyrsoidal or panniculate, small, more or less fragrant, greenish-yellow, complete, pistiliferous or stamaniferous, on three different individuals, blossoming in May and June. *Fruit* from the size of a pea to that of a plum. (*Rafinesque.*)

The following arrangement has been made of grapes, with reference to their color and shape.

1. *Round, dark-red, purple, or black grapes.*—The most remarkable variety of this division is the *black Corinthian grape*, which when dried constitutes the *currant* of the grocer.

2. *Oval, and dark-red, purple, or black grapes.*—To this division belongs the favorite *black Hamburgh grape.*

3. *Round and white grapes.*

4. *Oval and white grapes.*—The *Portugal grape* comes under this division. It is imported, packed in saw-dust and contained in earthen jars, from Portugal and Spain. The berries are large, fleshy, sweet, and slightly acidulous. They keep a

long times after they have ripened. In 1822, the *ad valorem* duty at 20 per cent. on these grapes produced £1,720. (McColloch, *Dic. of Commerce.*) The *white cornichor* grape is remarkable for its elongated elliptical berry.

5. *Red rose-colored, grayish, or striped grapes.*

Grapes are susceptible of various uses, as, 1. To eat raw; 2. Verjuice; 3. Must; 4. Syrup; 5. Grape butter; 6. Sugar; 7. Wines; 8. Nectar; 9. Piquette; 10. Lees; 11. Vinegar; 12. Brandy; 13. Alcohol; 14. Preserves; 15. Pies and Tarts; 16. Tartar or Argol; 17. Cordials; 18. Perfumes; 19. Varnish; 20. Raisins. As these latter are of some considerable importance, perhaps it would be proper, although out of place, to notice, briefly, their preparation.

Raisins (*Uvæ passæ majores; Passulæ majores*) are the dried berries of the grape. The best—the Granada *Muscatels* and *Blooms*—are simply sun-dried; while the *Lexias* (so called from the liquor in which they are dipped,) according to accounts, are immersed in a mixture of water, oil, and ashes, and afterwards sun-dried. By this treatment, their skins are rendered so fragile, that the juice readily exudes and candies on the fruit. Dillon, in his "*Travels through Spain*," states that the sun-dried raisins have their stalks half cut through while the bunch remains on the vine, and is thus dried. Some raisins are also said to be dried by heated ovens. Raisins are imported in casks, barrels, boxes, and jars; the best come in jars and quarter boxes of about twenty-five pounds weight. The varieties of the grape from which they are prepared, are the *Sultanas*, *Blooms*, and *Muscatels*. The *Corinthian Rasins*, or *Currants*, are obtained from a very small grape called *Black Corinth*.

Preparation of Wine.—Though the art of making Wine varies in different countries, yet it is regulated by general rules, which require to be observed. When the grapes are ripe, they are gathered, and trodden under foot in wooden vessels perforated at the bottom, through which the juice, called the *must*, runs into a vat placed beneath. The temperature of the air being 60°, the fermentation gradually takes place in the must, and becomes fully established after a longer or shorter period. In the meantime, the must becomes sensibly warmer, and emits a large quantity of carbonic acid, which, creating a kind of effervescence, causes the more solid

parts to be thrown to the surface in a mass of froth, having a hemispherical shape called the head. The liquor, from being sweet, becomes vinous, and assumes a deep red color, if the product of red grapes. After a while the fermentation slackens, when it becomes necessary to accelerate it by thoroughly mixing the contents of the vat. When the liquor has acquired a strong vinous taste, and becomes perfectly clear, the wine is considered formed, and is racked off into casks. But even at this stage of the process, the fermentation is not complete, but continues for several months. During the whole of this period, a frothy matter is formed, which, for the first few days, collects around the bung, but afterwards precipitates along with the coloring matter and tartar, forming a deposit, which constitutes the wine-lees. (*Bache.*)

Description.—Professor Rafinesque gives the following comprehensive description of the various wines:

1. Red Wines owe their color to the coloring matter; they are most common, often called table wines, or claret. They vary from pale purple to black, and from the thinness of water to the thickness of syrup. When new, or less than three months old, they are less agreeable, difficult to digest, flatulent, liable to irritate and inflame the bowels. When from three to eighteen months old, they are palatable and perfect. When older, they become better still, lighter, milder, and healthier, very stomachic, and reviving.

2. White Wines are made with white grapes, or red grapes without husks. They are commonly limpid, thin, and dry, whence they are called dry wines, or sack. The color is white, pale, yellow, or brownish. They are milder and less acid than the red wines, very diuretic and useful in dropsies. Such are Hock and Sherry.

3. Sparkling Wines contain an excess of carbonic acid; commonly called Champaigne; white and frothy, very mild and healthy, but liable to affect nervous persons.

4. Acid Wines have too much malic acid; they are thin and sourish, but very cooling. The northern and mountainous countries afford hardly any other, the grapes being deficient there in sugar. Several American grapes can produce no other, unless sugar is added. The colors are white, or pale red.

5. Astringent Wines contain more tannin. They are commonly red, rough, and austere. Such are Port, or Oporto, Catalonia, Roussillon, &c. Useful for persons of lax fibres, or who have undue evacuations; but liable to bring on gout.

6. Strong Wines have an excess of alcohol, which makes them affect the head. They are commonly white, or brown. Such are Madeira, Teneriffe, Lisbon, &c. Unless drank very moderately,

they produce intoxication, dyspepsia, inflammation, and chronic diseases.

7. Sweet Wines contain much sugar, some strength, and perfume. They are commonly white, or pale, but some are red; also, commonly thick, luscious, delightful, acting as mild cordials, and very nourishing. Such are Cyprus, Malaga, Lachryma, Muscat, Malmsey, Constantia, &c. Used moderately, they are reviving, tonic, stimulant, and useful in all diseases of debility.

8. Exquisite Wines abound in delicious and fragrant aroma, are sweet, but not strong. Such are Tokay and Nectar, the best of all wines or cordials, the best kinds of which sell on the spot at fifteen dollars per bottle, or sixty dollars the gallon; while common table wines often sell in Europe at five cents the gallon. The finest perfumed sweet wines may be concentrated by frost into exquisite Essence of Wine.

Some of the most famous or valuable wines are the following kinds. Each has its peculiar flavor.

French Wines.—1. Sillery,—amber color, dry, fine perfume, stomachic. 2. Rose-colored Champaigne. 3. Moselle,—white, light, agreeable. 4. Straw Wine,—similar to Tokay; made with grapes kept on straw till spring. 5. Rangen,—white, very strong, bad for the nerves, may cause palsy. 6. Pineau,—sweet, light, fragrant, 7. Vouvray,—sweet, soft, strong, white. 8. Grosnoir,—black, thick, rough, loses color and taste by age. 9. Burgundy,—red, brisk, delicate. 10. Cote d'or,—red, strong, brisk, high flavor. 11. Auxerre,—red, fine, delicate, fine boquet. 12. Leclos,—white, quite limpid, fine. 13. Chambertin,—red, fine, sweet perfume. 14. Volnay,—red, very fine, delightful smell. 15. Grillet,—white, brisk, perfumed, sweet when young, dry when old. 16. Hermitage,—red, fine, perfumed. 17. Golden Hermitage,—golden color, delicious perfume and flavor. 18. Medoc, or best perfumed Claret. 19. Graves,—white Claret. 20. Roussillon,—red, rough. 21. Muscat,—white, sweet, delicious. 22. Sciotat,—similar, but thin. Most of these best wines are drank as luxuries or medical tonics, and the very best are seldom exported, costing from one dollar to five dollars the bottle.

Spanish Wines.—1. Tinto,—black, thick, strong. 2. Tintillo,—ditto, red. 3. Soco,—white, dry, bitterish. 4. Xeres, or Sherry,—white, dry, nutty, strong. 5. Paxaret,—white, sweet, high flavor. 6. Grenada,—amber color, very sweet when young, losing the sweetness by age. 7. Albaflora,—like Hock, white, not so dry. 8. Sweet Malaga,—brown, sweet, strong, a fine cordial when old. 9. Dry Malaga,—whiter, thinner, and dry. 10. Alicant,—red, strong, very tonic. 11. Catalonia,—red, and rough, like Port. 12. Malmsey,—sweet, reddish, fine flavor. 13. Red Malaga,—fine, strong. 14. Salamanca,—pale, red, fine.

Wines of Portugal are commonly called *Port* when red, and *Lisbon* when white: both are strong and rough, but improve by age, unless adulterated, as usual, with brandy. 1. Carcavelos,—is the

Sweet Lisbon. 2. Bucellas,—the Dry Lisbon. 3. Setubal,—like Muscat. 4. Minho,—best Pale Port. 5. Douro,—very rough.

Italian Wines.—1. Chiaretto,—pale, red, fine. 2. Pennino,—white, thin like water, acid; made in the Alps and Appenines. 3. Florence, or Tuscany,—similar to Burgundy, thinner, cannot keep. 4. Lombard, Modena, and Montserrat,—red, thin, acid. 5. Montepulciano,—red, strong, hot. 6. Vicentino,—red, strong 7. Falerno, and Salerno,—red, delicate. 8. Calabrese,—black, thick, sweet. 9. Tarento,—red, rough. 10. Malvagia,—sweet, strong, delicate. 11. Lachryma,—red, sweet, strong, perfumed. 12. Moscatello,—yellow, sweet, luscious. 13. Nobile, and Vergine,—exquisite, similar to Tokay. 14. Rosolio, or Fiascone,—white, sweet, thick like a cordial. 15. Paglino,—straw color, fine. 16. Agro Dolce,—sweet and acid, white. 17. Nenacio,—black and thick 18. Puglia,—pale, red, brisk. 19. Viterbo,—red and rough. 20. Trappola,—sweet and bitter. 21. Amaro,—red, bitterish. 22. Zafferano,—saffron color. 23. Doro,—golden, sweet. 24. Albano, and Sanguinello,—bright and pleasant. 25. Greco,—yellow, pungent, sweet. 26. Morello,—black, strong. 27. Vesuvio,—red, strong. 28. Ischia,—pale, strong. 29. Pergola,—pale, thin, flat. 30. Passola,—fine, made with shrivelled grapes. 31. Meile,—yellow, as sweet as honey. 32. Corsican,—similar to Catalonia. 33. Sardinian,—similar to Burgundy, many kinds. The Italian wines are hardly known out of Italy, being seldom exported; those of South Italy alone will keep well.

Sicilian Wines.—1. Di Pasto,—pale, strong. 2. Catania,—similar, with the pitch taste. 3. Mascali,—red, strong. 4. Etna,—white, fiery. 5. Palermo,—pale, red, strong, but thin. 6. Castelvetrano,—yellow, strong, limpid. The Marsala, or Sicilly Madeira, is made with this Castelvetrano, brandy, bitter almonds, &c., well fined, and kept two years. 7. Tusa,—sweet, brown, flavor of Cyprus. 8. Syracusa,—sweet, strong, yellow, like Muscat. 9. Noto and Lipari,—strong, pale, rough. 10. Modica,—pale, red, flavor of Malaga.

Swiss Wines.—1. De Vaud,—dry, like Rhenish. 2. Neufchatel,—red, like Burgundy. 3. Baudry,—red, good flavor. 4. Montagnard,—thin and acid.

German Wines.—Commonly dry and acid. 1. Treves,—a specific for gravel [?]. 2. Hock,—white, very dry. 3. Rhenish,—white, delicate. 4. Berg,—strong, and perfumed. 5. Heidelberg,—fine, red. 6. Bohemia,—like Burgundy. 7. Danube,—delicate, do not keep. 8. Austrian,—greenish, strong. 9. Styrian,—pale, strong. 10. Spitz,—fine. 11. Tyrol,—red, weak.

Hungarian Wines.—1. Anspruch Tokay,—white, luscious, soft, mild, oily, exquisite. 2. Marlas, and Common Tokay,—inferior, thinner. 3. Szeghi,—white, aromatic perfume. 4. Moda,—nearly similar to Mazlas. 5. Zombor,—strong, pale red. 6. Matra, and Arad,—red, sweet, strong wines.

Russian Wines.—Only produced in the South. 1. Zimlansk,—

red, fine. 2. Don,—white, fine. 3. Tangarog,—disagreeable taste. 4. Kaffa,—or Champaigne of Crimea. 5. Sudagh,—white, sweet, similar to Hungarian. 6. Cutner, or Moldavian,—green, very strong.

Grecian Wines.—1. Carlovitz,—red, fine, brisk. 2. Posega,—white, fine flavor. 3. Dalmatian,—red, strong, fine. 4. Lissa,—dark red, very strong, the strongest of all wines. 5. Morea,—red, perfumed. 6. Napoli,—Malmsey. 7. Malmsey of Mount Ida, in Candia. 8. Nectar of Candia—exquisite, delicate, sweet. 9. Samos,—sweet and acid, white. 10. Nectar of Scio—sweet, astringent. 11. Scio,—pale, red, fine. 12. Tenedos,—like Medoc. 13. Tenedos,—red Muscat. 14. Santorin,—very sweet and agreeable, but sulphurous. 15. Pitch Wine,—brown, with the taste of tar. 16. Holy Wine,—very fine. 17. Cyprus,—sweet perfumed, red when young, yellow when old, similar to Malaga, a very fine cordial and stomachic.

Asiatic Wines.—1. Smyrna,—red, strong, fine. 2. Astracan,—red, similar to Lachryma. 3. Caspian,—like Moselle. 4. Caspian Champaigne. 5. Kuma,—red, light, thin. 6. Tartary,—strong, made very intoxicating by poppies. 7. Tiflis,—fine wine, made from wild grapes! 8. Arminian—red and white, fine, strong. 9. Syrian Claret. 10. Damascus, golden, dry. 11. Lebanon,—thick, perfumed, red. 12. Golden Wine,—yellow, from Syria. 13. Jerusalem,—white, good. 14. Sana,—in Arabia, good. 15. Shiraz,—red, harsh, high flavor. 16. Nectar of Shiraz,—white, sweet, strong, perfumed. 17. Ispahan,—white, fine. 18. Tabriz,—red and white, many kinds. 19. Shirvan,—red, like best Claret. 20. Afghan,—similar. 21. Many wines in Bucharia, Thibet, and China, hardly known.

African Wines.—1. Jew's Wine,—red, good. 2. Berber,—white, fine. 3. Madeira or Vidonia,—dry, strong, yellow, flavor of bitter almonds. 4. Bagoal of Madeira,—sweeter. 5. Pingo,—Malmsey of Madeira, exquisite. 6. Tinto of Madeira,—red, perfumed, austere, useful in dysentery. 7. Canary,—white, similar to Lisbon. 8. Vidonia of Teneriffe,—similar to Madeira when old. 9. Gomer,—white, sharp, limpid like water, flavor of Madeira. 10. Palma,—yellow, light, dry. 11. Palma Malmsey,—flavor of pine-apple. 12. Fayal,—white, thin, strong. 13. Azorian,—pale red, like light Port. 14. Constantia,—red, highly perfumed, sweet. 15. Cape or Henapop,—less perfumed. 16. Stony,—dry like Graves. 17. Rota,—red, strong. These four last from the Cape of Good Hope.

South American Wines.—Only made in Chili, Cuyo, Tucuman, &c.; little known, similar to Catalonia, pale red. In the Andes of Peru, wine is also made, but weak and bad tasted. The wine made in the West Indies, with V. glomerata and V. maritima, is red, harsh, acid.

North American Wines.—These are made from Canada to Mexico, chiefly from native grapes. In the United States, seventeen species can make good wine, either alone or with a little sugar. The principal wines, already made, are 1. Vincennes,—pale red, light. 2. Vevay,—red, acid. 3. Vevay prime,—brown and sweetish, fine.

4. Alexander,—pale red, flavor of raspberries, and similar to best Burgundy, made with V. prolifera. 5. Bland,—acid, strong, yellow, made with V. blanda. 6. Lufborough,—red, rich, fine musky flavor. 7. Catawba,—yellow, fine body and perfume. 8. Scuppernong,—yellow, limpid,very strong, fiery when brandy is added. 9. Mascadine,—yellow, sweet, perfumed. 10. Catskill,—strong, between Madeira and Port in taste and color. 11. Cooper's,—brown, similar to Lisbon, but acidule. 12. Elsinburg,—fine flavor. 13. Orwisburg,—very fine, white. 14. Isabella,—pale and fine. 15. Worthington,—similar to Port. 16. Winter Wine,—dark red, acid and harsh. 17. York,—red, harsh. 18. Harmony,—red, acid, good. 19. Alabama,—brown, fine, &c. The European vines thrive in our gardens, and produce good eatable grapes with some care; but are often injured in the fields by late frosts, and do not ripen well, or give a thin acid juice, unsuitable for good wine. We must, therefore, rely on our native hardy grapes, some of which are equal to the best exotic.

The Mexican wines, made from Spanish vines, produce wines similar to Spanish, but are little known as yet.

Composition of Wine.—The juice of both ripe and unripe grapes, have been analyzed by several chemists; the following tables, given by Pereira, embraces the most important results:

JUICE OF THE UNRIPE GRAPE.

Proust.		*Geiger.*
Extractive.	1. Deposite from the juice.	Wax.
Malic acid, a little.		Chlorophylle.
Citric acid, much.		Tannin.
Bitartrate of potash.		Glutinous matter.
Sulphate of potash.	2. Filtered juice.	Tannin.
Sulphate of lime.		Extractive.
		Sugar (uncrystallizable.)
		Gallic acid.
		Tartaric acid (free) about 1·12 per cent.
		Malic acid (free) about 2·19 per cent.
		Bitartrate of potash.
		Malate, phosphate, sulph., and muriate of lime.
Unripe grape juice.		Juice of white Grape of good quality.

JUICE OF THE RIPE GRAPE.

Proust.	*Berard.*
Extractive.	Odorous matter.
Sugar (granular and uncrystallizable).	Sugar.
Gum.	Gum.
Glutinous matter.	Glutinous matter.
Malic acid, a little.	Malic acid.
Citric acid, a little (Tartaric, *Braconnot*).	Malate of lime.
Bitartrate of potash.	Bitartrate of potash.
	Supertartrate of lime
Ripe Grape Juice.	Ripe Grape Juice.

Purity.—The table, p. 379, exhibits the results of the examination of the pure juice of the grape, but the wines of commerce are, many of them, very far from being pure. Nearly all contain more or less alcohol, many of them astringent and stimulating substances, coloring matter, &c. The following table exhibits the proportion of alcohol, (*sp. gr.* 0·825 at 60° F.,) by measure, contained in one hundred parts of wine:

	Brande.	*Prout.*		*Brande.*	*Others.*
1. Lissa, *average*	25·41	15·90	24. Alba Flora,	17·26	
2. Raisin, "	25·12		25. Malaga,	17·26	
2. Marsala, "	25·09	18·40	26. Zante,	17·05	
4. Port, "	22·96	20·64	27. Mam. Madeira,	16·40	*Fontenelle.*
5. Madeira, "	22·27	21·20	28· Lunel,	15·52	18·01
6 Currant,	20·55		29. Sheraaz,	15·52	*Prout.*
7. C. Madeira, *av.*	20·51		30. Syracuse,	15·28	30·00
8. R. Madeira, "	20·35		31. Claret, *av.*	15·10	
9. Teneriffe,	19·79		32. Nice,	14·63	*Prout.*
10. Colares,	19·75		33. Burgundy, *av.*	14·57	12·16
11. Constantia, W.	19·75	14·50	34. Sauterne,	14·22	
12. Lachryma Cristi	19·70		35. Vin de Grave,	13·94	
13. Vidonia,	19·25		36. Barsac,	13·86	
14. Sherry, *av.*	19·17	23·80	37. Tent,	13·30	
15. Lisbon,	18·94		38. Fontignac (R)	12·79	*Fontenelle.*
16. Malaga,	18·94		39. Champ'ne *av.*	12·61	12·20
17. Constantia, red,	18·92	14·50	40. R. Hermit'ge,	12·32	
18. Calcavella, *av.*	18 65		41. Cote Rotie,	12·32	
19. Bucellas,	18·49		42. Hock, *av.*	12·08	
20. Cape Muscat,	18·25		43. Gooseberry,	11·84	
21. Rousillon, *av.*	18·13		44 Orange, *av.*	11 26	
22. Grape Wine.	18·11		45. Tokay,	9·88	
23. W. Hermitage,	17·43		46. Elder,	8·79	

Christison, however, thinks that the proportion of alcohol in wine has been overrated. He makes the mean of seven Port wines about 16·20; that of thirteen Sherrys, excluding those long kept in casks, about 15·37, and that of Madeira, long kept in casks, 15·49. Wines kept in casks, according to this gentleman's views, will, for a few years, increase their proportion of alcohol by the mutual action of their elements, and it is supposed that they will improve their flavor during this time. In a few years. however, a reverse action will gradually take place, during which time the proportion of alcohol will decrease, and likewise some of the flavor.

Adulteration of wines is very extensively practiced, but it consists chiefly of the admixture of wines of inferior quality with those of superior: and if we except brandy and other spirits, little else will be found, unless it be the coloring, astringent, flavoring, and sweetening matters already spoken of. It may be remarked, however, in reference to mixing wines, that poorer wines are not always the result of this practice.

Physiological Effects.—Taken in moderate quantities, wine acts as a stimulant and tonic. It increases the action of the heart, and arteries; diffuses an agreeable warmth over the whole body; promotes the various secretions; sustains muscular force; promotes nervous action; excites the mental faculties; and causes gayety and agreeableness of feeling. Nevertheless, in a perfect state of health, while the *grape* may be nutritive, *wine* cannot add to the advantage of the system, but on the other hand, its long continued or excessive use, may do much mischief; see phys. ef. of alcohol.

Wines taken in large portions, especially the strongest kinds, will produce intoxication, like the ardent spirits; but a singular peculiarity obtains in its power to produce this effect; for although the alcohol that it possesses is the cause of the intoxication arising from its use, there is no correspondence between the effects of wine and a quantity of alcohol equal to that which is taken in the wine. A mixture of alcohol and water, corresponding to the strength of wine, will produce intoxication in a much smaller quantity than is necessary of wine. Four fluid ounces of alcohol are contained in eighteen and a half fluid ounces of port-wine, or twenty-six and a half of claret, and it takes eight of brandy, to furnish the same quantity; yet every one knows that individuals cannot take near half as much brandy as they can of port-wine.

The intoxication produced by wine, not only comes on slower than that by ardent spirits, but is much more lasting in its duration. The attending headache, nausea, and general derangement of the digestive apparatus, is also much more considerable.

Therapeutic Properties and Use.—Wine is regarded as a

valuable stimulant, tonic, and cordial, and is one of the most common articles prescribed in general practice, to patients that are weak, and much relaxed, or that are convalescing tediously. It supports the vital power, equalizes the circulation, regulates the nervous action, obviates delirium, especially that caused by an exanguinous, or extremely relaxed condition of the system.

"As a medicine," says Parr, "wine is a most valuable cordial in languor and debility, particularly useful in the low stage of typhus, raising the pulse, supporting the strength, promoting a diaphoresis, and *resisting putrefaction more quickly and certainly than any other medicine.* Delirium, from excessive irritability, and a defect of nervous energy, is often more relieved by the judicious use of wine; during the prevalence of an intermittent epidemic, or putrid sore throat, a moderate use of wine has proved a salutary prophylactic. In malignant anginia; in the small pox, verging to putresency, with great debility; in gangrenes and the plague; wine is considered an important remedy, and in almost every case of great prostration of strength, is a most grateful and efficacious cordial."

In cases of irritability of the stomach, wine will sometimes set peculiarly grateful, when no other stimulant could possibly be taken. This property, therefore, as well as its remarkably salutary effects, when applied to fresh wounds and bruises, according to sacred history, was well known to the ancients. As a remedy *for*, and corrector *of* old sores, ulcers, and cancers, it is also important.

But the special *adaptations* and the *varieties* of wines have already been spoken of in their description, and need not here be treated upon. The quantity to be taken varies exceedingly in different cases: some patients can bear but little, perhaps scarcely a spoon-ful, while others require large quantities, frequently repeated. A pint or more has been given in the course of a few hours, with the happiest effect.

In pharmacy, it is used as a menstruum for various medicines, and thus *Medicated Wines*, *Wine Bitters*, *Cordials*, &c., are often prepared, and extensively used. One of the most common and valuable domestic preparations of wine, is *Wine-*

whey, which is made by adding from a gill to half a pint of good wine, to a pint of boiling milk, straining out the curd, without pressing, and sweetening the whey. It forms a very excellent drink, in nearly all varieties of disease.

ÆTHER SULPHURICUS.

Synonymes.—Sulphuric Ether, Ether, *Eng.*

History.—It is not known whether Ether was known to the ancients. Raymond Lully, who lived in the thirteenth century, is the first whom we know to have been acquainted with it. V. Cordus, in 1540, described the method of preparing it. He called it *Oleum Vitrioli dulce.*

Preparation.—"Take of Alcohol *four pints;* Sulphuric acid *a pint;* Potassa *six drachms;* Distilled Water *three fluid ounces.* To two pints of Alcohol, in an open vessel, add gradually fourteen fluid ounces of the Acid, stirring them frequently. Pour the mixture, while still hot, into a tubulated glass retort, placed upon a sand-bath, and connected by a long adapter with a receiver kept cold by ice or water, then raise the heat quickly until the liquid begins to boil. When about half a pint of ethereal liquid shall have passed over, introduce gradually into the retort the remainder of the Alcohol, previously mixed with two fluid ounces of the Acid, taking care that the mixture shall enter in a continuous stream, and in such a quantity as shall supply the place, as nearly as possible, of the liquid which distils over. This may be accomplished by connecting a vessel containing the alcoholic liquid with the retort, by means of a tube provided with a stop-cock to regulate the discharge, and passing nearly to the bottom of the retort, through a cork accurately fitted into the tubulure. When all the Alcohol has been thus added, continue the distillation until about three pints shall have passed over, or until white vapors shall appear in the retort.

"To the product thus obtained, add the potassa previously dissolved in the Distilled Water, and shake them frequently. At the end of twenty-four hours, pour off from the alkaline solution the super natant ether, introduce it into a retort, and, with a gentle heat, distil until two pints have passed over,

or until the distilled liquid shall have the specific gravity of 0·750." *U. S.*

"Take of Rectified Spirit *fifty fluid ounces;* Sulphuric Acid *ten fluid ounces*. Pour twelve fluid ounces of the Spirit gently over the Acid, contained in an open vessel, and then stir them together briskly and thoroughly. Transfer the mixture immediately into a glass matrass connected with a refrigeratory, and raise the heat quickly to about 280°. As soon as the ethereal fluid begins to distil over, supply fresh spirit through a tube into the matrass in a continuous stream, and in such quantity as to equal that of the fluid which distils over. This is best accomplished by connecting one end of the tube with a graduated vessel containing the spirit—passing the other end through a cork fitted into the matrass—and having a stop-cock on the tube to regulate the discharge. When forty-two [fluid] ounces have distilled over, and the whole spirit has been added, the process may be stopped. Agitate the impure ether with sixteen fluid ounces of a saturated solution of muriate of lime, containing about half an ounce of lime recently slacked. When all odor of sulphurous acid has been thus removed, pour off the supernatant liquor, and distil it with a gentle heat so long as the liquid which passes over has a density not above 0.735. More ether of the same strength is then to be obtained from the solution of muriate of lime. From the residuum of both distillations, a weaker ether may be obtained in small quantity, which must be rectified by distilling it gently again." *Ed.*

"Take of Rectified Spirit *three pounds;* Sulphuric Acid *two pounds;* Carbonate of Potassa, previously ignited, *an ounce*. Pour two pounds of the spirit into a glass retort, add the acid to it, and mix. Afterwards place it on sand, and raise the heat so that the liquor may quickly boil, and the ether pass into a receiver cooled with ice or water. Let the liquor distil until some heavier portion begins to pass over. To the liquor which remains in the retort, after the heat has subsided, add the remainder of the spirit, that ether may distil in the same manner. Mix the distilled liquors, then pour off the supernatant portion, and add to it the Carbonate of Potassa, shak-

ing them frequently during an hour. Lastly, distil the ether from a large retort, and keep it in a stopped vessel." *Lond.*

The Dublin College orders it made from the Sulphuric Ethereal Liquor, by distilling it from a mixture of this with Potassa.

Properties.—Sulphuric Ether is a very limpid colorless liquid, of a strong, agreeable, sweet odor, and hot, pungent taste. When pure, it will not redden litmus; but if imperfectly prepared, or long kept, it will to some extent. Its specific gravity is 0·713; its boiling point 95°. It is not susceptible of freezing at even 166° below zero. The officinal strength, according to the U. S. and Lond. Pharmacopias, is 0.750. Its inflammability is very great, and hence it should be handled carefully about the flame or fire. The products of its combustion are water and carbonic acid.

Composition.—Chemically speaking, this liquid is an *oxide of ethyle*, while alcohol is a *hydrated oxide of ethyle*. The formula of ether then is $C^4 H^5 -|- O$. It thus appears that ether contains no sulphur, and can have no claim on its common name further than the fact of the agency of sulphuric acid in its production.

Physiological Effects.—The physiological effects of ether are very nearly the same as those of alcohol, which see.

Therapeutic Properties and Use.—Ether is not very extensively used in the new practice simply as a therapeutic agent, but in pharmacy it is, like alcohol, very important. As a medicine, it is stimulant, and anti-spasmodic; but its effects, though diffusive, are very transient. It is serviceable sometimes when it is desired to produce a sudden reaction, as in cyncope, asphyxia, and in all cases of rapid depression of the vital powers. As an anti-spasmodic, in cases of hysteria and hypocondriasis, it is often of very considerable service.

As a letheon, it has of late attracted much attention. When properly inhaled into the lungs, it will produce a species of insensibility and intoxication that will admit of the severest surgical operations without the least sensation of pain. But these effects of ether are not altogether safe, as they prevent the proper decarbonization of the blood, and

will, hence, in some instances, produce no small amount of mischief.

Externally applied, it serves as a refrigerant, by its rapid evaporation; and thus it will sometimes relieve headache.

Ether is by far the most available in pharmacy, for, excepting water and alcohol, there is no better general solvent. Its extreme volatility places it before alcohol as a menstruum in the preparation of many of the vegetable oils and resins. The virtues of lobelia, capsicum, podophyllum, &c., are taken up by the ether in the form of a tincture, when, by evaporating the ether, the desired product is left behind. By means of a retort and refrigeratory, the ether may be saved for succeeding processes.

The use of ether as a pharmaceutic agent, being so well illustrated in treating of articles prepared with it, it is unnecessary to protract this article any more.

The dose of sulphuric ether is from f3ss. to f3jj, or from 30 ♏ to a tea-spoon-ful.

Various other ethereal preparations are officinal in the several pharmacopias, but are not in use in the new practice. Among the most important of these, are *Æther Nitrosus* and *Spiritus Ætheris Nitrici*, which are prepared by the action of sulphuric acid on *nitrate of potassa* and *alcohol*, and subsequent distillations. This latter, which is commonly called *sweet spirit of nitre*, is diuretic, diaphoretic anti-spasmodic, and sedative, and is very much esteemed in the old or Allopathic practice.

Order VI.—AMMONIACAL STIMULANTS.

The different preparations of *Ammonia*, are alone comprised in this order. They are not very numerous, especially those of them that are used by practitioners of the New School; nor are they as extensively useful as most other orders of stimulants. A few, however, as the *carbonate*, *muriate*, and *aqua* of *ammonia*, are of some importance.

Ammoniacal stimulants in their action, are very diffusive, and volatile; but, from their *acrid* properties, some of them which are more caustic, excite the parts with which they

come in contact, much more than those more remote from the sphere of their immediate influence. Their power, as *topical stimulants*, make them eminently useful as rubefacients; and, indeed, this is the chief purpose for which they are employed in the new practice.

AMMONIA MURIAS.

Synonymes.—Ammonia Hydrochloras; Salmiac, *Ger.;* Sel Ammoniac, *Fr.;* Sale Ammoniaco, *Ital.;* Sal Ammoniaco, *Span,;* Hydrochlorate of Ammonia, Sal Ammoniac, *Eng.*

Preparation.—The Egyptians, many years ago, prepared the Sal Ammoniac from the soot formed in the combustion of camel's dung, which they used as fuel. It is now obtained, in this country, from two principal sources: — 1. The *gas liquor*, collected in the condensing vessel of coal-gas works; 2. The *bone spirit*, which is a secondary product, arising from the destructive distillation of bones, in the manufacture of animal charcoal for sugar refiners.

The ammonia in the *gas-liquor* is found in several different combinations with other elements, but principally with sulphur and carbon. To these, sulphuric acid is added, when the affinity for sulphur prevails. When this liquor is duly evaporated, brown crystals of sulphate of ammonia are obtained. This salt is then sublimed with chloride of sodium, in pots of iron, lined with clay, and furnished with a dome or head of lead. The affinities of the different elements, contained in the mixture, give rise to several decompositons and compositions during the process of sublimation. Thus, the chlorine combined with the soda, disengages from the latter, and unites with the ammonia, forming muriate of ammonia, which is found sublimed in the head of the still, while the sulphur and soda constitute a new salt that remains behind.

Sometimes a different process is adopted, and the ammonia, instead of being first all converted into a sulphate, is directly changed into a muriate by the addition of muriatic acid, or chloride of calcium; from this, after due evaporation, the muriate is sublimed.

Muriate of ammonia may be obtained from *bone-spirit* in the manner above described; but, it is also prepared by a different process. The *bone-spirit* is digested with sulphate of lime. Thus by double decomposition and re-composition, sulphate of ammonia, and carbonate of lime, are formed. Then the muriate is prepared from the sulphate of ammonia, by sublimation, as in the other process. Ammonia is not manufactured for market in this country, but is chiefly imported from England and Hindostan. That brought from the latter place is an impure article, and is not used as medicine, but is consumed in the arts.

The English sal ammoniac occurs, in commerce, in large white cakes, some two inches thick, which are convex on one side and concave on the other. When broken, it presents a striated texture, somewhat tough and ductile; semi-transparent; nearly permanent in the air; without smell, and of a saline taste. It is not so soluble in alcohol as in water. It will dissolve in its own weight of boiling water; but requires three times as much when of the temperature of 60°. When dissolved, it diminishes the temperature of the menstruum, and is hence used for the purpose of making freezing mixtures.

Composition.—Hydrochloride of ammonia is composed of 1 eq. of ammonia, and 1 eq. of hydrochloric acid. Its ultimate constituents are, 4 eq. of hydrogen, 1 eq. of nitrogen, and 1 eq. of chlorine. Pereira gives the following analytic tables of sal ammoniac:

	Atoms.	Eq. wt.	Per ct.	Kirwan.	Bucholtz.	Berzel.
Ammonia,	1	17	31·48	25	31	31·95
Hydrochloric Acid,	1	37	68·51	75	69	68·05
Hydrochlorate Amm.	1	54	100·00	100	100	100·00

	Vol.	Spec. Gr.
Ammoniacal Gas,	2	0·59027
Hydrochloric Acid Gas,	2	1·28478

Physiological Effects.—*α. On Vegetables.*—A watery solution containing 1·300 of its weight of hydrochlorate of ammonia, according to Sir Humphrey Davy, promotes vegetation; but if it contains 1·30 of its weight it will act injuriously.

β. On Man.—When taken in doses of from *gr.* x to xx, it, at

first, produces a sensation of warmth at the stomach, followed by nausea, with slight oppression, which is attended by headache and increased nausea, if the dose is repeated. After it is absorbed, it produces a manifest stimulating effect on the glandular and lymphatic systems.

Therapeutic Properties and Use.—Hydrochlorate of ammonia is a stimulant alterative, strongly antacid, diaphoretic, and somewhat diuretic. The Germans esteem it highly as an alterative and resolvent; they use it instead of mercury, in glandular diseases, and general cachectic habits.

Among Reformers, this article has not been much in use as an internal remedy. Experience has not yet proven it to act on true therapeutic principles. The lack of investigation, in reference to this article as a medical agent, it is presumable, is owing to the fact that the Materia Medica of the new system is replete with agents more organized, that are calculated to fulfil the indications, which have generally been cited for sal ammoniac; and while organic elements prove fully satisfactory, the inorganic are not necessary. Nevertheless, it is possible, that the muriate of ammonia, as a saline, or neutral principle, may prove itself possessed of valuable therapeutic properties that are peculiar to these combinations. The author regrets his want of time to investigate the subject. It is given in doses of from *gr.* v to *gr.* xxx.

As an external application, sal ammoniac has been found useful as a resolvent, or discutient lotion and embrocation. Various solutions, in water, vinegar, and spirits, have been made, and in many cases very beneficially used in glandular swellings, contusions, and echymosis, when there is no wound of the skin. A watery solution is used as a wash for ulcers, cancers, and scrofulous sores.

AMMONIA CARBONAS.

Synonymes.—Ammoniæ Sesquicarbonas; (L.) Carbonate of Ammonia, Volatile Salts, *Eng.*

The elements constituting Carbonate of Ammonia are found variously combined, under different circumstances, and thus several substances are known under the name of *Carbonate of Ammonia.* An impure article is formed during the decompo-

sition of most organic substances that contain nitrogen, and hence, the atmosphere always contains more or less of it. According to Liebig, rain-water contains it; and it is well known that the urine and excrements of most animals, and especially of the human species, when in a putrid state, give off ammonia in the state of a carbonate. An anhydrous neutral carbonate of ammonia is formed by the union of dry carbonic acid and ammoniacal gases.

The medical carbonate is prepared by subliming together one part of hydroclorate of ammonia and one and a half of chalk, well pulverized separately and mixed together; or it may be prepared in the same way from equal parts of Sal Ammoniac and Carbonate of Soda. The phenomena of the process are as follows: 1. A mutual decomposition takes place between the elements of the ingredients employed: 2. A new combination takes place between the nitrogen and hydrogen of the sal ammoniac and the oxygen contained in the chalk (oxide of calcium,) or of the carbonate of soda; while, in the third place, the chlorine that is set free, combines with the calcium, and forms a chloride of lime which remains behind, while the carbonate of ammonia sublimes over into the receiver.

Physical Properties.—When recently prepared, Carbonate of Ammonia is in white, rather hard, translucent masses, of a fibrous texture, crystalline appearance, extremely pungent ammoniacal odor, and a sharp taste. It is completely soluble in about four times its weight of water; also in diluted alcohol. When pure, it will totally evaporate when heated. It has an alkaline reaction; and when held under a piece of tumeric paper, it turns it to a brown. When exposed to the air, it is converted into a bicarbonate of ammonia, and losing its translucency, falls into powder. This is caused by the loss of a portion of its ammoniacal gas, which is equivalent to an addition of half an atom of carbonic acid.

Composition.—The officinal article of the *Lond.* Pharmacopia, is a *sesquicarbonate of ammonia*, whose formula is NH^3, $1\frac{1}{2}$ CO^2, HO=59, or $2NH^3$, $3CO^2$, H^2O^2=118; and that made officinal in the *U. S.*, *Ed.*, and *Dub.* Pharmacopias, is a carbonate, whose formula is given as NH^3, CO^2; while Dalton,

Scanlan, and Pereira, would make it appear that the article is neither a carbonate or sesquicarbonate of ammonia, but a compound of the carbonate and bicarbonate. "For," it is argued, "if treated with a small quantity of cold water, a solution of carbonate of ammonia is obtained, while a mass of bicarbonate, having the form and dimensions of the sesquicarbonate employed, and of which it is a mere skeleton, is left." Dr. Pereira, from the uniformity of its composition and its crystaline structure, considers it to be a chemical combination of the two salts. Dr. Bache, in defence of his position in the U. S. Dispensatory, in reference to this matter, makes the following remarks: "When converted into bicarbonate by exposure to the air, each eq. of the medical salt loses one eq. of monocarbonate, a change which leaves the acid and base in the proper proportion to form the bisalt. The mutual decomposition of the salts employed in its preparation, would generate, if no loss occurred, the monocarbonate, and not the sesquicarbonate. The way in which the latter salt is formed, may be thus explained. By the mutual decomposition of the three eqs. of muriate of ammonia and of chalk respectively, three eqs. of monocarbonate of ammonia, three of water, and three of chloride of calcium are generated. During the operation, however, one eq. of ammonia and one of water, forming together oxide of ammonium, are lost; so that there remains to be sublimed, three eqs. of carbonic acid, two of ammonia, and two of water [=118]; or, in other words, the exact constituents of the hydrated sesquicarbonate. When this is re-sublimed in the process of refining, two eqs. of the salt lose one eq. of carbonic acid, and become one eq. of 5-4 carbonate of ammonia."

Therapeutic Properties and Use.—Carbonate of ammonia is powerfully antacid, stimulant, diaphoretic, and anti-spasmodic; but is not much used as an internal remedy in the reformed practice. Occasionally, however, it is employed as an antacid in some cases of dyspepsia, in which there is a disposition to acidity of the stomach, together with nervous inactivity. It has also been used as a lithontriptic. In view of its anti-spasmodic properties, it is sometimes used in cases of hysteria hypocondria, and epilepsia. In some cases of typhus,

it is employed as a stimulant and antiseptic. It is an antidote to the poison communicated by the bites and stings of reptiles and insects, which consists of some peculiar acids, and which become neutralized by the remedy.

One of the common uses that are made of this article, is that of a volatile smelling-salt. It is eminently adapted to all cases of syncope, hysteria, and asphyxia. Applied to the nostrils, it stimulates the mucous membrane, and thus excites the arteries and nerves, and produces a reaction. It must, however, be applied with care to the nostrils of persons in an insensible state, as great mischief may be done from its acrid and powerfully irritating effects. When prepared for a smelling salt, it is put into a bottle with a ground stopper, and a little oil of bergamot or lavender added. The dose for internal use, is from *gr.* v to ʒj, exhibited in pill or solution.

As a topical remedy, it has been used in aqueous solution, or mixed with oil, in cases where a rubefacient is required.

AQUA AMMONIA.

Synonymes.—Liquor Ammonia, U. S., L.; Water of Ammonia, *Eng.*

Preparation.—℞ "Take of Muriate of Ammonia, in fine powder; Lime, each, *a pound;* Distilled Water, *a pint;* Water, *nine fluid ounces.* Break the lime into pieces, and pour the water upon it in an earthen or iron vessel; then cover the vessel, and set it aside till the lime falls into powder and becomes cold. Mix this thoroughly with the muriate of ammonia in a mortar, and immediately introduce the mixture into a glass retort. Place the retort upon a sand-bath, and adapt to it a receiver, previously connected, by means of a glass tube, with a quart bottle, containing the distilled water. Then apply heat, to be gradually increased till the bottom of the iron vessel containing the sand becomes red hot, and continue the process so long as ammonia comes over. Remove the liquid contained in the quart bottle, and for every fluid ounce of it add three and a half drachms of distilled water, or so much as may be necessary to raise the sp. gr. to 0·96. Keep the solution in small bottles well stopped." (*U. S*).

℞ "Take of Hydrochloride of Ammonia, *ten ounces;* Lime, *eight ounces;* Water, *two pints*, [Imperial measure]. Put the lime, slaked with water, into a retort; then add the hydrochlorate of ammonia, broken into small pieces, and the remainder of the water. Distill fifteen fluid ounces, [Impe-

rial measure], of solution of ammonia." (*Lond*). The specific gravity of this is 0·960.

The several Pharmacopias, have formulæ for a solution called, *Liq. Ammo. Fortior, U. S., Lond.; Aqua Ammo. Fortior, Ed.; Aq. Ammo. Causticæ, Dub.; Stronger Solution of Ammonia*, which has a specific gravity of 0·882. When this is diluted with two measures of distilled water, is of about equal strength with the common aqua of ammonia.

Physical Properties.—The aqua of ammonia is a colorless liquid, having a very pungent ammoniacal odor and caustic alkaline taste. It gives no precipitate with lime-water or with chloride of calcium, proving the absence of carbonic acid; nor will it effervesce with dilute acids. This, like the carbonate of ammonia, will not give any precipitate with nitric acid, to show that it contains any earthy matters or chlorine. But oxalic acid will indicate the presence of calcium. It has a very strong alkaline reaction, and, and like the carbonate, transiently browns tumeric paper.

Composition.—Pereira gives the following table to show the composition of the liquid of several Pharmacopias with their different specific gravities:

	LOND., ED. Sp. Gr. 0·960	DUB. Sp. Gr. 0·950	LIQ. AM. FORT. Sp. Gr. 0·880
Ammoniacal Gas,	10	12·5	30·5
Water,	90	87·5	69·5
Liquor Ammonia,	100	100·0	100·0

Impurities.—Aqua of ammonia sometimes contains traces of carbonate of ammonia, hydrochloric acid, chlorine, etc.; which may be detected as follows: The carbonate may be detected by means of lime water, which produces a precipitate of carbonate of lime. When neutralized by a portion of nitric acid, nitrate of silver will detect the presence of *hydrochloric acid* or *chlorine;* oxalic acid, that of *lime;* and sesquicarbonate of ammonia, *lime* or *other earthy matters*, by producing precipitates.

Therapeutic Properties and Use.—The therapeutic properties of this article are very analogous to those of the carbonate of ammonia and need not here be described. When

administered internally it is given to fulfil the same indications for which the carbonate is used. It is, however, more commonly prescribed as an antidote for poisoning by hydrochloric acid, oil of bitter almonds, and other substances containing this peculiar poison. It is also recommended against poisoning by cicuta, belladona, tobacco, and other poisons of the kind. As a diaphoretic, it seems not to be dependant entirely on its mere stimulating or general exciting power; but, from its alkaline properties it derives an additional faculty of exciting the functions of the skin. It is more convenient than the carbonate, in its application as an antidote to the poison inflicted by bites and stings; and the *liquor ammonia fortior* is equally active as an application to the nostrils in cases of syncope, hysteria, epilepsy, etc. It may, like it, be kept in bottles prepared for the purpose. When thus put up it may be scented with any of the pleasant flavored essential oils.

Externally, it is especially valued as a rubefacient, and counter-irritant, in pains of a neuralgic and rheumatic character, as well as in inflammations and phlegmasia dolens. The *dose* is from ♏ x to ♏ xxx, properly diluted. A strong solution of ammonia will answer as a caustic.

There are several other preparations of ammonia that are sometimes used, but are not popular with botanics; among these the Liquor Ammoniæ Acetatis, or *Spirit of Mindereri*, is one of the most important. This is made by saturating diluted acetic acid with carbonate of ammonia. It is a saline, diaphoretic, and diuretic draught, valued, by some, in fevers and in inflammations of the viscera. It is also employed, as a discutient application, in various swellings and diseased glands, as in cases of mumps and hydrocele. It should be applied warm, with a flannel cloth. The dose is from f℥ss. to f℥jss., diluted with water and sweetened with sugar; taken three or four times a day.

Spirit of Ammonia is another preparation of ammonia, which is valued by some as a stimulant and anti-spasmodic. This is prepared in the following way:

℞ "Take of sal ammoniac *ten ounces;* carbonate of potassa *sixteen ounces;* rectified spirit, water, each three pints [Im-

perial measure]. Mix them, and distil three pints, Imperial measure. (Lond.) The *aromatic spirits of ammonia* is prepared by dissolving, in the common *spirits of ammonia* some of the aromatic essential oils, such as the *lemon*, *rosemary*, *cinnamon*, *cloves*, &c. It is also used as a stimulant and diaphoretic, and likewise as a carminative. The dose of these is from thirty drops to a tea-spoon-ful, properly diluted.

Class II.—TONICS.

Tonics are medical substances, which have the power to exalt the tone of the organs of the body, or in other words, which give strength and vigor to the system.

A certain state of permanent tention of the fibres of the body is necessary to the physiological state. Sir Gilbert Blane states, that no muscle, whether voluntary or involuntary, can act, unless its fibres are previously in such a state, that if divided, they would shrink by their own resiliency, leaving an interval between the cut extremities. This will apply equally to all parts possessing a fibrous structure. The arteries, veins, lacteals, and lymphatics, require a certain tonicity, to enable them to "grasp" and propel the fluids they contain. A want of this tonic power, is equivalent to *debility* or a state of disease.

Now, the doctrine that contemplates disease to be dependant upon a want of proper vital resistance to morbific influences, must most obviously place tonics among the most important medical agents that we possess.

Modus Operandi.—Various theories have been proposed, in the way of explaining the operation of tonics. It has been contended that these substances exert a mechanical influence over the matter of which the muscular fibre is composed.—But this would not explain the operation of those tonics which are not necessarily carried into the circulation.

It has also been supposed that tonics produce their legitimate effects by their action upon the stomach, in promoting digestion. But, although this principle, without any doubt, obtains to a very considerable extent, yet it is difficult to account in this way, for the comparatively quick effects that

some tonics produce. Nor is the idea correct, that the power of tonics is proportioned to the bitterness of the agents employed, as we find that although most of our vegetable bitters are more or less tonic, yet there are some powerful tonics that are not in the least bitter; and, on the other hand, there are some substances intolerably bitter, that are almost entirely void of tonic virtues.

It is unfortunate for science, that men in their investigations should be so much prone to be engrossed with isolated facts, or to be satisfied with discoveries already made. A truth may be found, *nay!* an entire system of *new truths!* and they may be extremely entertaining, but this is no argument that there may not be many others, even but one single step *beyond*, and which may be still infinitely more important and interesting. Had the ardor for exploring been quenched, when Columbus first discovered the West Indies, or even when the eastern coast of the Continent had been explored, our beautiful *West* would still be the theatre of the wild sports of the Indian and the rude objects of his chase. Had investigation ceased, when the notions of positive and negative electric phenomena were among the visionary speculations of Franklin, we should have no use for telegraphic wires. If inquiry had stopped on the simple discovery of the motive power of caloric, there would have been no use for steam engines. Again, to come nearer to our subject, if the discovery that has secured immortality to Harvey, had not been improved upon, it would have been of no practical advantage to the medical profession; and finally, if the apprehension of the vital principle, or *vis conservatrix*, by Hippocrates, had not lead to its further investigation, or had the more modern investigations of nervous phenomena, forever ceased with the improvements of Van Helmont, the modus operandi of tonics would never be fully understood.

We find that the vital force, as well as the tention or tonicity of the system may be very much modified by direct action upon them,—that they may be entirely destroyed as in poisoning, by hydrocyanic acid, without leaving the least traces of organic disturbance. In this case, the extinction of life is no more remarkable than the total loss of muscular

tension, and which, indeed, may perhaps justly be regarded as being identical with the cause of death from the effect of this singular poison. We have examples of every grade of this power from its most destructive influence to its most mild and transient, as in the simplest relaxations.

Now may not these vital endowments here contemplated be influenced on the opposite scale, without necessarily involving other principles of action? The answer is apparent, and it may be illustrated in the use of *tonics*. These agents produce their effects upon the vital principle through the nervous system. They exalt the vital integrity of the living fibre, and thus the normal tention of the system is maintained.

That this is the sole principle of the action of tonics is not for a moment supposed, it is only contended that it is the chief one, and that this may *obtain* independently of any other.

That tonics effect much indirectly, by promoting digestion, is very readily admitted; and this principle may often be successfully invoked in the explanation of various facts that mark the gradual increase of strength that is so regularly proportioned to the state of the functions of assimilation.

The gradual and more permanently *stimulating* virtues of tonics, as explained by Drs. Murray, Paris, and others, are not among the least efficient that are possessed by this class of remedies.

Application.—It has been very correctly remarked that a certain state of tention of the animal fibre, is necessary to the physiological state. According to some, this fact might be still more strongly expressed. Dr. Paris states, "it has been justly admitted, that a state of permanent tention in the fibres of the body is necessary for the *existence of life*, and that any undue departure from such a condition is followed by debility." Now this debility must be regarded as the proximate cause of disease.

These views evidently place tonics in a different light from that in which they have been generally considered. Instead of being regarded as mere *secondary restoratives*, applicable only when the force of disease is broken up by other means, they should be considered rather as among the most efficient

means we have to *subvert* disease in its first as well as its most *violent* stages. It is true they are not indicated, as such, in *every* case, nor are *others!* But that the indications for their use are as frequent and as well marked throughout the entire treatment of disease, as are those for the employment of either of the *evacuents*, or for the *stimulants*, is very certain, and is a conclusion which every attentive therapeutist must arrive at, who devotes himself to a careful and philosophical investigation of the subject.

If disease is regarded as absolutely the result of debility, it is folly to attempt a cure without obviating this, its *cause*. It is admitted that there are many mechanical or chemical influences which may obtain either as primary or collateral causes, or as effects which demand early, and, sometimes, paramount attention. But until *this proximate* cause is obviated, convalescence cannot take place.

The position here taken in reference to the application of tonics, it is thought, is not only in accordance with sound theory, as already hinted, but is most strongly corroborated by numerous facts that are furnished by practical observation.

The entire course pursued by the old-school physicians, contributes to illustrate what has just been stated. Their course in febrile disease, is first to *deplete* and *reduce* the system, then to apply tonics. The principles here involved are simply these: first, by the use of depletives they diminish febrile action, *not by exalting vital resistance against it*, but by obviating the mechanical and chemical conditions necessary to its existence—they remove combustible matter by bloodletting and the use of purges, and modify the access of oxygen by diminishing the excitement of the vascular system.* Secondly, when they have thus obviated the febrile movement, they apply tonics and stimulants to recover the tone of the organs and the normal vital force of the system. Now the latter process effects the cure. The first simply obviates, *for the time being*, some of the mechanical and chemical conditions that supervene on the occurrence of debility, or that follow as consequences of external influences which the normal liv-

* It is well known that the activity of respiration always corresponds with that of the circulation.

ing powers are incapable of resisting, and which circumstance is equivalent to a diminution of the vital force. If the tonics were *not* given, the fever would return with equal, if not redoubled violence, for the cause is not yet removed. This fact is clearly stated by Dunglison, and admitted by all. "Antiphlogistics simply," says the author just named, "have been found to have no effect in breaking in upon them [intermittents]. However useful they may have proved in lessening the duration of one of the stages of the paroxysm, they do not prevent the occurrence of the attack."*

Were the tonics given in the onset, in a proper condition of the system, and the vital power thus exalted above the force of the *morbific influence*, the same effect might have been accomplished at once.

Numerous instances of the casual use of tonics in the active stage of fever, have occurred in the practice of different old-school physicians, and their effects have generally been so contrary from what their principles would lead them to expect, that they have been astonished beyond measure. We have many reports of this kind in the various medical journals of our day. The London Fever Hospital has reported much in favor of tonics in every stage of fever.

Although *tonics* are *stimulant* in their action, and their administration, hence, is somewhat governed by the mechanical condition of the organs, yet there is a marked difference between the stimulant effects of tonics and those of the *excitants* proper. The stimulant power of tonics is very gradual in its inception, and is not so likely to favor congestion, or to do mischief from its tendency to excite the circulation. The author has been particular in investigating this subject. It has long appeared to him that the prejudice against tonics in fever has arisen as a simple abstract deduction or speculation from the doctrine that fever and inflammation, in essence, are but the exalted action of the vital force. This doctrine being *false*, he concluded that all the indications founded upon such pathological basis, must also be incorrect, and by consequence, others that stand in opposition, must be at least *approximations* to the true indications of cure. Theory alone,

* Thera. and Mat. Med., vol. ii, p. 22.

however, could not be trusted, especially while its delusions are so apparent. *Observation* corroborative of philosophical deductions, could alone suffice in a matter so important. He found that so far as tonics served to supply combustible matter, or to promote vascular action, they did, indeed, contribute to the febrile movement, and that when given in very large quantities while the skin is very close and dry, and there is already a tendency to congestion, they will augment the latter in ther *primary* impression, as the immediate effect of a very large dose must, of necessity, give rise to some additional excitement to the circulation, which cannot as yet be counteracted by the aid that the medicine is calculated to afford the vital energies, as this latter is accomplished more slowly.

But how insignificant is this, their effect, when compared to their ultimate results, or the absolute aid they afford to the vital force.

In all that has here been discussed, the principles are the same as those that relate to the physiological effects and therapeutic power of stimulants *proper*, except that tonics are much less exciting in their influence over the circulation, and at the same time, eminently more permanent in the aid they afford the *vis conservatrix*. They may, therefore, be given in conditions of febrile excitement that would not admit of the use of the former.

The success that follows the exhibition of cinchona and its alkaloids in intermittents, is not only illustrative of this fact, but it goes far to prove the real *adaptation* of tonics to *febrile* disease.

It is unnecessary to descend to particulars here in reference to the application of these agents. Having discussed the *general principles*, it is thought that the intelligent reader will be fully able, with what he will find written in the contemplation of the several orders and different agents contained in this class, to form just ideas, not only in reference to the importance of tonics, but also of their general and special application.

It may not be improper, however, to remark here, that tonics are indicated in all cases of disease where the natural

defences are insufficient to repel the invasion, but especially when there is much debility or want of action, as in typhus, the secondary stage of remittents, jail fever, &c.

Our list of tonics is comprised entirely of vegetable bitters. It seems that the bitter properties and tonic virtues of plants are very intimately associated together. But, as has already been hinted, the tonic powder is not absolutely identical with the bitter principle, for although the best tonics are mostly intensely bitter, yet instances are not wanting to show that the bitterness of substances is no sure indication of the character of their tonic virtues. Aloes and opium, for instance, are both intensely bitter, but are by no means proportionately tonic in their effects. On the other hand, some other articles are powerfully tonic, and yet possess no bitterness at all; such are ferrium, arsenicum, &c.

The virtues of our tonic remedies are readily taken up by water, as they reside in the extractive principles of the plants. They are also imparted to alcohol, acetic acid, and ether.

It is important to bear in mind, that when the use of tonics requires to be long continued, as in some chronic complaints, it is necessary to change the agents employed, so as not to use the same article too long at a time. The system becomes accustomed to their influence, so that after a week or two their power will be apparently exhausted, while other articles of the same order will have their full power. After any article is discontinued for a time corresponding to that in which it had lost its power, and is then again resumed, it will act as a new agent.

Order I.—ANTI-INTERMITTENT TONICS.

Experience has long since proven a marked dissimilarity in the quality and power of the impression that the different articles of this class are capable of producing upon the system. The most remarkable of these, is the peculiar anti-intermittent power that characterizes a few of our tonics, and which is made the basis of the present order.

The principle upon which this singular impression is produced, and by which is broken up the chain of morbid association, and thus every variety of periodic disease at once arrested, is something more than can justly be attributed to tonics in general. It is supposed that, in the intervals of these complaints, there is an unobservable train of morbid associations going on within the recesses of the nervous system; and that, in like manner, the remedies here to be considered, may display their influences upon these tissues. One thing is very probable, at least: the periodicity of action that characterizes the former, is very intimately associated with the *condition* of the nervous system, for besides the fact that many of the physiological movements are essentially periodic, and that in consequence, the resistance opposed by nature may be thus periodically exerted, it is *further* evident, that the nerves are much implicated in the morbid phenomenon, from the fact that by a sudden excitement of them the character of the symptoms may be materially modified, and, indeed, a paroxysm may be thus sometimes completely broken up. We have instances of this kind in the effects of *anger*, sudden *joy*, or, indeed, any other passion suddenly excited.

The articles of this order seem to exert a peculiar tonic power over the nerves, by which they effect their specific influence. This power is by no means dependant upon the bitterness of the agents employed, as we find other substances which possess no bitterness whatever, are nevertheless actively anti-intermittent. Still, however, we find that bitter and astringent vegetable substances abound most with these virtues. It is often the case, when the ordinary agents of this order, as quinine, &c., fail to produce their usual effects, that the latter are fully developed on combining with them an active astringent principle; and hence it has been a common practice with some physicians, to combine their bitter tonics with active astringent tonics, when they were exhibiting them against ague.

It may be proper to remark here, that the articles of this order are not confined in their application merely to intermittent fever, but are almost equally serviceable in all forms of disease which are characterized by periodicity of action, or

which come on in regular paroxysms! Thus, anti-periodics have been successfully exhibited against some cases of *remittent fever*, *epilepsy*, *chorea*, *hemicrania*, *periodic pains of the eyes*, *face*, and other parts of the body, as *neuralgia*, &c. The nearer any form of disease approaches to the character of a regular *periodic*, the more certain will be this order of tonics to effect their cure. Moreover, in addition to this extension of their application, we find that they are fully equal to the common tonics in all other cases in which this class of remedies are indicated.

CINCHONA.—The Bark.

Synonymes.—China, *Ital.*; Quina, *Span.*; China, Peruvianische Rinde, *Ger.*; Quinquina, *Fr.*; Peruvian Bark, *Eng.*

History.—The exact time when the virtues of Cinchona were discovered is unknown. Various fabular accounts, however, are on record concerning the circumstances which lead to a knowledge of them. It is stated that, in the year 1500, an Indian, impelled by his thirst, during a paroxysm of an intermittent, repaired to a pool near a town in Peru, and which was surrounded by a grove of the Cinchona trees, (many of which had been torn up by an earthquake, and fallen into the water, rendering it bitter,) drank freely of the bitter water, and was cured of his malady. Others, learning the fact, tried the experiment, and with like results, until the matter was investigated, when it was found that the water owed its virtues to the trees, and finally that the bark was the true source. Geoffroy (Mat. Med. ii. 181,) asserts that the Indians had a knowledge of the virtues of the bark, long before the arrival of Columbus on this continent; and remarks that they, from their hatred against the Spaniards, kept it a secret for many years, until, finally, an Indian, grateful for some favors received from the Governor of Loxa, revealed to him the secret.* Humboldt, however, in opposition to this opinion, asserts that in Loxa, and other parts far around, he found the natives

* A fable was popular many years since, that the virtues of Cinchona were discovered, by observing lions eat the bark when attacked with intermittent fever.

ranked Cinchona among poisons, and had no knowledge of its anti-intermittent powers. He admits, however, that in Malacatis, "where many bark-peelers live," they begin to esteem its virtues.

He speaks further of a tradition, current in Loxa, that the Jesuits, having accidentally discovered the bitterness of the bark, tried an infusion of it in tertian ague, and thus discovered its specific effects.

In 1737, La Condamine, a French Academician, who, with others of his fellows, was sent to South America to make some geometrical observations in reference to the figure of the earth, on his journey to Lima, through the province of Loxa, had an opportunity of examining the tree. On his return he published a description of it in the Memoirs of the Academy. Linæus, soon after, gave it the name of Cinchona, in honor of the Countess Cinchon, wife of the Viceroy of Peru, who brought some of the bark to Europe, on her return from South America, in 1639. It is said that this lady gained her knowledge of the virtues of the bark from a Spanish soldier, who, on being cured of an intermittent by it, recommended it to the Countess, who was also cured of an attack by its use. On her recovery she distributed a large quantity of the bark among the Jesuits, among whom it soon acquired popularity. The Jesuits carried it to Rome and distributed it to their brethren. Hence the name *cortex cardinalis de Lugo* from Father Lugo, who was the principal man in taking it to Rome, and who was at very great expense and trouble in the enterprise. But the faithfulness of this account, few are now willing to vouch for, although it is contended that the general knowledge of the medicine was derived from Rome.

Botany.—*Sex. Syst.* Pentandria Monogynia.—*Nat. Ord.* Cinconaceæ.

Gen. Char.—*Calyx* five-toothed. *Corolla* hypocrateriform, with a five-parted limb, valvate in æstivation. *Anthers* linear, inserted within the tube, and not projecting, unless in a very slight degree. *Capsules* splitting through dissepiment into cocci, open at the commissure, and crowned by the calyx. *Seeds* girted by a membranous lacerated wing.—*Lindley.*

Spec. Char.—There is not a little difference of opinion among botanists in regard to the proper arrangement of the species of this genus. While some (Zea, and others,) consider that all the Cinchonas properly belong to four species, others (Lindley, Von Martius, &c.,) make some twenty or more. On this subject, Dr. Wood, of Philadelphia, remarks: It appears from the best testimony, that the number of the species has been unnecessarily augmented by certain botanists; mere fugitive differences, depending on peculiarities of situation or growth, having been exaggerated into permanent characteristics. One source of the difficulty of a proper discrimination, is stated by Humboldt, to be the varying shape of the leaves of the same species, according to the degree of elevation upon the mountainous declivities, to the severity or mildness of the climate, the greater or less humidity of the soil, and to various circumstances in the growth of individual plants. Even the same tree often produces foliage of a diversified character; and a person, uot aware of this fact, might be led to imagine that he had discovered different species, from an examination of the leaves, which have grown upon one and the same branch. The fructification partakes, to a certain extent, of the same varying character, and the difficulty is thus farther augmented.

Dr. Lindley, however, reports twenty-six species, twenty-one of which appear to be well known. These are the following:

1. *C. Micrantha*,—yields Silver or Gray Cinchona; 2. *C. Nitida*,—yields Cascarillo or Quino fino; 3. *C. Condaminca*,—yields Crown or Loxa Bark; 4. *C. Lancifolia*,—yields New Spurious Yellow Bark; 5. *C. Lucumæfolia*,—yields a part of the Quina fina de Loxa; 6. *C. Lanceolata*,—yields Yellow Bark; 7. *C. Ovalifolia*,—yields White Cinchona of Mutis; 8. *C. Ovata*,—yields Ash Cinchona; 9. *C. Rotundifolia*,—products unknown; 10. *C. Cordifolia*,—yields Hard Carthagena Bark; 11. *C. Pubescens*,—yields Huamalies Bark; 12. *C. Hirsuta*,—yields a kind of Cascarilla fina; 13. *C. Glandulifera*,—yields Cascarilla negrilla; 14. *C. Villosa*,—bark unknown; 15. *C. Oblongifolia*,—bark unknown; 16. *C. Acutifolia*,—yields poor bark; 17. *C. Magnifolia*,—yields Red Bark; 18. *C. Caduci-*

flora,—bark not used; 19. *C. Stenocarpa*,—bark unknown; 20. *C. Macrocarpa*,—bark unknown; 21. *C. Cava*,—bark unknown.—Species imperfectly known; 22. *C. Dichotoma*,—said to yield Quinas finas; 23. *C. Macrocalyx*; 24. *C. Crassifolia*; 25. *C. Pelalba*; and, 26. *C. Muzonensis*.

The various species of this genus are generally described as being trees or shrubs, growing from ten to forty, or perhaps fifty feet high, with a trunk from a few inches to some three or four feet in diameter. Some of the species furnish very beautiful forest trees, being well proportioned and handsome in appearance. "The leaves are opposite, upon short petioles, with flat margins, and are attended with ovate or oblong, foliaceous, free, deciduous stipules. The flowers are terminal, in corymbose pannicles, and of a white or purplish-rose color."

Habitation.—The Cinchonas are found in various parts of South America. Their range extends, according to Pereira, from 11° N. lat. to 20° S. lat., being more than thirty degrees extent in latitude. They are confined chiefly to mountainous situations, being found to range at an elevation of from 1200 to 10,000 feet above the level of the sea.

The bark is peeled by the Indians along in May, either by cutting the trees or peeling as they stand. As soon as it is taken from the tree, it is carried to open places and quickly dried, as it otherwise deteriorates. As soon as dried, it is carried to the coasts and packed in chests or hides, in packages usually containing only one kind of bark.

Commerce.—Loxa and the neighboring provinces, for more than a century after the use of the bark, was almost its exclusive source. In the first part of the last century, it began to be exported from Payta to Spain, and from thence to other parts of Europe; and from the middle to the latter part of the century, many other ports shared in the trade. The tree was found to grow plentifully in New Grenada, and the bark was shipped from the ports of Carthagena and Santa Martha. Subsequently, Cinchona was discovered in the more southern portion of the continent, and it began to be exported from Buenos Ayres, as well as the various ports on the west or Pacific side. It is now shipped from numerous ports on the

Pacific coasts, the principal of which, however, are Payta, Lima, Callao, Arica, and Valparaiso.

The amount of this bark annually exported from the various ports of South America, is truly enormous; and when it is considered that the *Cascarilloes*, or bark-peelers, give but little attention to the probable destiny of the production, and that the most wasteful practices are followed, when they are likely to save present inconvenience or labor, or promote the profitableness of their business, it is not astonishing that the government of Bolivia should put restrictions on the exportation of the drug, from an apprehension that the trees yielding it, might become extinct.* Many who are acquainted with the commerce of this drug, and the circumstances of its collection, are of opinion, that unless the governments will provide for the preservation of the trees, they will all be destroyed before the wood-lands will be taken up and become personal property. An English author states that some dealers in Europe are now laying up large stocks of the drug on the speculation that the forests containing the Yellow or Calisaya bark, are already about exhausted of this tree.

Description.—Cinchona, like other barks, consists of three different parts, or structures,—the *epidermis*,† or most external portion,—*rete mucosum*, or cellular layer, and *cutis vera*, or corticul layers. Sometimes the bark is brought to us divested of its outer layers, when it is called *uncoated bark*. These outer layers are of a whitish or grayish color, but vary according to the varieties of the bark; they are smooth, wrinkled, furrowed, or cracked. The cutis vera, which is the second, and, indeed, the principal portion of the bark, consists of a series of layers which are formed at the rate of one a

* The cutting of Cinchona Trees was prohibited in Bolivia, by that government, for five years commencing Jan. 1st, 1838.

† The term *epidermis*, as applied to this bark, has been differently understood by medical men; but is generally defined to mean the external or lifeless portions of the bark, which consists of an uncertain number of layers, which increase one in number *annually* by the outer layer of the cortical portion losing its life, while a new layer, or *liber*, is formed next to the wood. This increase of layers, after the bark has attained a certain age, is modified by the decay from without; so that the epidermis of a given species is usually of nearly a uniform thickness after the bark has commenced to decay or wear away from without.

year, but after some years, lose their life gradually from without, so that this portion keeps about the same thickness. The innermost layer, termed the *liber*, which is the product of the last year's growth, is generally the most valuable; but all these layers, except the outer, are possessed of the medical virtues, and are used together.

The bark is usually more or less quilled, but is sometimes flat. "The absence of the curl arises from one or two circumstances—the age of the stem from which the bark is taken, or the want of flexibility of the bark even in the fresh state. When the bark is rolled cylindrically in a quilled form, it is termed *quilled bark* (*cinchona tubulata*). Bergen speaks of several kinds of quilling, namely: the *partially quilled* (*cinchona sub-convoluta*,) when the edges of the quill approximate; the *closely quilled* (*cinchona convoluta*,) when the edges of the quill overlap each other, forming a more or less closely rolled-up tube; and the *doubly quilled* (*cinchona involuta*,) when both edges of the quill are rolled together so as to form two cylinders, but which, seen from the back, appear as one."

The transverse fracture of the bark is either smooth, resinous, or fibrous; that producing the resinous fracture is usually preferred.

The color, taste, and smell of the different varieties differ so much, that no definite account of them can be given.

Classification.—It has already appeared that the bark is divided into very many different varieties. These are in part founded on botanical characteristics; partly on the physical properties and medical qualities of the bark itself; partly in reference to the ports from whence the bark is brought; and, finally, some are arranged according to their chemical characteristics.

It is obvious, however, that in the present state of things, no classifications of the barks can be successfully adopted, except that founded on the physical characteristics of the bark itself. As there are no other parts of the tree accompanying the bark, the latter cannot be traced to the species from whence it was derived: and the ever varying aspects of the bark will not admit of the discrimination necessary for practical use, were the relations between the species and their

products once even well determined. A chemical classification cannot consistently be adopted for general practice, while so many of the profession lack that extent of chemical knowledge necessary to the chemical investigation of vegetables. It is unnecessary to remark that the varieties, being produced in promiscuous groups, and thus carried indiscriminately to the different ports, cannot possibly be distinguished by the *ports* whence they are shipped.

Goibourt, who describes some thirty-seven varieties of cinchona barks, arranges them according to their physical properties, (color, etc.), into five classes, as follows: 1. *Gray Cinchonas;* 2. *Yellow Cinchonas;* 3. *Red Cinchonas;* 4. *White Cinchonas;* 5. *False Cinchonas.*

Von Bergen admits nine specics, viz:

1. China Rubra, or *Red Bark.*
2. China Loxa, or *Crown Bark.*
3. China Huanuco, or *Gray* or *Silver Bark.*
4. China Regia, or *Yellow Bark* of English Commerce.
5. China Flava Dura, or *Hard Carthagenia Bark.*
6. China Flava Fibrosa, or *Woody Carthagenia Bark.*
7. China Huamalis, *or Rusty Bark.*
8. China Jean, or *Ash-colored Bark.*
9. China Pseudo-Loxa, or *Bastard Crown Bark.*

Dr. Pereira has made an arrangement embracing the elements of other classifications, in such a way, as, with some valuable improvements he has added, is calculated to elucidate this subject in a very happy manner. Dr. Royle remarks that "his synonymes are particularly valuable, in consequence of his having exchanged specimens both with Bergen and with Goibourt, and thus identified the German, French, and English names, by a comparison of the several kinds of barks."

As this is a subject of much interest and practical importance, not only to the pharmaceutist and apothecary, but also to the practitioner, the author has presented, in a tabular view the important synonymes of Pereira, accompanied with a description of the barks, and a reference of them to their species as far as practicable, so that by a glance of the eye,

the descriptions of the different varieties of the bark may be compared with each other.

§ I. Genuine Cinchona with Epidermis normally Brown.

α. *Cinchona Pallida; Pale Barks; Quinquinas Gris.*—Guibourt.

1. C. Coronæ, Ed. Crown or Loxa Bark.—Essen. Char. *Coat* moderately thin, firm; *cracks* numerous, annular, transverse; *under surface* smooth; *color* cinnamon-brown.—Bergen.
2. C. Huanuco; Gray or Silvery Cinchona, Ed.—Essen. Char. *Coat* moderately thin, hard; *wrinkles* longitudinal, predominating; *nnder surface* splintery; *color* rusty brown.—Bergen.
3. C. Jean; Ash Cinchona.—Essen. Char. *Coat* thin, light, readily pulverized; *cracks* few; *quills* mostly crooked; *color* dark cinnamon-brown.—Bergen.—*Species.* C. Ovata.—Fl. Peruv.
4. C. Huamalies; Rusty Barks.—Essen. Char. *Coat* thin and spongy; longitudinal *wrinkles* and *warts* which penetrate to the *cortical layers; under surface* even; *color* rust-brown. —Bergen.—*Species.* C Purpura.

β. *Cinchona Flavæ or Yellow Barks.*

5. C. Calisaya Sue Regia; C. Flava, U. S., Ed., Dub., Royal Yellow Bark.—Essen. Char. *Coat* very thick, brittle; *furrows* longitudinal; *cracks* predominating, transverse; *under surface* uneven; *color* deep cinnamon-brown.—Bergen.—*Species.* Unascertained; supposed by some to be the C. Cordifolia.

γ. *Cinchona Rubra or Red Barks.*

6. C. Rubra, U. S., Ed., Dub., Red Cinchona.—Essen. Char. *Coat* thick with *wrinkles* longitudinal; *furrows* and *warts*, but without any important impressions on the *cortical layers; inner surface* uneven; *color* brownish-red.—Bergen.—*Species.* Unknown.

§ II. Genuine Cinchonas with Whitish and Micaceous Epidermis.

α. *Pale Bark, with a Whitish Epidermis.*

7. C. Loxa Alba; White Loxa Bark. Found with the Crown or Loxa Cinchona, and from which it can only be distinguished by the whiteness of its epidermis.—Mutis.—White Cinchona is different from this, being flat and yellowish.

β. *Yellow Barks with White Epidermis.*

8. C. de Carthagena Dura; Carthagena Hard Cinchona. Essen. Char. *Coat* thin and soft or wanting; longitudinal *furrows* irregular; *under surface* uneven or splintery; *color* dull ochre-yellow.—*Species.* C. Cordifolia.—Mutis.
9. C. de Carthagena Fibrosa; Carthagena Fibrous Cinchona.—Essen. Char. *Coat* thin, soft, of moderate thickness or entirely rubbed off; *under surface* even, but rough to the touch; *color* pure yellow-ochre.—Bergen.—*Species.* Unknown.

10. C. de Cusco; Cusco Cinchona.—Essen. Char. Hard to distinguish from Calisaya or true yellow; it has a whitish uncracked *epidermis* on the smaller pieces or quills; *rete mucosum* orange-red and corky; *inner surface* yellowish, or of a cinnamon-brown. This variety may be distinguished by sulphate of soda not producing a precipitate in its infusion.
11. C. Aurantiacea de Santa Fe; Orange Cinchona of Santa Fe. —Essen. Char. *Cortical layers* excessively fibrous,insipid, and of an orange color.—*Species.* C. Lancifolia.—Mutis.

γ. *Red Barks with a Whitish Epidermis.*

12. C. Nova;—Mutis,—Red Cinchona of Santa Fe. This is dissimilar to most other barks, is not much wrinkled or cracked; its taste is astringent and unpleasant, and its epidermis with scarely any lichen.—*Species.* C. Magnifiolia.
13. Red Cinchona, with a white micaceous epidermis. This is a variety commonly found with the common red bark of commerce.

§ III. Barks falsely called Cinchonas, and which do not yield the Cinchona Alkaloids.

1. C. de Santa Lucia; St. Lucia Bark. The bark of Exostema Floribundum, a native of the West India Islands. Its bitter principle is called Montama.
2. C. Caribæa; Carribæan or Jamaica Bark. The Bark of Exostema Caribæum, a native of most of the West India Islands and Mexico.
3. C. Peruviana; Peruvian Cinchona; Ecorce de Exostema du Perou.—Guibourt. The bark of Exostema Peruvianum, a native of the colder parts of Peru, between the river Chota and the village of Querocotillo.
4. C. Brasiliana; Brazilian Cinchona; Ecorce d'Exostema du Brazil.—Guibourt. The Bark of Exostema Souzanum, a native of Brazil. It yields an alkaloid called Esenbeckina.
5. C. Pitaya; Pitaya Cinchona, Quinquina bicolore.—Guibourt. The bark of an unascertained tree.
6. C. de Rio Janeiro; Rio Janeiro Bark. The bark of Buena Hexandras.

In the U. S. Dispensatory the barks are all calssed under four heads: the *Pale*, *Yellow*, *Red*, and *Carthagena Barks*.

Under the epithet *pale* (which is derived from the color of the powder), the Dispensatory embraces the *Loxa* and *Lima*, or *Huanuco bark* among the most important, and the *Jaen* and *Huamilies*, among those less so. The finest kinds are about the size of a quill, rough exteriorly, marked with circular, and occasionally with longitudinal fissures, and of a grayish color, owing to the litchens which envelope the epidermis. The shade, however, differs; being some times of a

light gray, or nearly white; while at others, it is of a dull brown, and is often spotted by patches of lichen. The inner surface is smooth, but, in the coarser kinds, it is often rough and ligneous. Its natural color is of a brownish orange, varying to red or yellow. The fracture is usually clear, sometimes somewhat fibrous on the inner surface. The taste is moderately bitter and somewhat astringent, but not disagreeable or nauseous. The superior kinds are said to have a feeble odor, which is aromatic, and observable in the powder and decoction. The pale barks contain but comparatively little quinine, but yield a better proportion of cinchonia.

Yellow Bark is the epithet intended to be applied only to the best varieties of the bark of this color. In commerce it is commonly called *Calisaya*. Druggists arrange this variety of bark into two divisions, the *quilled* and the *flat;* they sometimes come separate, but often mixed in the same seroon. It would seem, from their appearance, that they are produced from larger, or older branches, than the pale varieties. The quilled variety of the *Calisaya* occurs in pieces from a few inches to a foot or more in length, and from a quarter of an inch to some three inches in diameter, varying as much also in the thickness of the tissue. The epidermis is of a brownish color, often covered, and generally spotted with white lichens. In larger kinds of the bark the epidermis is thicker, rough, traversed by deep fissures. It is easily separated from the true bark, makes a dark, insipid, and worthless powder, and should always be separated from the bark before the latter is pulverized. The *cutis vera*, or real bark, when divested of its epidermis, is of a brownish-yellow color, with an orange tinge. In thickness it is from one to two lines; its texture is fibrous, and when broken presents shining points, which seem to be the points of fibres running longitudinally. These spiculæ are of rather a firm consistence, yellow and transparent; they separate on pulverizing the bark, and floating in the air, they insinuate themselves into the skin, like cowitch, producing a disagreeable smarting and itching. It is said that the external part of the bark is more bitter and astringent than the other portions (perhaps the *liber* should be excepted). The bark is much more bitter, and less astrin-

gent, than the *pale bark*, by which it may be distinguished when the bark is small, in which case it, in color, much resembles the latter. The yellow bark is the most valuable of all.

Red Bark is readily distinguished by its color, being distinct both in the bark and its powder. It is of a lively brownish-red. The bark is larger and thicker than the yellow, and appears as if it were taken from the larger branches, or trunk, of the tree. The epidermis is rugged, wrinkled longitudinally, and in thicker pieces, marked with furrows, which occasionally penetrate to the cutis vera. Sometimes numerous small eminences, or warts, are observed on the outer surface. The outer layers of the cutis vera are darker colored, more brittle and compact, but less bitter and astringent, than those nearer the wood. The innermost layers are ligneous and fibrous, of a more lively brownish-red, but sometimes inclining to an orange, or even yellowish-brown color. The taste and smell much resemble those of the yellow bark. It ranks next in value to the *yellow*.

Carthagena Bark, though a regular commercial name, it is not applied to a single variety of bark, but is a general name for all the barks that are exported from Carthagena, or other northern ports of New Grenada, as Santa Martha, Rio Hacha, and Maracaybo. These barks are characterized by a soft, whitish, or yellowish-white, micaceous epidermis, which is easily disengaged, and is often almost completely removed; yet there is generally enough remaining to indicate its character. These barks are produced, likewise, in more remote parts of South America, but as they are of comparatively little value, they would not pay transportation from the western coast; and it is not probable that they will ever be imported into this country from the parts whence the yellow and red barks are derived, while the latter can be procured with equal convenience.

Analysis.—The proximate elements of cinchona are *fatty matter*, *red coloring matter* (*cinchonic red*), *yellow coloring matter* (*cinchonic yellow*), *tannin*, *gum*, *starch*, *quinic*, *or kinic acid*, *volatile oil*, *kinovic acid*, *cinchona*, *quinia*, *aricina*, *kinate of lime*, and *lignin*.

These constituents are possessed in different proportions by the different varieties of the bark. The pale bark of Loxa contains most of them, but some of them in small quantities. It contains much less quinia than either the yellow or red bark, but it possesses a large proportion of cinchonia.

The yellow, or Calisaya bark, contains the fatty matter, volatile oil, cinchonic red, yellow coloring matter, tannin, starch, lignin, kinate of lime, a large proportion of quinia, and comparatively small quantity of cinchonia.

Red bark contains the same constituents with the yellow, but a larger proportion of the red coloring matter, as well as both the quinia and chinchonia, in pretty large proportions.

The Carthagena barks contain the same elements as the red or yellow barks, but in different proportions.

The following table, embracing Goebel's classification of the barks, according to their chemical characteristics, will serve as well to illustrate that system of arrangement (as noticed under the head of *classification*) as to show the proportions of the more important constituents of each of the classes of the barks.

	Quantities of the Alkaloids to every pound of bark.	
	Cinch.	Quinia.
I. *Barks containing Cinchonia:*		
a. Huanuco, or gray bark,	168 gr.	
II. *Barks containing Quinia:*		
1. Yellow, or regia bark,		
a. Flat, uncoated pieces,		95 gr.
b. Coated thick quills,		84 "
c. Thin quill,		60 "
2. Fibrous Carthagena bark (*China flava fibrosa*),		54 "
3. Ash bark (*China Jaen*),		12 "
III. *Barks containing both Quinia and Cinchonia:*		"
1. Red bark,	65 "	40 "
2. Hard Carthagena bark (*China flava dura*),	43 "	56 "
3. Brown, or Huamilies bark,	38 "	28 "
4. Loxa, or Crown bark,	20 "	16 "
5. False Loxa bark,	12 "	9 "
IV. *False Cinchonia Barks.*	0 "	0 "

As the proportions of quinia and cinchonia, which are yielded by the several kinds of barks, is of so much importance, as well to the pharmaceutist as the practitioner, the author deems it proper to insert a table originally prepared by Dr. Christison, showing the results of the experiments of

various experimentalists. It will, however, appear that these results vary considerably, which must be accounted for on the grounds that they perhaps did not use precisely the same varieties of the barks. Nevertheless, their results may well be considered as an approximation to the true proportions:

TABLE SHOWING THE PROPORTIONS OF CINCHONIA AND QUINIA IN EVERY 1000 PARTS.

	Cinch.	Qui.	
1. *Yellow Bark:*			
" Stripped quills,....	0·0	15·0	*
" Stripped flat,.....	0·0	14·6	*
" Quilled,.....	0·0	17·2	†
" do.	0·0	20·0	‡
" do.	0.0	11·0	§
" Flat,.....	0.0	21·3	†
" do.	0·0	37·0	‡
" do.	0·0	12·3	§
2. *Red Bark:*	Cinch.	Qui.	
" Thick quills,.....	24·0	0·8	*
" Fine quality,.....	6·1	11·5	†
" do.	4·2	8·3	‡
" do.	8·4	5·2	§
" Pale red,.....	6·1	8·6	†
" Fine quills,.....	9·0	7·5	*
" Flat,.....	11·8	1·5	*
3. *Crown Bark:*	Cinch.	Qui.	
" Fine quills,.....	0·0	0·5	*
" Fine quality,.....	12·3	trace	†
" do.	2·4	1·0	‡
" do.	2·6	2·0	§
" Medium quills, ...	0·0	2.1	*
" Low quality, ...	9·2	0·0	
4. *Gray Bark:*	Cinch.	Qui.	
" Fine quills,.....	24·33	0·0	*
" Medium quills, ...	27·3	0·0	*
" Fine quality, ...	9·2	0·0	†
" do.	10·0	3·6	‡
" do.	21·3	0·0	§
" Inferior, ...	6·4	4·2	‡
5. *Ash Bark:*	Cinch.	Qui.	
"	0·0	trace.	*
"	1·6	1·2	§
"	1·6	10·4	‡
6. *Rusty Bark:*	Cinch.	Qui.	
"	12·4	0·0	*
"	5·1	3·6	§
"	6·3	3·6	‡
" Thin quills.....	0·0	1·0	‡
7. *Carthagena Bark:*	Cinch.	Qui.	
" Hard,.....	4·0	3·2	*
" do.	5·5	7·3	§
" Woody,.....	4·4	3·0	*
" do.	7·0	5·4	§

* Von Santen. ‡ Michaelis.
† Soubeiran. § Coebel.

Physiological Effects.—Topically, the bark operates as a mild astringent, stimulant, and irritant. It appears to render the textures more firm and solid.

Its constitutional impression is chiefly manifested on the nervous and vascular systems, as well as the fibrous tissues. When the system is in perfect health, it will produce no considerable effect when taken in small doses. When the dose is increased or repeated, it will produce an increased action in the heart and arteries; the pulse is quickened, and rendered more full; and ultimately headache will ensue. Hahneman, the celebrated author of the Homœpathic system of medicine, contends that it will produce marked paroxysms of ague, which will recur at regular intervals. This is one of the principle hypothesis, i. e. *similia similibus curantor*, on which is founded his remarkable system. He contends that the

barks will cure intermittents, because they will produce symptoms, on the healthy system, similar to those that characterize these affections, when brought on from other causes.

A temporary improvement of the appetite usually follows the use of Cinchona. But if long continued, it is said to disorder the stomach, and produce a firred tongue.

It must not be supposed that the barks, more than any other tonics, will evince their tonic powers on the healthy system as on the diseased. A state of debility alone is calculated to develop, to any marked extent, these virtues in remedies.

Accounts are given of pernicious effects which are said to follow the injection of solutions of bark into the veins. But the fallacy of such experiments has already been pointed out. These reports are eminently calculated to mislead such individuals who are unacquainted with the subject. It is to be hoped, therefore, that authors will be more careful on these points. The great object of medical writers should be, not only to deal in facts, but to invest facts with their *just claims only.*

Therapeutic Properties.—Cinchona, without doubt, is the best tonic known to the profession. There is no other article, in reference to the therapeutic value of which, there is such a uniformity of opinion in the general profession. All accord to it the first place in the list of tonics.

What so eminently distinguishes the present article above the others of this class, are its remarkable anti-periodic virtues. These are so certain and uniform in their effects, that they have gained for the medicine the character of a *specific for ague.* Many articles have been proposed as substitutes, bnt none have proved successful competitors. The medicine has now sustained its high character for a full century in Europe and the United States, and scarcely for one other—perhaps not one—can this be said. All have had their fluctuations.

Cinchona alone fully establishes the order of anti-periodic or anti-intermittent tonics; perhaps no other article now known, could have done it. The medicine will seldom fail of giving satisfaction, if properly used. But it is often given without due attention to the circumstances, which alone can

insure success. The stomach should always be cleansed by means of an emetic when the intermittent has been of long continuance, for if this precaution be neglected, it may not retain a sufficient amount of the medicine to devolop its full influence. The intestines may also be so out of order as to require a cathartic. Indeed, many practitioners make it a point always to precede the use of cinchona, when it is prescribed against ague, with a cathartic possessing the power to excite the secretions.

Enough of the medicine should always be given to produce a decided impression upon the system in the outset. When the paroxysms are broken up, the doses may be modified, but must still be continued until the patient is restored to his usual strength. If this particular be unattended to, a relapse may take place; as it is very difficult in all periodic forms of disease, to break up completely the chain of morbid associations, which circumstance is evinced in *epilepsy*, &c., as well as in ague.

If from four to six drachms of the bark, or thirty grains of quinia are administered and retained in the system, for from three to six hours before the accession of the chill, the ensuing paroxysm may be prevented, and thus the disease may be cut short at once. But it often happens that there is not sufficient time, after the commencement of the treatment, to admit of the development of the constitutional effects of the medicine before the chill or paroxysm comes on. In such cases, therefore, it is of little avail to attempt an effort to prevent its occurrence. The object, then, must be to take advantage of this start upon the next ensuing paroxysm, which may be obviated with an almost absolute certainty. The author does not recollect of a failure in his practice for many years, when he had so much of an advance upon the disease.

The medicine is best administered during the intervals between the paroxysms of the intermittent, as it will then agree better with the stomach, and is more likely to be effectual. It is certain, however, that the idea of its being dangerous when administered during the presence of a paroxysm of an intermittent, is not founded on deductions made from observation, but is rather to be referred to the speculative theory

that stimulants and tonics are always absolutely *inadmissible* in febrile affections. The bark has, in innumerable instances, been given in every stage of the paroxysm with decidedly beneficial results. Many practitioners, especially in the western states, are in the general habit of giving large doses of quinine at given intervals, without any reference to the paroxysms, and they continue the use of the medicine until the disease is completely broken up.

Although the most extensive use of cinchona is appropriated to the treatment of intermittent fever, yet the medicine is of great avail in all other periodic forms of disease. Remittent fever, periodic neuralgia, some cases of epilepsy, hemicrania, periodic pains in the eyes, face, and other parts of the body, and even hectic fever, have all been successfully treated with the Peruvian tonic. Nor is it necessary that the intermissions should always be complete, for we find that in remittent fever, when there is but a very indistinct apyrexia, the medicine is, nevertheless, generally quite available. Indeed, the author is inclined to think that the profession have not given due attention to the applicability and power of this article in remittents. Although it cannot be expected that a remittent can be controlled with the same ease and certainty of success as an intermittent may, yet it is questionable whether the use of cinchona may not be available here in a proportionable degree.

It should not be forgotten that cinchona, and all its preparations, though chiefly valued for their anti-periodic virtues, are, nevertheless, equally as good and available, when used as a common or simple tonic, as any other article of this class. Hence, the medicine is very extensively employed; and were it not for its being more expensive than most of our indigenous tonics, and that it is rather more unpleasant to take than many of the latter, it would be used still more to their exclusion.

The author has used some of its preparations topically, especially the quinine and extract, to great advantage. He cured a case of palsy by the application of a liniment made of quinine and the alcoholic extracts of lobelia and capsicum,

which had exhausted the skill of some six or eight eminent physicians.

It is not in place here to go into a lengthy detail of the particulars that relate to the application of this medicine. A few remarks more on this subject must suffice. When there is no objection to taking it, and the stomach bears the medicine in quantities sufficient, it is generally best to give it in substance, as its effects are rather more certain when exhibited in this way. But at the present time, its alkaloids and extract, but particularly the *disulphate* of *quinia*, have almost entirely superseded the use of the bark in substance. The quantity of bark necessary to the cure of ague, is from one to two ounces, taken in doses of one drachm every few hours. Doses so large, however, are generally objectionable; and as several of the preparations are sufficiently certain in their effects, they are generally preferrable. The extract, when properly prepared, is rather better than the quinine, or any of the alkaloids or salts of cinchona.

In cases of irritability of the stomach, or other inconveniences in which the bark cannot be taken by the mouth, it may be exhibited by other means, as by enema; or the alkoloids, or extract of it, may be used on the catroleptic plan. When given by injection, or when applied externally, it must be used in much larger quantities than what are necessary to be taken into the stomach. Numerous cases might here be reported of its success, when used in the ways just spoken of. The most obstinate intermittents have been known to yield to the external application of some of the alkaloids, particularly quinine.

Pharmaceutic Preparations.—PULVIS CINCHONA: *Cinchona Powder*.—This is the form in which Cinchona is usually found in the retailing drug stores. It consists in a very fine powder, obtained by grinding and bolting the bark. It varies in color and quality, according to the bark from which it is prepared. The common kinds of cinchona powder, are the *pale*, *yellow*, and *red*: but the varieties throughout correspond with those of the bark, and are known by the same appellation. The yellow and red powders are the best.

The effects of cinchona are always more certain, when the medicine is taken in substance, but as already stated, the quantity requisite when taken in this form is so considerable,

that it often disagrees with the stomach, besides being very inconvenient to be taken. Of late therefore, the medicine is seldom taken in this form. The dose is from ℈j to ʒij, or even more if the stomach will bear it, often repeated.

INFUSUM CINCHONÆ; *Infusion of Cinchona.* ℞ This is prepared by macerating one ounce of any of the barks, in coarse powder, in a pint of boiling water, for two hours, and straining.

Use.—This is a tonic, corresponding in strength only with the common bitter tonics. As the water only takes up a small quantity of the kinates of cinchona, and quinia, lime, gum, tanin, and coloring matters, leaving the greater parts of the alkaloids in the marc, it cannot be expected that the infusion possesses the activity of the bark itself, or that it can be depended on as a febrifuge. The dose is from f ʒiv to f ʒvij, thrice a day.

DECOCTUM CINCHONÆ: *Decoction of Cinchona.* ℞ Bark in coarse powder, ʒj; Sulphuric Acid, ʒj; Water, Oj. Put together, in an earthen or glass vessel, and boil in a water-bath, for twenty minutes, strain, and boil down to one-half.

Use.—This preparation contains considerable quantities of the alkaloids, in the form of soluble sulphates, and is, hence, a pretty good tonic and febrifuge. The dose is f ʒj to f ʒij, three times a day.

TINCTURA CINCHONÆ: *Tincture of Cinchona.* ℞ Bark, coarsely powdered. ʒvj; Diluted Alcohol, Oij; Moisture the bark with a part of the diluted spirits, and after letting it remain thus for eight or ten days, adding of other spirit as may be necessary; proceed by percolation, to prepare the tincture. Or it may be prepared in the ordinary way.

Use.—The tincture of the bark contains a considerable portion of its active properties, and is a valuable tonic, stomachic, and febrifuge. But it is less powerful and convenient than the more concentrated preparations. The *dose* is from a f ʒj to f ʒiij. It is commonly used as an adjuvant to the decoction or infusion, when the latter are used in cases of intermittent fevers.

EXTRACTUM CINCHONÆ: *Extract of Cinchona.* ℞ Bark, in coarse powder, ʒxvi; Alcohol, Oiv; Water, a sufficient quantity. Macerate the bark in the alcohol for five days, and filter by means of an instrument for displacement. When the liquor ceases to pass, pour on the water, by

degrees, so as to keep the surface of the bark covered with the water until two gallons in all are obtained. The alcohol may now be distilled off, and the remainder evaporated down to the proper consistence.

The extract may be obtained by means of water alone, but it is much less valuable. By adding a small quantity of sulphuric acid to the water, and then conducting the process in proper vessels, a tolerably good extract may be obtained. By some, whisky alone, is used as a menstruum; and, after obtaining the tincture, as much of the spirit is distilled off as can be done without burning the remainder; after which the evaporation is conducted by means of a water or sand-bath.

Use.—This is one of the most valuable preparations of cinchona, as it not only possesses a good proportion of all its valuable alkaloids, but contains the tannin or tannic acid, which adds much to the permanency of the effects of the medicine. The extract is usually taken in the form of pills, in doses of from *gr.* x to *gr.* xxx. A small proportion of capsicum worked in with the pills, will be a valuable addition for many cases in which the medicine is used. The extract of cinchona is serviceable in all cases in which an active and powerful tonic is indicated; but it is particularly applicable in obstinate and protracted intermittents.

QUINIA DISULPHAS: *Disulphate of Quinia: Quinine.*—℞ The London College directs the preparation of Quinine as follows: "Take of Heart-leaved Cinchona, (Calisaya), bruised, ℔vij; Sulphuric Acid, ʒix; Purified Animal Charcoal, ʒij; Hydrated Oxide of Lead, Solution of Ammonia, Distilled Water, each as much as may be sufficient. Mix four ounces and two drachms of Sulphuric Acid with six gallons of Distilled water, and add the cinchona to them. Boil for an hour and strain. In the same manner, again boil what remains, in acid and water, mixed in the same proportions, for an hour, and again strain. Finally, boil the Cinchona in eight gallons of distilled water, and strain. Wash what remains frequently with boiling distilled water. To the mixed liquors add oxide of lead, while moist, nearly to saturation. Pour off the supernatent liquor, and wash what is thrown down with distilled water. Boil down the liquors for a quarter of an hour and strain; then add gradually a solution of ammonia to precipitate the quinia. Wash this until nothing alkaline is perceptible. Let what remains be saturated with the rest of the sulphuric acid, diluted. Afterwards digest

with two ounces of animal charcoal, and strain. Lastly, the charcoal being thoroughly washed, evaporate the liquor cautiously, that crystals may be produced."

In this process, the quinia, which, as already shown, exists in the bark, in combination with kinic acid, in the character of kinate of quinia, is dissolved by the acidulated water. Now, when the oxide of lead is added, the acid combines with it, forming the sulphate of plumbium, which is precipitated. The solution now contains only the kinic acid and quinia. As soon as the ammonia is added to this solution, the kinic acid disengages from the quinia and unites with the ammonia, thus forming kinate of ammonia, while the quinia is precipitated. The coloring matters having already been removed by the animal charcoal, nothing more is necessary than to add a little more sulphuric acid, when the disulphate of quinia will form in beautiful crystals on evaporation.

The Edinburgh College adopts a plan by which the coloring and extractive matters, as well as the gum and acids, are first extracted by means of a solution of soda. For this purpose Stoltz uses lime; and others, potash. The alkaloids are then dissolved by boiling the residuum in water acidulated with sulphuric acid, when upon the addition of soda, the impure quinia is precipitated. The latter is then again dissolved in water acidulated with sulphuric acid, and, after filtering again, set aside for crystallization. The impure disulphate of quinia thus obtained is re-dissolved in boiling water, and after clarifying with animal charcoal, is filtered and again left to crystallize.

The U. S. Pharmacopia directs as follows: "Take of Yellow Bark, in coarse powder, *four pounds;* Muriatic Acid *three fluid ounces;* Lime, in powder, *five ounces;* Water, *five gallons;* Sulphuric Acid, Alcohol, Animal Charcoal, each *a sufficient quantity*. Boil the Bark in one-third of the water, mixed with one-third of the Muriatic Acid, and strain through linen. Boil the residue twice successively with the same quantity of Water and Acid as before, and strain. Mix the decoction, and, while the liquor is hot, gradually add the Lime, previously mixed with two pints of water, stirring constantly until the quinia is completely precipitated. Wash the precipitate with distilled water, and, having pressed and dried it, digest it in boiling Alcohol. Pour off the liquor and repeat the digestion several times, until the Alcohol is no longer rendered bitter. Mix the liquors, and distil off the Alcohol until a brown viscid mass remains. Upon this substance, removed from the vessel, pour about half a gallon of distilled Water, and, having heated the mixture to the boiling point, add as

much Sulphuric Acid as may be necessary to dissolve the impure alkali. Then add an ounce and a half of Animal Charcoal, boil for two minutes, filter the liquor while hot, and set it aside to crystallize. Should the liquor, before filtration, be entirely neutral, acidulate it very slightly with Sulphuric Acid; should it, on the contrary, change the color of litmus paper to a bright red, add more Animal Charcoal. Separate the crystals from the liquor, dissolve them in boiling water slightly acidulated with Sulphuric Acid, add a little Animal Charcoal, filter, and set aside to crystallize. Wrap the crystals in bibulous paper, and dry them with a gentle heat. The mother-waters may be made to yield an additional quantity of Sulphate of Quinia, by precipitating the Quinia with solution of Ammonia, and treating the precipitated alkali with Water, Sulphuric Acid, and Animal Charcoal, as before."

Disulphate of Quinia consists in fine, silky, needle-shaped crystals, which are slightly flexible, about a line, or less, in length; and are matted, or grouped, in small star-like tufts, and hence make a spongy powder. Its color is white, and its taste intensely bitter. It is very slightly soluble in cold water, but will dissolve in thirty parts of boiling water. On adding only a very small quantity of sulphuric acid to water, it will dissolve it with facility. By this means the alkaloid, by taking up an additional proportion of sulphuric acid, is converted into a *sulphate*, whereas, before, it was a *disulphate*, or *subsulphate*, containing two equivalents of the vegetable base, and only one of the acid. The vegetable acids, as the solution of tartaric, &c., dissolve it with facility. At a moderate heat, or when exposed to the air, it loses its crystalline form, which, however, may be again restored by dissolving in alcohol, evaporating, and leaving it to crystallize.

Impurities.—This article, on account of its high price, is sometimes adulterated with foreign substances of similar appearance. The articles most commonly used for this purpose are, sulphate of lime, white sugar, starch, &c. When a portion of the suspected article is dissolved in cold water, sulphate of lime, starch, and any fatty matters that it may contain, are not dissolved, but will settle to the bottom. Sugar can be detected by its taste. Gum, and alkaline earths, will remain undissolved by alcohol, and earthy impurities will moreover resist the action of heat. At a red heat pure

quinine is entirely consumed. This, therefore, will detect incombustible or mineral substances.

Use.—Quinine is decidedly the most powerful tonic now known, operating with remarkable promptness and certainty. From the smallness of the dose required, and consequent facility in taking it, this alkaloid now almost entirely supercedes the use of the bark in practice, especially in its employment as an anti-periodic. It is seldom the case that the stomach will not bear a quantity, taken between the paroxysms, or within twelve hours, that will be sufficient to prevent the occurrence of even the first ensuing, or any subsequent paroxysm, of a simple intermittent. It seems, moreover, that intermittent fever is almost equally under the control of the medicine, whatever the form of the attack may be: i. e., whether it assumes the type of a *quotidian*, *tertian*, or *quartian*. Nevertheless, the *tertian* type generally admits of cure most readily.

Although the chief use of quinine, like that of the bark, is in those forms of disease which are characterized by marked intermissions or periodicity of action, yet the application of the medicine is very general; it becomes serviceable in all cases of debility, general or local, especially those that are attended with atony, or with irregular vital reaction.

Many objections have been urged against quinine as a general remedy, on the supposition that it is not safe in its action. But it is certain that these views cannot have resulted from careful observation, but that they are rather the consequence of a want of a proper discrimination between the effects of this article and those of others previously or collaterally used; or even between the effects of quinine and those of the disease itself, for the removal of which it may have been administered.

Arsenious acid, which indeed appears to be almost equally efficient in arresting periodic affections, has, from its comparatively low price, been very extensively prescribed for many years by the practitioners of the old school. It is also known that mercury, in its various forms, has been the universal opening medicine in those varieties of disease in which quinine is indicated and administered. Indeed, "*a dose of calo-*

mel, followed with quinine," has become the popular prescription for agues. Now, it needs no great effort, to trace the effects commonly reckoned among the mischiefs of quinine, and to prove them to be the legitimate results of those potent poisons, while quinine, though innocent, has got all the blame.

Moreover, observation fully proves that the mischievous effects commonly ascribed to quinine, in many instances, do not obtain at all in the premises, but must be referred, even for an ideal existence, to the theory which nominally deduces these results from the operation of simple stimulants and tonics, either taken in large doses, or given in certain conditions of the system, as in synocha, &c.

The author has given this subject considerable attention, but never, under any circumstances, has he found effects to follow the use of quinine, that are not common to the bark itself, in proportionate doses. It is hard to see the consistency of the practice of any individual who uses the bark while he rejects the alkaloid.

CINCHONIA DISULPHAS. *Disulphate of Cinchonia.* ℞ This alkaloid is prepared from *Cinchonia*, which is procured by submitting the powdered bark to the action of sulphuric acid, very much diluted, and then precipitating by an excess of lime. The precipitate thus formed is collected on a filter, washed with water, and treated with alcohol. The alcoholic solution must be filtered while hot, and on cooling the Cinchonia is deposited. This is then heated with a little water, adding dilute sulphuric acid gradually until the Cinchonia is dissolved. The solution is now boiled with animal charcoal, previously washed with dilute muriatic acid, and after filtering, while hot, it is set aside to crystallize. The solution will not, at first, yield all the salt it contains, but by alternate evaporation and crystallization, the whole of the sulphate may be obtained from it.

There are many other processes by which this alkaloid may be obtained, but this perhaps is the most simple.

Disulphate of Cinchonia is in short, oblique, prismatic crystals, terminated by bihedral summits. It is soluble in fifty-four parts of water at common temperatures, and in a much smaller quantity of hot. Six parts of alcohol of a sp. gr. 0.85, or eleven parts of absolute alcohol will dissolve it. When heated it becomes phosporescent; at 212° F. it fuses,

and at 248° F. it loses its water of crystallization. To the taste it is not so bitter as quinine. Its composition is:

	Atoms.	*Eq. Wt.*	*Per Cent.*
Sulphuric Acid, - - -	1	40	10·42
Cinchonia, - - -	2	308	80·20
Water, - - - -	4	36	9·38
Crystallized Disulphate of Cinchonia,		384	100·00

Use.—This alkaloid, which is often called *Sulphate of Cinchonia*, is identical in its medical properties with the Disulphate of Quinia, but is supposed to be a little less active. It is applicable in all cases in which quinine is indicated, and may be used in like doses.

Aricina, and various other alkaloids, besides those already treated of, have been prepared, and some of them used for medical purposes, but they have not yet been considered as meriting a place in the *Materia Medica*.

CORNUS FLORIDA.—The Bark.

Synonymes.—Corniolo, *Ital.;* Schonbluhender Hartriegel, *Ger.;* Huntzholtz; *Vul. Ger.;* Cornouiller Fleuri, *Fr.;* Mon-ha-can-ni-min-schi, or Hat-ta-wa-no-min-schi, *Del. Indians.;* Dogwood, *Eng.*; Boxwood, *Vul.*

History.—It is not known at what period the medical virtues of Cornus Florida first became known. Shœpf had a knowledge of its tonic properties and and its use in intermittent fever, as early as 1787. Other physicians, and in some sections of the country, private individuals, had known something of its mediccl properties in the latter part of the last century. The tree grows wild in almost every part of the United States, but is most abundant in the Middle States. It is found on uplands or dry grounds in almost every variety of soil, and even on the poorest lands.

Botany.—*Sex. Syst.*—Tetrantria Monogynia.—*Nat. Ord.* Cornaceæ.

Gen. Char.—*Calyx* symphogyne, four-toothed. *Corolla* small, and of a greenish-yellow color. *Stamina* four, epigyne alternating with petals. *Fruit* a drupe, inclosing a bilocular two-seeded nut.—*Rafinesque.*

Gen. Char.—*Leaves* opposite, ovate, acute at the base,

glaucous beneath. *Flowers* small, clustered, greenish-yellow, and surrounded by a large *involucre*, with four very large, broad or ob-cordate petals, which are of a white or pale pink color, and crisped at the outer end. These are usually mistaken, by common observers, for the corolla. *Fruit* oblong, of a beautiful red, and disposed in compact clusters.

This is a small tree, seldom growing over twenty-five feet in height. The bark is rough, and of a dark color. Its liber is of a pinkish-brown, and is intensely bitter to the taste. The branches are spreading, often opposite, especially the smaller ones. The twigs are of a purplish color, and are marked by-light-colored rings at the points, where the leaves of former years were attached. Its flowering time is in May.

Analysis.—The composition of the bark of Cornus Florida is almost identical with that of the pale cinchonas. It perhaps contains a little more *gum* and *tanic acid*. Its alkaloid corresponding with *cinchonia*, is called *cornine*. The author, in one experiment obtained, *gum*, *soft resin*, *fatty matter*, (*a considerable*,) *extractive*, *coloring matters*, *tannin*, *acids ?* a *peculiar painciple*, (*cornine ?*) and *lignin*. The peculiar principle or alkaloid obtained, unfortunately, did not admit of a very accurate investigation, as the animal charcoal used was not well prepared.

Physiological Effects.—The recent bark, when taken in large quantities, is apt to disagree with the stomach, and will occasionally produce vomiting and pain in the bowels. But, on drying, the principle giving rise to these effects, seems to become dissipated. A small portion of the powder, or any of the preparations, will produce but little or no effect. When taken in larger quantities, it will raise the pulse somewhat, produce a sensation of vascular fulness, and will transiently improve the appetite. It promotes muscular tone, and a firmness of the fibrous tissues.

On lifeless animal substances, it produces a firmness, strength, and insolubility of tissue, owing perhaps, mostly, to its tannic acid.

Therapeutic Properties.—Barton remarks that the similarity between the dog-wood and Peruvian barks, in their sensible qualities, their chemical analysis, and their action on the

incised and dead fibre, as shown in the experiments of Dr. Walker, sufficiently proves an identity in their medical effects; and the result of actual experience with the bark of the Cornus Florida, by many physicians, entitles it to be ranked among the best tonics of our country.

Dr. Gregg says, he used the dog-wood twenty-three years, during which time he found its virtues such as to convince him, that it was not inferior to the Peruvian bark, in curing intermittents, nor inferior as a corroborant, in all cases of debility.* He, however, used the medicine in powder, and considered twenty-five grains of this, equal to thirty of cinchona. But it would seem from most observations that this gentleman had a higher opinion of the medicine than its merits really justify.

Our new school practitioners are laboring with commendable zeal to perfect our Materia Medica, in its indigenous collections; and it is gratifying to find their labors so richly rewarded by the immense stores of the vegetable world.

The bark of this tree has been extensively tested by them as an anti-intermittent, and although the general conclusion is, that it is inferior to cinchona, yet the character of its febrifuge virtues, is now very well established.

When properly prepared it seldom fails to fill every reasonable expectation, from its use, both as a general tonic and anti-periodic. But as the bark will not yield a very large proportion of its virtues to either cold or boiling water, it must be obvious that its infusion, decoction, and watery extract, when depended on for the cure of intermittents, must necessarily lead to disappointment. For this purpose, the extract, prepared as directed, must be used.

Besides its tonic power, which is available in all cases in which agents of this class are indicated, it also possesses others which make the medicine applicable in all conditions in which antiseptics, astringents and stimulants, are generally supposed to be indicated.

The dose of the powdered bark, as a general tonic or corroborant, is from *gr.* x to *gr.* xx. As an anti-periodic, the powder or crude preparations are not applicable, as they

* Walker's Inaugural Diss., p. 40.

cannot be taken in doses large enough to be available. It has been stated that the variety bearing the red or pink involucres, is much more powerful than the other as an anti-periodic.

PHARMACEUTIC PREPARATIONS.—INFUSUM CORNUS FLORIDA: *Infusion of Dogwood.*—℞ Dogwood Bark, bruised, ʒj; Boiling Water, Oj. Macerate for two hours, and strain.

Use.—Useful as a corroborant, or general tonic, but not sufficiently powerful to be depended on in cases of intermittents. The *dose* is from f ʒij to f ʒv.

DECOCTUM CORNUS FLORIDA: *Decoction of Dogwood.*—℞ Dogwood Bark, bruised, ʒj; Water, Oj. Boil for ten or fifteen minutes in a covered vessel, and strain while hot.

Use.—This preparation is somewhat stronger than the infusion, and may be used to fulfil the same indications.

EXTRACTUM CORNUS FLORIDA: *Extract of Dogwood.*—℞ Dogwood Bark, in coarse powder, ʒxvj; Alcohol, Oiv; Water, Oiv. Simmer the bark in the alcohol for two hours, and strain. Return the marc and the water. Boil three hours, and strain as before. Now place the spirituous decoction in a retort and distil off the alcohol, until one pint remains, which is done merely from motives of economy, and then evaporate both together in a suitable vessel to the proper consistence. The extract may now be formed into pills or it may be kept in jars.

Use.—The extract of dogwood is inferior only to the alkaloids of cinchona as a remedy in intermittent fever and other periodic affections. It is also equally serviceable as a general corroborant.

CORNUS SERICEA.—The Root.

SYNONYMES.—Bloubarender Hartriegel, *Ger.;* Hat-ta-wa-no-min-schi, *Del. Ind.;* Swamp Dogwood, Red American Cornal, Red Willow, Rose Willow, Blue-Berries, Dogwood, etc., *Vul.*

HISTORY.—The Cornus Sericea is a native shrub, long known to the aborigines of this country, and particularly by the Delawares, who used to smoke the twigs with tobacco, in a compound that they called Kin-ni-ha-nick; and likewise used the bark of the root to dye their garment scarlet. It is thought that they also had a knowledge of its medical virtues.

It was cultivated in England by Bishop Compton before 1683.

Botany.—*Sex. Syst.* Tetrandria Monogynia.—*Nat. Ord.* Coranceæa.

Gen. Char.—Vide C. Florida.

Spec. Char.—An indigenous shrub, growing usually from six to eight feet in height, with numerous erect *stems*, which are covered with a shining reddish bark. The *branches* are opposite, roundish, spreading, and of a dingy purple color. The *young shoots* are round, annulated, with a very few spots, and of a dark purple color; those very young are somewhat pubescent. The *leaves* are opposite, petiolated, ovate, pointed entire on their margins, nerved, and somewhat veined; the midrib and nerves are depressed on the upper side of the leaf and projecting below: the size of the leaf, when full grown, is about three inches long, and about half as broad. The flowers are small, white, and disposed in terminal cymes. The calyx is monophyllous, four-toothed, villous. The *corolla* consists of four linear, acute, spreading petals, larger than the calyx. The fruit consists of a cluster of berry-formed, globular, fleshy drupes, of a beautiful cœrulean blue color, excavated at the base, and generally surmounted with the persistent style. In this country the shrub is in blossom in June and July, and the berries ripen in September. Grows in swamps, or wet thickets, banks of streams, and bottom lands, generally.

Analysis.—The constituents of the bark of the Cor. Sericera differ little in the main, from those of Cor. Florida, or even the Peruvian bark, excepting in its essential oil, which is *peculiar*.

Therapeutic Properties and Use.—The C. Sericea is considered equal in value, as an anti-periodic, with the common dogwood, and may be used, in all cases, as a substitute for it. Its pharmaceutic preparations, application, and dose are about the same as those of that article.

CORNUS CIRCINATA.—The Bark.

Synonyme.—Round-leaved Dogwood, *Vul.*

Botany.—*Sex. Syst.* Tetrandria Monogynia.—*Nat. Ord.* Cornaceæ.

Gen. Char.—Vide C. Florida.

Spec. Char.—A *shrub* from six to ten feet high, with warty *branches;* large roundish, pointed leaves, waved at their edges, and downy beneath. Its *flowers* are white and disposed in depressed cymes. The *berries* are blue. Grows native in various parts of the United States, from Canada to Virginia; being found mostly on hill-sides, and on the banks of streams. Its flowering season is in June and July.

THERAPEUTIC PROPERTIES AND USE.—An anti-periodic, and general astringent tonic, analogous, in its effects, to the C. Florida and C. Sericea. It is applicable, in febrile disease, generally, when the tonics are indicated; but especially in the treatment of intermittent and remittent forms. The *dose* is from a scruple to a drachm of the powder, or from five to fifteen grains of the extract, which is prepared from its alcoholic tincture.

SALIX.—The Bark.

SYNONYMES.—*Ἰτέα, Gr.;* Corteccia di salcio, *Ital.;* Corteza de sauce, *Span.;* Weider, *Ger.;* Ecorce de saule, *Fr.;* Willow, *Eng.*

HISTORY.—Dioscorides mentions *Ἰτέα*, which is our willow, as an astringent, employed by the ancients. We have no account, however, of its use as a medicine in more modern times, until 1763, when it was brought into notice as a remedy for *ague*, by the Rev. Mr. Stone, who published a paper on the subject (*Phil. Trans. Vol. liii, p.* 195.) Some of the species of salix have been made officinal in all the Pharmacopias.

BOTANY.—*Sex. Syst.* Diœcia Diandria.—*Nat. Ord.* Salicaceæ.

Gen. Char.—MALE. *Amentum* cylindrical. *Calyx* a scale. *Corolla* none. *Glands* of the base nectiferous. FEMALE *Amentum* cylindrical. *Calyx* a scale. *Corolla* none. *Style* two-cleft. *Capsule* two-celled, two-valved. *Seeds* downy.—*Willd.*

Spec. Char.—The salix genus affords rising of a hundred species, most of which are medicinal, and possess analogous

therapeutic virtues. Yet only three of them are officinal, the *S. Alba*, *S. Ceprea*, and *S. Fragilis*.

1. S. Alba.—This is the common European or White Willow, a *tree* twenty-five or thirty [forty or more] feet in height, with numerous round, spreading branches, the younger of which are silky. The *bark* of the trunk is cracked and brown, that of the smaller branches, smooth and greenish, [or yellowish.] The *leaves* are alternate, upon short petioles, lanceolate, pointed, acutely serrate, with the lower serratures glandular, pubescent on both sides, and silky beneath. There are no stipules. The *Flowers* appear at the same time with the leaves. The *amenta* are terminal, cylindrical, and elongated, with elliptical, lanceolate, brown, pubescent scales. The *stamens* are two in number, yellow, and somewhat longer than the scales; the *style* is short; the *stigmas* two-parted and thick. The *capsule* is nearly sessile, ovate, and smooth."—Introduced and common.

2. S. Nigra. *Leaves* lanceolate, acute at both ends, serrulate, same color both sides, glabrous; *petioles* and *midribs* downy above; *stipules* contracted, toothed; *aments* flowering at leafing time, erect, cylindric, villose, *scales* oblong, very villose; *filaments* three to five bearded at the base; *germs* pedicelled, ovate, glabrous, *stem* very short; *stigma* two-cleft. *Eaton.—Brittle-jointed Brook-Willd*—Indigenous.

3. S. Caprea. This species is commonly called the *great round leaved willow*. *Stem* erect. *Leaves* roundish-ovate, pointed, serrated, waved; pale and downy beneath. *Stipules* somewhat crescent-shaped. *Catkins* oval. *German* stalked, ovate, silky. *Stigmas* nearly sessile, undivided. *Capsules* swelling.—*Smith.* An European species.

4. S. Fragilis. *Leaves* ovate-lanceolate, pointed, serrated throughout, very smooth. *Footstalks* glandular. *Germen* ovate, abrubt, nearly sessile, smooth. *Scales* oblong, about equal to the stamens and pistils. *Stigmas* cloven, longer than the style.—*Smith.* An European species. *Crack Willow.*

5. S. Eriocephala. This is an indigenous species commonly called *Rose* Willow, It is supposed by some to be a variety of the *S. Conifera*. *Leaves* oblong-oval, somewhat retuse at the base, serrulate. *Twigs* downy. *Aments* oval, very villose.

6. S. Conifera. An indigenious species, commonly called *cone-gall willow*, and also *rose willow*. *Leaves* lance-oblong, remotely serrate, acute, glabrous above, flat and downy beneath, the first year's growth glabrous. *Stipules* lunate, subdentate. *Aments* precede the leafing. *Scales* lanceolate, obtuse, villose. *Germs* pedicelled, lanceolate, silky. *Style* two cleft. *Stigma* two-lobed. Known by its scaly conical excrescences or *galls*, which are the consequence of injuries from the stings of insects.

There are many other European and American species that might here be described if there were space, all of which are possessed of analogous properties. It has not yet been satisfactorily determined which of all the different species of salix is the most valuable in a medical point of view. But as the tonic power is that for which it is chiefly esteemed, the

bitterness of the barks will be a good criterion to judge by. The *salix nigrum*, or black willow, which is very common in this country, growing in wet places, and bottom lands, along our rivers, is considered, if not the best, at least, not inferior to any other.

ANALYSIS.—Among the constituents of willow bark are *tannin, resin, a yellow bitter coloring matter, a green fatty matter, gum, wax, lignin, a peculiar crystalline principle* (*salicin*), and *an acid* combined with magnesia.

The *salicin* contains the virtues of the bark in a highly concentrated state, and hence bears about the same relation to the former that quinine does to cinchona. It, when pure, consists of white, shining crystals, which have no odor, but an intensely bitter taste. It is soluble in water and alcohol, but not in ether. Salicine may be obtained by adding subacetate of lead to a strong decoction of the bark so long as it occasions a precipitate (tannate of lead); filtering, precipitating the excess of lead by sulphuric acid, filtering again, evaporating, adding animal charcoal toward the end of the evaporation, and filtering the liquor while hot. The salicin gradually separates, on the cooling, in the form of crystals.

The process of Merck is to treat a boiling concentrated decoction of the bark with litherage, until it becomes nearly colorless. By this means gum, tannin, and extractive matter, which would impede thecrystallization of the salicin, are removed from the solution; but a portion of the oxide is taken up, probably, in combination with the salicin. This he separates, by adding first sulphuric acid, and then sulphuret of barium, when, after filtering, the liquor is evaporated. The salicin is deposited, and may be purified by repeated solution and crystallization.

Another process, still, is given by Erdmann: "Sixteen ounces of the bark are macerated for twenty-four hours in four quarts of water, mixed with two ounces of lime, and the whole is then boiled for half an hour. The process is repeated with the residue. The decoctions having been mixed, and allowed to become clear by subsidence, the liquor is poured off, concentrated to a quart, then digested with eight ounces of ivory-black, filtered, and evaporated to dryness. The ex-

tract is exhausted by spirit containing twenty-eight per cent. of alcohol, and the tincture evaporated so that the salicin may crystallize. This is purified by again dissolving, treating with ivory-black, and crystallizing." (Christison's Dispensatory.) From two to three hundred grains of salicin may be obtained from a pound of bark.

Physiological Effects.—The barks of the willows, generally, will be found to produce the common effects of astringent tonics, upon the healthy system. They, as far as yet examined, are all very innocent in their action.

Therapeutic Properties.—Willow bark may be regarded as a permanent tonic, possessing considerable anti-periodic power. Although it is inferior to cinchona, it is, perhaps, equal to the bark of any of the cornus species.

It appears that its virtues in the cure of intermittents are chiefly dependant on the peculiar principle *salicin*, which has been demonstrated by its exhibition alone. Many physicians of Germany, France, and Italy, have tested the power of this principle in the cure of ague.

The bark of the *black willow* has long been in empirical use as a remedy for this complaint. It has commonly been employed in the form of a decoction, which, after proper evacuation with podophyllum, would, when freely used, seldom fail of giving satisfaction.

Pharmaceutic Preparations.—Besides the decoction, and the salicin already spoken of, there is only one other preparation of much importance, which is the extract. This is made in the same way in which that of *cornus florida* is made.

The dose of salicin is about the same as that of quinine, from *gr.* v—*gr.* xx. That of the extract is from *gr.* x—*gr.* xxx. The decoction is taken in portions of f℥j—f℥iij. It is not conveniently taken in substance, as the dose required is too great, being from ℥j—℥iij.

EUONYMUS.—The Bark.

Synonymes.—Wa-hoo, *Ind.*; Burning Bush, Spindle Tree, &c., *Vul.*

History.—The *Wa-hoo*, as it is generally called, in the country, is said to have been a popular remedy among the Indians, as well as among the whites of certain early settlements



Euonymus Atropurpureus

in the Mississippi valley. It has also been the subject of much quackery among some Empirics, or *Indian Doctors*, as they call themselves. The Euonymus Atropurpureus was shown the author, as being the true Wa-hoo, by an Herbalist, in 1834, on one of the northern tributaries of the Ohio River. This gentleman said that he had obtained his knowledge of it from the Indians, who, he stated, used it as a certain remedy for ague.

The term *Wa-hoo* seems now to be applied indiscriminately to two different species of the Euonymus, by our country practitioners.

Botany.—*Sex. Syst.* Pentandria Monogynia.—*Nat. Ord.* Celastraceæ.

Gen. Char.—*Calyx* flat, from four to six, generally five, sepals, united. *Corolla* flat, inserted on the outer margin of a glandular disk. *Stamens* five, short. *Capsule* colored, five-angled, five-celled, five-valved. *Seeds* ariled.

Spec. Char.—There are three species of Euonymus, all of which are admired for their beauty. Two are wild American species, and one is an European.

1. Euonymus Atropurpureus.—A smooth *shrub* about four to ten feet high, and considerably branched. *Branches* smooth. *Leaves* elliptic-lanceolate, accuminate, finely serrate, puberulant beneath, from two to three inches long. *Peduncles* divericate, many-flowered. *Flowers* usually in cymes of three to six. *Corolla* dark purple, about two and a half lines in diameter. *Capsule* smooth, of a crimson color. *Seeds* covered with a bright red aril. *Spindle-tree.*—Flowers in June. *Seeds* ripen late in the fall. Grows in woods and thickets, in river bottoms, in the Western States.

2. Euonymus Americanus.—A *shrub* of rather smaller size than the preceding. *Branches* smooth, four angled. *Leaves* sub-sessile, lance-oval, acute at apex, serrate, smooth, from one to two inches long, one third as wide. *Peduncles* long, round, two, three or four flowered. *Flowers* a little larger than those of the preceding species, yellow or pink colored. *Capsule* dark, red, warty. *Seeds* covered with a bright, red

aril.—*Burning Bush.* Flowers in June. Berries ripen late in the fall. Grows in similar situations to those of the above.

MEDICAL PROPERTIES AND USE.—The bark of the root of either of the species just described, possesses a peculiar bitterness that is very permanently tonic, and somewhat anti-intermittent. The author has made some trials of it, in which the results were rather in favor of its character, as an anti-periodic. He has not been able, from his own observations to judge of the comparative value of the two species here described, as the power of the latter has not been so much investigated by him. They are, probably, very nearly alike in their medical properties. They both possess, in addition to their tonic virtues, a laxative power, which makes them very valuable in the treatment of dyspeptic complaints. Some practitioners, in the acquaintance of the author, regard it one of our most valuable articles in dyspepsia.

When depended on for the cure of ague, the medicine should be preceded by an emetic or cathartic, as the circumstances may require, and then, if freely and perseveringly applied, it will generally be successful. The dose of the powder is *gr.* xx—3j, often repeated.

PHARMACEUTIC PREPARATIONS.—TINCTURA EUONYMUS; *Tincture of Euonymus.* ℞ Cort. Euonymus, in coarse powder, ʒiv. Alcohol Oij. Digest seven days, and filter.

Action. Uses.—Tonic and anti-periodic, useful in intermittent and remittent fever, and general debility. *Dose*, f ʒij—f ʒiv.

EXTRACTUM EUONYMUS; *Extract of Euonymus.* ℞ Euonymus ℔ iv. Alcohol C. ijss. Aq. C. iij. Digest in the alcohol, at a temperature a little below the boiling point, for four hours; or keep in a warm place for a week; strain through calico and distil to one pint. Boil the bark in the water for four hours over a slow fire; strain and evaporate to one pint. Mix the liquors, and evaporate by means of a water bath, to the proper consistence.

Action. Use.—Same as the bark. *Dose, gr.* x—*gr.* xx.

An almost countless number of other articles have been esteemed anti-intermittent, but none of them have main-

tained their character as such. Among the most prominent, however, are the following.

1. Angustura.
2. Piperina.
3. Liriodendron.
4. Hipocastanum.
5. Phloridzina.
6. Lupulina.

Order II.—AROMATIC TONICS.

This order is intended to comprise those articles among the vegetable bitters, which possess an aromatic taste, and flavor, and which are, hence, more agreeable both to the taste and the stomach. This is a circumstance much in their favor, as it is well known that most of our vegetable tonics are very disagreeable to the taste, and, indeed, quite *repulsive* to many persons. Tonics, sometimes, require to be long continued, and thus the individual taking them often gets a dislike to them, although perhaps, at first, they may not have seemed the least disagreeable. In such cases, the *aromatic* tonics are always least objectionable. A change from the use of the common bitters to that of this order, is always agreeable, when the former have been long employed.

The aromatic properties of tonics, also contribute to their medical virtues. They not only render them more stimulant, but make them susceptible of being taken in larger quantities than the stomach will bear of the common bitters.

CASCARILLA.—The Bark.

Synonymes.—Croton Eleutheria, U. S.; Croton Cascarilla; Cascarillrinde, *Ger.;* Cascarille, *Fr.;* Cascariglia, *Ital.;* Chacarila, *Span.;* Cascarilla, *Eng.*

Botany.—*Sex. Syst.* Monœcia Monadelphia.—*Nat. Ord.* Euphorbiaceæ.

Gen. Char.—Male. *Calyx* cylindrical, five-toothed. *Corolla* five-petalled. *Stamens* ten to fifteen. Female. *Calyx* many-leaved. *Corolla* none. *Styles* three, bifid. *Capsule* three-celled. *Seed* one.—*Willd.*

Spec. Char.—*Croton Eleuteria* forms a small tree. *Branches* and *twigs* angular, rather compressed, striated, downy, ferruginous. *Leaves* stalked, alternate ovate, with a short but

obtuse point, green on the upper surface, silvery and densely downy beneath. *Flowers* monœcious. *Racemes* axillary and terminal, branched. *Males* uppermost and smallest; *females* below, few, and on short stalks. *Filaments* ten to twelve.—*Ovary* roundish. *Styles* three, bifid. *Stigmas* obtuse. *Capsule* roundish, minutely warted, about the size of a pea, with three furrows, three cells, and six valves. (*Lindley.*) Grows in thickets of Jamaica, and other West India Islands.—This species, bearing the name of Eleutheria, from one of the Bahamas, has been proved by Dr. Lindley, from information and authentic specimens from the Bahamas, to yield the true Cascarilla bark, as had been before stated by Drs. Wright and Woodville.—Nees von Esenb. t. 139. St. and Ch. 150." —*Royle.*

Description.—"Cascarilla may be confounded not only with Copalchi, but also with that kind of Cinchona called Gray or Huanuco bark. It consists, however, of irregular fragments, which are thin, two to three, sometimes four inches in length, these are moderately quilled, a little twisted, or flat, about the thickness of a pencil, or that of the little finger, of a grayish color externally, much fissured, covered in many parts with a whitish lichen, the substance of the bark of a brownish color, and its internal face smooth. It is compact, fracture short, brittle, the powder is of a light brown color. It has a weak though aromatic odor; the taste is bitter, a little acrid, but also spicy."

Analysis.—The bark was recently analyzed by M. Duval, and was found to contain *Albumen*, *Tannin*, a *Bitter crystallizable substance* (*Cascarralline*), *Red Coloring matter*, *Fatty matter*, with a nauseous smell, *Wax*, *Gum*, *Volatile Oil*, with an agreeable smell, *Resin*, *Starch*, *Pectic acid*, *Chloride of Potassium*, *Salts of Lime*, *Woody fibre*. "*Cascarilline* when pure, is white and chrystalline, without odor, has a bitter taste, which however, is not at first perceptible from its sparing solubility; but it communicates its bitterness to a large quantity of water. It is very soluble in spirit and ether, and appears to be a non-azotised neutral substance of the nature of Salicine. The properties of the bark, no doubt, depend chiefly on the

Volatile Oil and the Cascarilline. These are taken up by spirit, partially by water."

THERAPEUTIC PROPERTIES AND USE.—Cascarilla is an excellent aromatic tonic, which is much used by the German physicians. It was formerly supposed to be anti-periodic in its effects, but it has now lost that character, and is only prescribed as a general tonic. In this country it is not so much used as many other of our native tonics, on account of its being necessarily more expensive. It is generally prescribed in the treatment of dyspepsia, chronic diarrhœa, dysentery, flatulent colic, fever, and all cases of debility, especially of the digestive organs. The dose is ℈j to 3ss., of the powder. It may also be conveniently given in infusion, tincture, or extract. These are prepared in the same way as those of other articles of this kind.

MAGNOLIA.—The Bark and Cones.

SYNONYMES.—MAGNOLIA GLAUCA; MAGNOLIA, *Eng.*; Cucumber-tree, *Vul.*

BOTANY.— *Sex Syst.* Polyandria Polygynia.— *Nat. Ord.* Magnoliaceæ.

Gen. Char.—*Calyx* three-leaved. *Petals* six or more. *Capsules* two-valved, one-seeded, imbricated in a cone. *Seeds* berried, pendulous.—*Bigelow.*

Spec. Char.—There are a number of species in this splendid genus that are very much alike in their medical properties. The *M. Glauca*, *M. Acuminata*, and the *M. Tripetala*, however, are alone much used in practice. The first is a forest tree, common to the eastern sea coasts, but is found in the Middle States, growing in swamps and morasses. It is a middling sized tree, with a rough bark. The *leaves* are scattered, petiolate, oval, obtuse, entire, glabrous, thick, opaque, yellowish-green on the upper side, and pale glaucous beneath. The *flowers* are large, terminal, cream-colored. The *fruit* is a cone about an inch long, consisting of numerous imbricated cells, each containing a single scarlet seed. The entire herbage, but particularly the flowers and cones of the tree, are exceedingly fragrant, and scent the air for a considerable distance.

The M. Acuminata is a much larger tree, with foliage,

flowers, and fruit larger than the above. This tree is more common in the Western States than the former. It is a common forest tree, growing on rich hill sides and bottoms along the Alleghanies and our western rivers. It is commonly called cucumber tree, from the resemblance of the shape of its fruit to that of this garden product.

The M. Tripetala is a small tree, but has very large leaves and flowers. The former are often as much as eighteen or twenty inches long, by six or eight in width. The flowers are seven or eight inches in diameter, with from four to twelve oval, acute, white petals. It is found in the Middle, Western, and Southern States. Another species, the *M. Grandiflora*, is a very large forest tree, common in the Southern States.

Medical Properties and Use.—The bark of the root and the fruit of all the species are very excellent aromatic, and slightly stimulant tonics. They were formerly regarded to be anti-intermittent, but although they have not maintained this character, they are certainly among the most valuable articles of this order. The cones, or *cucumbers*, as they are called, have long been a domestic remedy for dyspepsia. Both the bark and cones have been successfully employed in chronic rheumatism. As a general tonic in fever, especially in remittent and typhus, the magnolia is a very excellent article. In general debility, and in obstinate cases of amenorrhœa, the medicine will also be found to be as effective as any others of this order.

The dose of the recently dried bark, in powder, is from ʒss. to ʒj. A tincture, prepared by macerating the cones and bark in diluted alcohol or brandy, is perhaps the best preparation. The infusion is also used, but is less efficient. The dose of the tincture is from fʒij to fʒiv.

COMPTONIA.—The Root and Tops.

Synonymes.—Comtonia Asplenifolium; Streifenfarren, *Ger.*; Comptonia odorant, *Fr.*; Sweet Fern, *Eng.*; Fern bush, *Vul.*

Botany.—*Sex. Syst.* Monœcia Triandria.—*Nat. Ord.* Amentaceæ.

Gen. Char.—MALE: *Flowers* in long cylindrical catkins. *Scales* one-flowered. *Perigone* two-leaved. *Stamina* three-forked. FEMALE: *Flowers* in globular inferior catkins. *Scales* one-flowered. *Perigone* six-leaved. *Pistil* one. *Styles* two. *Fruit* ovate, one-seeded. *Raf.*

Spec. Char.—*Roots* long, horizontal. *Stem* shrubby, from two to five feet high. *Branches* crooked. *Leaves* alternate, sessile, or sub-sessile, long, narrow, dentate, or sinuate. *Flowers* appear before the leaves, in globular or cylindrical catkins. Grows in sandy or rocky places, in poor soil, from New England to Carolina.

MEDICAL PROPERTIES AND USE.—Sweet fern has long been a domestic remedy. It is a good aromatic astringent tonic, highly useful in diarrhœa, dysentery, leucorrhœa, rachitis, hœmoptysis, &c. It is a pleasant-tasted article, and can hence be employed for a considerable time before it proves disagreeable to the taste. It is usually taken in the form of a decoction, but for many cases it is more conveniently taken in a tincture. The medicine yields its virtues more readily to alcohol than to water.

CANELLA.—The Bark.

SYNONYMES.—Weisser Zimmt, Canell, *Ger.;* Canelle Blanche, *Fr.;* Canella Blanche, *Ital.;* Canela Blanca, *Span.;* Canella, *Eng.*

HISTORY.—"The name Canella, a diminutive of Canna, was at one time applied to the cinnamon, whence the French name Canella. When the present canella was discovered in South America, it was supposed to be the true cinnamon, and called by its then name. The earliest full, though not the first account, was given by Monardes, (*Clus. Exot., p.* 323), who states that in 1540, an expedition was sent by Pizarro to examine the province Cumaco, where this cinnamon was said to be found. It was long confounded with Winter's Bark, and at one time called Winterania Canella or Spurious Winter's Bark, though both had been clearly distinguished by Sir Hans Sloane in Phil. Trans."

BOTANY.—*Sex. Syst.* Dodecandria Monogynia, *Linn.*—*Nat. Ord.* Meliaceæ, *De Cand.;* Canelleæ, *Lind.*

Gen. Char.—*Calyx* three-lobed. *Petals* five. *Anthers* sixteen, adhering to an urceolate nectary. *Berry* one-celled, with two or four seeds, *Willd.*

Spec. Char.—*Stem* straight, branched at the top.

The *bark* is whitish, so that the tree is at once distinguished from others in the woods. The *leaves* are petiolate, alternate, but not regularly so; obovate, the younger ones pellucido-punctate, the older smooth, shining, of a thick consistence, without nerves, very entire and exstipulate. The *flowers* are arranged in terminal corymbs, small and of a violet color, but seldom open. *Royle.*

"Canella alba, is a tree which is common in many parts of the West India Islands and in South America, frequently on the sea coasts, where it seldom exceeds twelve or fifteen feet, but in the inland forests it attains a more considerable height. It is propagated chiefly by wild pigeons feeding on its berries. The tree has a straight stem and branched top, and a good deal resembles the pimento."

Description and Alalysis.—"The bark being the only officinal part, is removed with an iron instrument, and then being deprived of its epidermis, is dried in the shade. It is in flat or quilled pieces, according to the part of the tree from which it has been removed, the thinner pieces drying into the quill-form the most readily. (Goebel and K. I. tab. iii, fig. 1–3). The pieces are of a light buff color, pale internally; have an aromatic odor, a warm pungent taste, and are brittle, yielding a yellowish-white powder. Boiling water takes up some of this bark, but alcohol only dissolves its aromatic properties, becoming of a bright yellow color. Distilled with water it affords a reddish-yellow, fragrant, and very acrid essential oil, which is often mixed with and sometimes sold for oil of cloves. (*Browne.*) Petroz and Robinet also obtained *resin*, which is aromatic; *bitter extractive*, a peculiar *saccharine substance*, which will not undergo the vinous fermentation, and which has been called *canellin; albumen, gum, starch, lignin*, and *salts*. It may be distinguished from Winter's bark by not being precipitated by nitrate of baryta, nor by infusion of galls, nor by sulphate of iron, as it does not contain tannin."

Therapeutic Properties.—A very pleasant aromatic and

stimulant tonic, chiefly applicable as an adjuvant to other less pleasant tonics, as well as cathartics. *Dose gr.* x—3ss. of the powder.

AURANTII CORTEX.

Orange peel is a very agreeable aromatic tonic, and is much used in combination with other less pleasant tonics. It is scarcely possessed of sufficient power to be used alone.

When employed in this way, it may be taken in powder, simply stirred in cold water; or the infusion may be made by macerating half an ounce of the powder in a pint of boiling water. Perhaps the infusion or the tincture are the best forms in which to take the medicine, as the presence of the powder in the stomach is sometimes disagreeable, and has been, indeed, considered pernicious.

The lemon peel is used in the same way.

WINTERA.—The Bark.

Synonymes.—Wintera Aromatica; Drymis Aromatica; Drymis Winteri; Ecorce de Winter, *Fr.*; Wintersche Rinde, *Ger.*; Corteccia Vinterana, *Ital.*; Corteza Winterana, *Span.*; Winter's Bark, *Eng.*

Botany.—*Sex. Syst.* Polyandria Tetragynia.—*Nat. Ord.* Winteraceæ.

Gen. Char.—*Calyx* with two or three deep divisions. *Corolla* with two or three petals.

Spec. Char.—An evergreen tree of varying size, but often fifty feet in height. Bark of the trunk gray; that of the branches green and smooth. *Leaves* alternate, petiolate, oblong, obtuse, entire, smooth. *Flowers* small, solitary, or in clusters of from three to four. Native of the southern ports of South America.

Medical Properties and Use.—The bark, which is brought to us in quills of about a foot in length and an inch in diameter, and which are of a pale yellowish or reddish-gray color, with red elliptical spots, is quite an agreeable aromatic and stimulant tonic, much used in some parts of the world. But not much of it is brought to this country. It was used by Dr.

Winter as a cure for scurvy. The dose of the powder is about 3ss.

Among the less aromatic plants are the following:

1. Liriodendron Tulipifera.
2. Aristolochia Serpentaria.
3. Ptelea Trifoliata.
4. Humulus Lupulus.
5. Amygdalus Persica.
6. Contrayerva.
7. Teucrium Chamædrys.
8. Tanacetum.
9. Inula Helenium.
10. Prunus Virginiana.

Order III.—SIMPLE BITTER TONICS.

Under this head may be arranged all the ordinary vegetable bitters, which do not possess any considerable additional virtues to their simple tonic power. The number of articles that properly belong to this order is exceedingly great, as we find that the barks and foliage of most trees, as well as a very large proportion of the herbaceous plants, are more or less tonic. But it would be entirely beyond the proper or designed limits of this work, to make a collection of all the medical substances that are known. In this, as in the other orders, it must suffice to give as many examples as can well be embraced without trespassing too much upon the general design of the work.

The articles of this order are generally admissable in all cases in which tonics are indicated; and although the circumstances in many cases may indicate more particularly the articles of the other orders, yet when they are not convenient, these may be used, with more or less advantage, in all cases in which this class of remedies is indicated. Thus, although the simple bitter tonics do not possess any specific anti-intermittent virtues, yet, by giving tone and support to the general vital force, may do much in the control even of every variety of periodic disease. They may also be substi-



Populus Tremuloides.



Populus. Balsamifera.



Populus Grandidentata.



Populus Candicans.



Liriodendron Tulipifera.



Liriodendron Tulipifera.

tuted for the aromatic tonics, by combining them with aromatic stimulants.

POPULUS.—The Bark.

Synonymes.—Penplier, *Fr.*; Poplar, *Eng.*

Botany.—*Sex Syst.* Monadelphia Octandria.—*Nat. Ord.* Amentaceæ; Salicineæ, *Willd.*

Gen. Char.—Male: *Ament* cylindrical, loosely imbricated. *Bract* single-flowered, cuneate, lacerated. *Calyx* turbinate, oblique, entire. *Stamens* eight or more, short, capillary. *Anthers* large, drooping, quadrangular. Female: *Flower* as in the male. *Ovary* ovate, pointed. *Style* none. *Stigmas* four to eight, subulate. *Capsule* one-celled, with two concave valves. *Seeds* numerous, small, ovate, beset with long wool.

Spec. Char.—There are many medical species of Populus, which are very similar in the virtues of their barks. The following are some of the most esteemed.

1. Populus Tremuloides.—(*American Aspen.*) *Leaves* sub-cordate, obtusely lanceolate, abruptly acuminate, tooth-serrulate, entire, glabrous, somewhat pubescent at the margin, with two glands at the base on the upper side; *petioles* long and slender, giving the leaf a continuous tremulous motion when the air is moving, whence the name *Quaking Asp.* Grows in most parts of the U. S., in woodlands, on hill-sides, about springs, and often on low grounds.

2. Populus Balsamifera.—(*Balsam Poplar.*) *Leaves* lanceo-elliptical, or ovate-acuminate, entire, with close-pressed serratures, white and net-veined beneath. *Buds* resinous. Grows in Canada, and the Northern States, and in Siberia.

3. Populus Candicans. (*Balm of Gilead,*) *Leaves* cordate, acuminate, unequally serrate, whitish beneath, sub-three-nerved, net-veined. *Buds* resinous, large. Grows in various parts of the U. S.

4. Populus Grandidantata. (*Tree Poplar.*) *Leaves* round, ovate, acute; unequally and coarsely sinuate-toothed, glabrous; in the young state villose; *petioles* compressed. Grows in various parts of the United States, in rich soil and along river bottoms.

The poplars are all middling sized trees, of a beautiful appearance. Some of the species are often cultivated as ornamental trees.

Medical Properties and Use.—The bark of the poplars is among the purest bitter tonics that we possess. It is less astringent than many of our tonic barks, and is not disagreeable to the taste. The virtues seem to be dependant upon two alka-

loids, one of which is peculiar. These are *Populin* and *Salicin*. The process of obtaining the salicin has already been described. The populin may be obtained from the solution, when the salicin is procured, by saturating the excess of sulphuric acid, after the last mentioned alkaloid has ceased to crystallize. The populin will gradually precipitate. This is then to be pressed between folds of blotting paper, and re-dissolved in boiling water; when, upon the cooling of the liquid, the populin will be deposited in the crystalline state. The article thus obtained is very light, pearly, white, and of a bitter-sweetish taste, resembling that of liquorice. When heated it melts into a colorless and transparent liquid. It is soluble in two thousand parts of cold, and about seventy parts of boiling water. It is also soluble in boiling alcohol and acetic acid. On adding an alkali, it is precipitated unchanged, from its solution in the acid.

The poplar bark is applicable in all cases in which the simple tonics are indicated, and it may be relied upon as a very efficacious article. It is best taken in the form of extract; but it is much employed, by practitioners, in combination with other articles, in the shape of syrups, tinctures, and powders. The virtues of the bark are imparted to water, alcohol, and acetic acid. *Dose*, ʒj—ʒij.

The buds of most of the poplars are highly medicinal, especially those of the P. Balsamafera and P. Candicans. They are stimulant, tonic, and balsamic: useful in some varieties of pectoral disease, rheumatism, etc.

Pharmaceutic Preparations.—EXTRACTUM POPULUS: *Extract of Poplar.*—℞ Poplar Bark, ℔iv; Aq., Ciij; Acetic Acid, Oj. Boil the bark in the water and acetic acid for four hours; strain, and boil down to the consistence of syrup; remove to a water or sand-bath to complete the process.

Action. Use.—An invaluable tonic, applicable in all cases of debility. The *dose* is *gr.* v to *gr.* xx.

LIRIODENDRON.—The Bark.

Synonymes.—Liriodendron Tulipifera; Tulip Tree, *Eng.;* Yellow Poplar, *Vul.*

Botany.—*Sex. Syst.* Polyandria Polygynia.—*Nat Ord.* Magnoliaceæ.

Gen. Char.—*Calyx* three leaved. *Petals* six. *Samaræ* sub-lanceolate, one or two-seeded, imbricated in a cone. *Nutt.*

Spec. Char.—A forest tree remarkable for beauty and size, growing sometimes to the height of a hundred feet, and occasionally five or six feet in diameter. The bark is rough and of a grayish color. *Branches* large. *Leaves* on long foot-stalks, alternate, smooth, of a beautiful shining green color, divided into three lobes; the upper or end lobe is truncated at the apex; the side ones are rounded at the base, and usually, pointed at the apex. The larger leaves are of a different shape, not having the lateral sinuses common to the smaller, but instead thereof, have a lateral projection or pointed tooth on each side, about midway between their base and apex. *Flowers* large, tulipiferous, beautifully variegated, with different colors, the yellow and red predominating. Grows in rich soil throughout the U. S., but is most abundant, and attains the greatest magnitude in the middle and western states. It flowers in the latter part of May.

Medical Properties and Use.—The bark of this noble tree is tonic stimulant, diaphoretic and anthelmintic. But is chiefly valuable for its tonic virtues. It has been supposed to be anti-periodic, and has been prescribed against ague. But although it has occasionally proved successful in this application, it has failed to establish its claims as a medicine of this kind. The bark, however, may well be regarded as among our best general tonics, and has been considered especially useful in the treatment of dyspepsia and chronic rheumatism. It deteriorates much by age, and its virtues are also much impaired by boiling. The decoction of this article, therefore, is of comparatively little value. Thus it appears that the virtues consist in a volatile principle, as has, indeed, been supposed to be demonstrated by Prof. Emmet, of the University of Virginia. He obtained a solid white, crystallizable, brittle, principle, which he called *liriodendrin*, by boiling the alcoholic tincture of the root-bark with magnesia, till it assumes an olive-green color, then filtering, concentrating until the liquid becomes turbid, and then precipitating the liriodendrin, by the addition of cold water. The dose of this article is from *gr.* v to *gr.* x.; that of the bark 3ss.

HYDRASTIS CANADENSIS.—The Root.

Synonymes.—Warnera Canadensis, *Miller;* Hydrophyllum, Verum, *Linnæus;* Hydrastis, *Ellis;* Hydraste du Canada, *Fr.;* Canadische Hydrastis, *Ger.;* Gelb Puckuhn, *Vul. Ger.;* Golden Seal, Yellow-Root, etc., *Vul.;* Puc-coon, *Indian.*

History.—This valuable plant owes its generic name *hydrastis*, to the industrious botanist, J. Ellis, who in a communication to Linnæus, gave a description of it under this name, and thus induced the latter to adopt it instead of *hydrophyllum*. But it is hard to see the propriety of either of these names, as this is by no means an aquatic plant. It has been known as a medicine for above half a century. The first knowledge of it seems to have been obtained from the aborigines of this country. They, owing to its color, called it *Puccoon*, and used it to dye their garments. It is also said that the Cherokees used it in the cure of cancer. The early settlers of Ohio and Kentucky employed it as a tonic and anti-phlogistic in ophthalmia. On the authority of Professor Barton it was introduced into the Dispensatories, but has never yet gained much character among the general profession. The plant is found plentifully in most of the States west of the Alleghanies, growing in rich, moderately shaded soils.

Botany.—*Sex. Syst.* Polyandria Polygynia.—*Nat. Ord.* Multisiliquæ? *Barton;* Ranunculaceæ, *Lindley.*

Gen. Char.—*Calyx* none. *Corolla* three-petalled. *Filaments* numerous, linear, compressed, a little shorter than the corolla. *Anthers* compressed, obtuse. *Germens* numerous, ovate, formed into an ovate head. *Styles* very short. *Stigmas* broadish, compressed. *Pericarp* an oblong berry, composed of oblong grains with solitary seeds.

Spec. Char.—*Root* perennial, horizontal, tortuous, with large fibres, which, as well as the caudex, are of a beautiful golden yellow color, and extremely bitter taste. *Stem* upright, slightly pubescent, from eight to ten or more inches in height, about a line or more in diameter, divided into two nearly equal *branches* above, each bearing a *leaf*, the first or lowermost of which, has generally five lobes, the upper three. They at first are comparatively small and shrivelled, but as

the season advances they spread out, and in shape much resemble the maple leaf. They are unequally serrate, have rather a rough surface, and are of a yellowish-green color. The *flower*, which is of a white or pale rose color, appears early in the spring, but its petals are frugacious, and hence the perfect flower is seldom seen. Its situation is on a peduncle about three-fourths of an inch in length, arising from the petiole through the fissure of the smaller leaf. The fruit is of about the size of a raspberry, of a red color, and consists of a compound berry, having a number of muricated acini.

Analysis.—Hydrastis contains a *volatile oil*, *extractive*, *amarine*, several *salts*, and a *peculiar principle*, (*hydrastin*), of a yellow color. It yields its virtues to water and spirit.

Therapeutic Properties and Use.—A valuable acrid tonic useful both for topical and general application. As a general tonic it is available in cases of remittent and typhus fever, erysipelas, and general debility. In its topical application, it is highly serviceable in cases of chronic inflammation of the eyes and other mucous tissues, leucorrhœa, blenorrhœa, aphtha, etc. It has also been found serviceable when applied to ulcers and cancers. The medicine, however, is much less pleasant to the taste than many other articles of this class. It may be given in powder, decoction, infusion, syrup, or extract. The latter form is best as it is more conveniently taken in this way.

Pharmaceutic Preparations.—EXTRACTUM HYDRASTIS: *Extract of Hydrastis.*—℞ Hydrastis, bruised, ℔ij; Aq., Cj; Alcohol, Oj. Macerate in the water and spirit for fourteen days in a warm place; strain, and evaporate to the proper consistence, being careful not to burn it. To avoid the latter, the process should be completed by means of a water or sand-bath. *Dose gr.* v—*gr.* x.

GENTIANA.—The Root.

Synonymes.—Gentiana Lutea; Enzian, *Ger.;* Genziana, *Ital.;* Genciana, *Span.;* Gentiane, *Fr.;* Gentian, *Eng.*

Botany.—*Sex. Syst.* Pentandria Dygynia.—*Nat. Ord.* Gentianaceæ.

Gen. Char.—*Corolla* one petalled. *Capsule* two-valved, one celled, with two longitudinal recepticles, *Willd.*

Spec. Char.—The Gentian genus furnishes but one species that has, as yet, gained much character in a therapeutic point of view; but this is a very popular article of the Materia Medica. It is the *G. Lutea*, a native of Europe. The *G. Catesbæi*, an indigenous plant, is however, perhaps, equally good.

The following description is given of the G. Lutea by Royle:

Root thick, perpendicular, often forked, brown externally, yellowish within. *Stem* straight, two to three feet in height, *Radical leaves* ovate oblong, five-nerved; *stem leaves* sessile, ovate-acute; those supporting the flowers cordate, amplexicaul, concave all of a pale glaucous-green color. *Flowers* in an uninterrupted spike of whorls, large, of a brilliant yellow. *Calyx* membranous, spathe-like, three or four-cleft. *Corolla* rotate, with five or six green glands at the base, five or six-parted, divided usually into five acute veiny lobes. *Stamens* five; *anthers* straight, subulate. *Style* wanting. *Stigmas* two, revolute. *Ovary* and *capsule* fusiform, one-celled. *Seeds* roundish, compressed, with a membranous border. A native of the Alps, Appenines, and Pyrenees, and other mountains of Europe.—(*Esenb. and Eberm.*. 199; *St. and Ch.*, 132.

Description.—"The root which is supplied from Germany and Switzerland, is the only officinal part. France is supplied from Auvergne, etc. It varies in dimensions, but is usually about the thickness of the thumb, and several inches in length, often a little twisted, wrinkled, and of a brownish color externally, yellowish within, rather soft, but tough; odor feeble, but the taste at first slightly sweet, then of an intense but pure bitter," its virtues are imparted readily to water, spirit, wine, and ether.

Analysis.—The roots contain *bitter extractive matter*, *gum*, *uncrystallizable sugar*, *caoutchouc? concrete oil*, *yellow coloring matter* with a trace of *volatile oil* and an *acid* which has been called *gentisic*, which in its impure state was supposed to be the active principle, but, when quite pure, is colorless, and in tasteless feebly acid crystals. "Owing to the presence of

Sugar, etc., infusion of gentian ferments with yeast, and yields a bitter distilled spirit, prized by the Swiss and Tyrolese as a stomachic."

THERAPEUTIC PROPERTIES AND USE.—Gentian is one of our best tonics, and is much in use among old school practitioners, who have not yet much knowledge of our many indigenous articles of this class. The medicine may be regarded as admitting of an application as general as that of any other tonic that we possess. It may be given in substance, but it is most usually prescribed in some other form. The *dose* of the powder is from *gr.* x—*gr.* xxx.

PHARMACEUTIC PREPARATIONS.—INFUSUM GENTIANÆ (E.) COMPOSITUM, L. D. (U. S.): *Compound Infusion of Gentian.* ℞ Macerate for one hour in a lightly covered vessel sliced Gentian (ʒss. E. U. S.) dried (and bruised bitter, E.) Orange Peel aa. ʒij, (ʒj E. D. U. S., Coriander bruised ʒj, E. U. S.), fresh Lemon Peel ʒiv, L. (ʒj, D.) in boiling Aq. dest. Oj, L. (ʒxij. D.) Strain. (Take the solids and pour on them Proof Spirit fʒiv; after three hours add cold Water fʒxvj, and in twelve hours more strain through linen or calico, E. U. S.)

Action. Use.—Aromatic tonic. Useful in dyspepsia, &c. and as a vehicle for acids, &c., in doses of fʒjss.

MISTURA GENTIANÆ COMPOSITA, L.: *Compound Gentian Mixture.* ℞ Mix Compound Infusion of Gentian fʒxij, Compound Infusion of Senna fʒvj, and Compound Tincture of Cardamoms fʒij.

Action. Use.—Aperient and tonic. Useful combination for extemporaneous use in doses of fʒjss. two or three times a day.

TINCTURA GENTIANÆ COMPOSITA, L. E. D. (U. S.) *Compound Tincture of Gentian.*—℞ Macerate for fourteen (seven E.) days *sliced* (and bruised, D.) *Gentian* ʒiiss. (ʒij. D. U. S.) *dried* (bruised bitter E.) *Orange Peel* ʒx. (ʒj. D. U. S.) *bruised Cardamoms* ʒv. L. (ʒss. D. U. S.) (Canella finely powdered ʒvj. Cochineal bruised ʒss. E.) in *Proof Spirit* Oij, (by measure ℔ij. D.) Strain. *Diluted Alcohol*, Oij, U. S.) Express strongly and filter. Or, more conveniently prepare by percolation, as Comp. Tinct. Cardamom. E.)

Action. Use. Tonic, Stomachic. Adjunct to bitter infusions in doses of fʒj.—fʒij.

EXTRACTUM GENTIANÆ, L. E. D. (U. S.) *Extract of Gentian.* ℞ Prepare with Gentian Root and eight times its weight

of Water, as other simple Extracts, D. Take sliced (finely powdered, q. s. E.) Gentian ℔ijss. and macerate it (mix thoroughly) with boiling Aq. Dest. Cij. (half its weight of Aq. Dest. E.) for twenty-four (twelve, E.) hours. (Put it into the percolator, and exhaust it with temperate Aq. Dest. E.) Boil down to Cj. (concentrate E.,) and while hot (before it gets too thick, E.) filter. Evaporate to a due consistence (in the vapor bath., E.)

Action. Usc. Tonic in doses of gr. v.—ʒj. in pills, often with other remedies. "The Extract made from the Infusion is considered superior to that made from the Decoction: but that made according to the E. P. is still finer."

VINUM GENTIANÆ COMPOSITUM, E. *Compound Wine of Gentian.* ℞ Digest Gentian ʒiv. Yellow Cinchona Bark ʒj, also Bitter Orange Peel ʒij. Canella ʒj., all coarsely powdered, in Proof Spirit fʒivss. for twenty-four hours, then add Sherry Wine fʒxxxvj, and digest for seven days. Strain and express the residue strongly, and filter the liquor.

Action. Usc.—A good Stomachic in doses of fʒiv—fʒj.

FRASERA.—The Root.

Synonymes.—Frasera Carolinensis; Frasera Walteri; Frasera Verticillata; American Columbo, *Eng.*

Botany.—*Scx. Syst.* Tetrandria Monogynia.—*Nat. Ord.* Gentianaceæ.

Gen. Char.—*Calyx* deeply four-parted. *Corolla* four-parted, spreading; segments oval, with a bearded orbicular gland in the middle of each. *Capsule* compressed, partly marginated, one-celled. *Seeds* few, imbricated, large, elliptical, with a membranous margin. *Nutt.*

Spec. Char.—The Frasera is one of the most gaudy among all our wild plants, adorning our plains with its beautiful foliage and flowers. The *root* is triennial, large, long, spindle-shaped, fleshy, solid, smooth, and of a yellow color. The *stem* is large upright, terete, simple, smooth, and about five, but sometimes ten feet in height. The *leaves* are radical and cauline, sessile, entire, glabrous, disposed in whorls at intervals of six inches; whorls smaller successively as they ascend. The *flowers* are numerous, of a yellowish-white color, and disposed in a beautiful terminal pyramidical pannicle, from one

to three, or more, feet long. Its flowering time is from May to July, but it does not bear flowers, nor produce a stalk, until the third year. It grows on plains and in open wood-lands, in most parts of the U. S., but is most abundant and luxurient in the Western States.

Analysis.—Frasera contains a trace of an *Essential Oil*, *Extractive*, *Amarine*, *Lupuline?* and a *peculiar Principle*. (*Fraserine.*) It yields its virtues to water and spirit.

Therapeutic Properties and Use.—A moderately good tonic, and rather analogous to the gentian in its properties, but it is considered inferior as a tonic to that popular article.

The American Columbo was formerly much used in general practice, and was ranked among the best tonics, but at the present day, it has lost some of its reputation, as it is supposed to be rather feeble in its power, and not proportioned in this respect, to its bitterness of taste. Nevertheless, the medicine well merits a place among our tonics. When quite fresh, it is somewhat laxative, or even cathartic, in its effects. Although applicable in most cases in which the articles of this order generally are available, it is considered especially serviceable in constipation attended with colicy pains, that is common to some persons, especially pregnant females. The dose of the powder is from *gr.* xx to ʒij. It is best taken in the form of an extract.

Pharmaceutic Preparations.—EXTACTUM FRASERA: *Extract of American Columbo.*—This is prepared in the same way as the extract of *Hydrastis*, which see p. 449.

COLOMBA.—The Root.

Synonymes.—Columba; Coculus Palmatus; Calumbowurzel, *Ger.*; Colombo, *Fr.* Columba, *Ital.*; Kalumb, *Hind*, Mozambique; Raiz de Columbo, *Span.*; Kalumbo, *Port.*; Columbo, *Eng.*

Botany.—*Sex. Syst.*—Diæcia Hexandria.—*Nat. Ord.* Menispermaceæ.

Gen. Char.—*Sepals* and *Petals* ternate, usually in two, rarely in three rows. *Stamens* six, distinct, opposite the petals. *Drupes* berried, one to six, generally oblique, reniform, somewhat compressed, one-seeded. *Cotyledons* distant.—*De Cand.*

Spec. char.—The Columba plant has a perennial *root* with several spindle-shaped fleshy tubers, filled with longitudinal fibres, or vessels, which are externally brown, with transverse warts, and internally of a deep yellow color, devoid of smell, but very bitter. The *Stems* are annual, herbaceous and twining, covered with glandular hair, hairy below. *Leaves* alternate, nearly orbicular, cordate at the base, five to seven lobed, lobes entire, wavy on the surface and margin, acuminate, hairy, with long petioles. *Racemes* axillary. *Flowers* small, diœcious, green. *Calyx* of six sepals, in two series, with bracteoles. *Petals* six, obovate half enclosing the six opposite stamens. *Anthers* terminal, two-celled, dehiscing vertically. *Ovaries* three, united at the base. *Drupes* or berries about the size of a hazel-nut, densely clothed with long spreading hairs, tipped with a black oblong gland. Bot. Mag. t. 2970.71.—*Royle.*

Description.—"Columba, in its officinal form, consists of transverse sections of the root and its lateral tubers, which are flat, circular, about one-fourth to one-half an inch in thickness, and from one-half to two or three inches in diameter. The cortical portion is two or three lines in thickness, covered externally with a brownish colored cuticle; the faces are of a grayish-yellow color; the interior portion in concentric rings, easily distinguishable from the cortical, is soft, almost spongy, thinner towards the centre, from shrinking there. The root is brittle, and therefore, easily pulverized; the powder of a greenish-yellow tinge; its taste is bitter and mucilaginous, with a slightly aromatic odor."

Analysis.—Columba, according to the acknowledged analysis, contains a small quantity of *Essential Oil*, a *peculiar Azotized Substance*, not precipitated by metallic salts, some *Salts of Lime*, and *Potassa*, *Oxide of Iron*, *Silica*, and a *Peculiar Crystallizable Principle*, (*Columbin*) in which the bitterness of the root resides.

Therapeutic Properties and Use.—Mild tonic and stomachic. Analogous in its tonic effects to gentian, but more mild. Its application is about the same as that of the latter or frasera. The dose is *gr.* xx to ʒij, of the powder.



Sabbatia Angularis.



Coptis Trifolia.

PHARMACEUTIC PREPARATIONS.—INFUSUM CALUMBÆ: E. D. (INFUSUM COLOMBÆ, U. S.) *Infusion of Calumba.*

℞ Macerate *Columba*, sliced ʒv (in coarse powder ʒss. E.; ʒij D.) in boiling *Aq. dest.* Oj, (℔ss. by measure, D.; cold water E.) for two hours and strain, L. Moisten and percolate till f ʒxvj of infusion are obtained, E. Cold water and percolation remove the bitter principle with less of the starch.

Dose f ʒss. twice or thrice a day. It soon undergoes decomposition.

TINCTURA CALUMBÆ, L. E. D. (TINCTURA COLOMBÆ, U. S.:) *Tincture of Calumba.*

℞ Macerate *Calumba* sliced ʒiij. (ʒijss. D.) in *Proof Spirit* Oij. (℔ij D.) for fourteen days and filter. (Digest for seven days, or prepare by percolation in moderately fine powder, which is first to be soaked for six hours, with a little of the spirit, E.)

Dose f ʒj—f ʒij as an adjunct to bitter draughts and mixtures.

COPTIS.—The Root.

SYNONYMES.—COPTIS TRIFOLIA; Goldthread, *Eng.*

BOTANY.—*Sex. Syst.* Polyandria Polygynia.—*Nat. Ord.* Ranunculaceæ.

Gen. Char.—*Calyx* none. *Petals* five or six, caducous. *Nectaries* five or six, cuculutate. *Capsules* five to eight, stipitate, stellately diverging, and rostrate, many-seeded. *Nutt.*

Spec. Char.—A humble, evergreen plant, resembling the strawberry plant in size and general aspect. It has a perennial, extremely yellow, slender, creeping root. The leaves, which are supported on long slender foot-stalks, are ternate, with roundish, or obovate, sessile leaflets. The scape or flower-stem, is slender, round, and rises above the leaves, bearing one small, white flower, each. An inhabitant of the northern regions of this continent, and of Asia, Greenland, and Iceland. It delights in the dark shady swamps, cold morasses, and Alpine regions of New England, and Canada.

THERAPEUTIC PROPERTIES AND USE.—The Coptis is a tonic of some value. It is considerably used in New England, and has become officinal. It may be employed as a general tonic like gentian, frasera, columba, &c. In domestic practice it

has been much in use as a remedy in aphtha. It may be administered in powder, infusion, decoction, or extract, but is principally used in tincture. The dose of the tincture, made by macerating an ounce of the root in a pint of diluted alcohol, is f ʒj—f ʒij. Its virtues consist in a bitter extractive, readily taken up by boiling or cold water, as well as by spirit.

CHELONE.—The Leaves and Tops.

Synonymes.—Chelone Glabra; Balmony *Eng.*; Turtle-head, Snake-head, &c., *Vul.*

Botany.—*Sex. Syst.* Didynamia Angiospermia.—*Nat. Ord.* Scrophulariæ.

Gen. Char.—*Calyx* five-parted, caliculate by three bracts. *Corolla* ringent, ventricose, convex above mouth gaping with two small lips and five lobes. *Stamina* didynamous; *anthers* wooly, a sterile filament besides. *Capsule* two-celled, bivalve. *Seeds* many, with a membranous margin.

Spec. Char.—There are several species of this genus, which differ so much that no simple discription can well apply to all. They however agree in the following particulars: *Root* perennial. *Stems* upright, obtusely four-angled and about three or four feet high. *Leaves* opposite, deep green above, glaucous beneath. *Flowers* terminal, in a dense irregular spike; each flower sessile and axillary to three bracts. *Calyx* with five unequal imbricate segments. *Corolla* tubular, labiate, resembling a snake's or turtle's head, whence some of the vulgar names of the plants. The most prominent species are the following: 1 C. Alba; 2 C. Maculata; 3 C. Lanceolata; 4 C. Purpurea; 5 C. Obliquea; 6 C. Elatior; 7 C. Capitata.

Therapeutic Properties.—Chelone is prominently tonic, but is somewhat unpleasant to the taste, and has rather a sickening odor. Prof. Rafinesque, however, regarded the plant as among our most valuable indigenous productions. He says "it is useful in many diseases, fever, jaundice, hepatitis, eruptions of the skin, &c. In small doses it is laxative, but in full doses it purges the bile and cleanses the system of the morbid or superfluous bile, removing the yellowness of the skin in jaundice and liver diseases." It is perhaps best taken tinctured in



Chelone Glabra.



Myrica Gale.



Aristolochia Serpentaria.

wine, the dose of which is f3j—f3ij. The dose of the powder is 3j. Water and spirits extract its virtues.

ARISTOLOCHIA SERPENTARIA.—The Root.

SYNONYMES.—SERPENTARIA; Virginianische Schlangenwurzel, *Ger.;* Serpentaire de Virginie, *Fr.;* Serpentaria Virginiana, *Ital., Span.*; Virginia Snakeroot, *Eng.*

BOTANY.—*Sex. Syst.* Gynandria Hexandria.—*Nat. Ord.* Aristolochiaceæ.

Gen. Char.—*Calyx* none. *Corolla* one-petalled, ligulate, ventricose at the base. *Capsule* six-celled, many-seeded, inferior. *Willd.*

Spec. Char.—Numerous species of aristolochia, have been in use as tonics, but at the present, the serpentaria is considered the most important. This has a perennial aromatic root, with a short, knotty, horizontal, caudex, and numerous small radicles. *Stem* inclining, jointed, and about eight or ten inches high. *Leaves* alternate, petiolate, cordate, oblong, acuminate, entire. *Flowers* near the ground; corolla of a dark purple color, monopetalous, tubular, swelling at the base, contracted and curved in the middle, and terminating in a labiate border with lanceolate lips. *Fruit* a hexangular, six-celled capsule, with several small flat seeds.

ANALYSIS.—The root of the aristolochia serpentaria, contains a *Volatile Oil*, *Gum*, *Starch*, *Albumen*, a *peculiar Principle*, *Lignin*, and various *Salts*. The virtues are imparted to alcohol, boiling water, and sparingly to cold water.

THERAPEUTIC PROPERTIES AND USE.—A valuable and popular tonic, considerably aromatic and stimulant. Its virtues are very analogous to those of the liriodendron. It has long been in use and has been prescribed in almost every variety of disease. It is chiefly valued as a tonic in amenorrhœa, exanthematous disease, rheumatism, and typhus fever. It has been thought to be anti-periodic. The dose of the powder is *gr.* x to 3ss. It is best taken in pills.

PTELIA.—The Bark.

SYNONYMES.—PTELIA TRIFOLIATA; Wingseed, *Vul.*

BOTANY.—*Sex Syst.* Tetrandria Monogynia.—*Nat. Ord.* Rhamni.

Gen. Char. — *Calyx* four-parted. *Petals* four, spreading. *Stigmas* two. *Samara* compressed, orbicular, two-celled, two-seeded.

Spec. Char.—A *shrub*, or *small tree*, with a grayish, smooth *bark*, and triternate *leaves*. The *flowers* are pannicled, diœcious. *Seeds* winged. There are several varieties: one, the *P. Pentaphylla*, has quinate leaves; and the *P. Pubescens* has pubescent leaves. Perhaps these latter should be entitled to the character of species.

THERAPEUTIC PROPERTIES AND USE.—The bark of the ptelia is one of our most valuable tonics, and has been regarded to be anti-periodic, and thus been prescribed against ague. Its chief application is in remittent and typhus fever, as well as in dyspepsia. Its virtues are imparted to water and spirit. It is best used in the form of extract. The dose of the latter is *gr.* v—*gr.* x; that of the powder *gr.* x—*gr.* xxx.

PRUNUS VIRGINIANA.—The Bark.

SYNONYMES.—CREASUS SEROTINA, *D. Caud*; CERASUS VIRGINIANA, *Mich.*; Wild Cherry, *Eng.*

BOTANY.—*Sex. Syst.* Icosandria Monogynia.—*Nat. Ord.* Lauraceæ.

Gen. Char.—Differs from the laurus genus only in its fruit being destitute of bloom, and having a round stone instead of acute, and the leaves, while in bud folded, flat and not rolled up. *Lindley.*

Spec. Char.—*Leaves* oval oblong, or lanceolate oblong, acuminate, glabrous, or bearded along the midrib beneath, smooth and shining above, finely serrate, with adpressed, or callous incurved teeth. *Petioles* with two or more glands. *Racemes* elongated, spreading, petals broadly obovate. *Drupes* globose, black.

The height of the tree varies from forty feet to eighty or more, as it is found to the South. The flowers are white and fragrant, appearing in May. The bark is of a dark ashy hue, rough on the trunk and smooth on the branches. The epi-

dermis is easily separable, and peels off circularly, leaving the green cellular tissue beneath. The wood is hard. The fruit has a prussic, sweet, and slightly bitter taste.

ANALYSIS.—The bark contains *amygdalin* (Procter), *starch*, *resin*, *gallic acid*, *tannin*, *fatty matter*, *lignin*, *&c.*, (probably bitter extractive). By distillation with water a volatile oil can be obtained. This oil is composed of *hydruret of benzule*. It is not fit for medical use, as it is rather harsh in its effects,—considered somewhat analogous to hydrocyanic acid.

THERAPEUTIC PROPERTIES AND USE.—The bark of this tree is an excellent tonic, rather peculiar in its effects. It seems to manifest its tonic power without exciting to any corresponding extent, the circulation. Although valuable as a *general* tonic, it is chiefly useful as a tonic in the treatment of pectoral affections. The author has been more successful in the use of this article in phthisis than with any other single medicine, and he confidently recommends its use, in this disease, to the profession. It may be taken in substance, but it is best taken in the form of tincture or extract. The dose of the powder is *gr.* x.—*gr.* xx.

PHARMACEUTIC PREPARATION.—INFUSUM PRUNI VIRGINIANÆ.—*Infusion of Wild Cherry Bark.* Wild Cherry Bark, bruised, ʒss. Water Oj. macerate for twenty-four hours and strain. Cold water constitutes the best vehicle, as it allows of the decomposition of the amygdalin without the escape of the volatile principle formed from it.

Dose.—fʒij.

SYRUPUS PRUNUS PIRGINIANA.–*Syrup of Wild Cherry Bark.* ℞ Made from the bark in powder ʒiv. Water fʒxij. exhaust in a percolator and add Sugar ʒxxiv. Add a sufficiency of water to make fʒxij.

Dose.—fʒss.

EXTRACTUM PRUNUS VIRGIANÆ: *Extract of Wild Cherry.* ℞ Cort. Prun. Virgin. ℔iv. Alcohol Cjss. Aq. Cij. Digest in the spirit, for twelve days in sun heat, strain and distil until there remains one pint. Boil the Mace in the water and strain; boil down to one pint, and reduce both the liquors together in a water or sand bath, to the proper consistence.

Dose.—*gr.* v—*gr.* viij.

SABBATIA.—The Herb.

Synonymes.—Sabbatia Angularis, ; Thousandgildengrant ; *Ger.* American Centaury, *Eng*

Botany.—*Sex. Syst.* Pentandria Monogynia.—*Nat. Ord.* Gentianaceæ.

Gen. Char.—*Calyx* five to twelve-parted. *Corolla* rotate, five to twelve-parted. *Stigmas* two, spiral. *Anthers* at length, revolute. *Capsule* one-celled, two-valved, many-seeded.—*Nutt.*

Spec. Char.—A most beautiful indigenous herbaceous annual or biennial plant, growing about a foot in height. The *stem* is square, and winged at the angles, simple below, branched at the top ; branches decussating, axillary. *Leaves* opposite, sessile, lanceolate, pointed, entire, nerved, smooth. *Flowers* numerous, terminal to the branches ; *corolla* five-parted, with ovate segments, and of a beautiful rose color. *Anthers* yellow. The plant grows in most parts of this country in fields and open woods.

Therapeutic Properties.—Sabbatia is a fine tonic, and has long been employed in domestic practice, as a common bitter. It has usually been tinctured in spirit, and used as a prophylactic against ague and autumnal fever. It may be used in substance or in tincture, in doses of ℈j-℈ij of the former, and of ʒij–ʒiij of the latter. Water and alcohol readily extract its virtues.

The Centaurium or *European Centuary*, possesses analogous properties, and may be used in similar doses.

VERBENA.—The Root.

Botany.—*Sex. Syst.* Didynamia Gymnospermia.—*Nat. Ord.* Vetices.

Gen. Char.—*Calyx* with one of the teeth truncate. *Corolla* funnel-form, with a curved tube ; border five-cleft. *Nuts* two or four. *Pericarp* thin and evanescent. *Eaton.*

Spec. Char.—There are a number of indigenous species of verbena. The two most prominent medical species are, the V. Hastata and the V. Urticifolia. These, in their general appearance, very much resemble each other in some of their



Verbena Verticifolia.



Verbena Hastata.



Leonurus Cardiaca.



Nepeta Cataria.

varieties. They have an upright obtusely four-angled *stem*, about three feet high. *Leaves* opposite, petiolate, lanceolate, or sub-hastate, serrate, entire, rough, and sometimes slightly pubescent. *Flowers* in terminal axillary spikes, small, purple, or purplish-white in the first, and white in the latter. The V. Urticifolia is more branched than the other.

Therapeutic Properties.—Verbena is a moderately good tonic, and has long been employed in domestic practice as a prophylactic against ague and many other affections. When taken in large doses it proves emetic. Dr. Thomson considered it a pretty certain remedy in intermittent fever, if taken at first in doses sufficiently large to excite free emesis, and then a prolonged nausea and perspiration. The V. Urticifolia is considered an excellent antidote for poisoning from the Rhus Toxicodendron. The root is to be boiled in milk with oak bark, and then the milk taken freely. Both species have also been regarded of service in incipient phthisis, gravel, scrofulous affections, &c. The dose of the infusion, prepared by macerating an ounce of the recently dried root in a pint of boiling water, is a wine-glass-ful; that of the powder is ℈j—℈ij.

NEPETA.—The Herb.

Botany.—*Sex. Syst.* Didynamia Gymnospermia.—*Nat. Ord.* Labiateæ.

Gen. Char.—*Calyx* dry, striate. *Corolla* with a longitudinal tube; underlip with the middle division crenate; throat with a reflexed margin; *stamens* approximate. *Eaton.*

Spec. Char.—The only species. A very common herb, growing in yards and out-grounds, about habitations, but never wild in this country. The *stem* is obtusely four-angled, upright, and about two or three feet high. *Branches* axillary. *Leaves* opposite, petiolate, obscurely lobed or tooth-serrate, hoary-pubescent. *Flowers* bluish-white, in whorled terminal spikes. The entire plant has a peculiar, slightly fragrant odor, much admired by cats, and hence one of its vulgar names, *cat mint.*

Therapeutic Properties.—A mild, but pure, bitter tonic, but

not much esteemed on account of its commonness. Nevertheless, it is equally as good as many more rare articles that are officinal. This article will answer as a general tonic, but seems more particularly adapted to females of delicate habits and general debility, with nervous depression. It may be used in conjunction with cinnamon and cascarilla, in port wine, or it may be taken freely in warm infusion, sweetened.

Class III.—ASTRINGENTS.

The term *Astringent*, (from *astringo* 'to adstringe,') is an appellation applied to that class of medical agents, whose prominent effects upon the system, are marked by a peculiar contraction of the muscular fibre, and an improvement in the cohesive force of the elements of the tissues.

Modus Operandi.—The action of astringents upon the organism, has been regarded as rather *obscure*, in some respects. It has been supposed that the chief agency concerned, is that evinced in the action tannin directly upon the parts on which the effects are produced. But this alone, will not account for the suddenness of the impression, that is sometimes produced in parts extremely remote from the point of the inception of the agent. Thus, some astringents will arrest hemorrhages from the lungs, uterus, and other organs, with a promptitude or suddenness of effect, that must forever preclude the idea that the medicine was first conveyed from the stomach to the point of the obvious display of its virtues.

Again we find that the resiliency or contraction of the muscles, that may be produced by the administration of astringents, occurs under circumstances that will also preclude our accounting for the phenomena on the principle that the medicine acted by direct contact. We have an illustration of this, in the prompt influence of astringents over the uterus during parturition. Thus pains, or a contraction of this organ may be excited with *remarkable promptness*—in some instances, almost instantaneously—by some astringents, taken into the stomach, or applied to parts situated at considerable distance from this organ.

Nevertheless, it is evident, that a great share of the gener-

al effects of astringents, is dependant upon a mechanico-chemical power involved in the phenomena, which is dependant upon the presence of tannic or gallic acid. This will apply to their general, as well as their topical influence, for, although they operate partially through the nervous system, as already stated, yet, that the astringent principle may be carried in the circulation without having its acid properties neutralized entirely, may be readily supposed when other analogous vital phenomena are considered. It may thus be supposed, that these agents may effect some influence even in remote parts, although this may be slowly developed.

Astringents, when topically applied for stanching blood, are denominated *styptics*. Many Therapeutists have, improperly arranged styptics into a separate class, but it is difficult to see the propriety of dividing a class of remedies involving the same principles of action, for no other reason than a simple difference of their application.

The effect of tannic acid on albumen is very remarkably exhibited in the common process of tanning leather: and it must be presumed that the same effect will follow the influence of this agent on all the tissues into which albumen enters as a constituent, modified indeed, according to the vital manifestations in those parts.

It has been a matter of curiosity with some whether the *tannic* and *gallic* acids are identical, and if not, whether either may produce this specific effect, or whether both are necessary.

Tannic acid is a *tri-basic* one; and the general formula for the neutral tanates is $\overline{Q}t$, 3MO in the case of protoxides, and $3\overline{Q}t$, $M^2 O^3$, in the case of sesquioxides. The formula of tannic acid is $C^{18} H^5 O^9$, 3HO, while the formula for gallic acid is $C^7 HO^3$, 2HO $=\overline{G}$, 2HO, and yet tannic acid may readily be converted into gallic: the process, however, is not well understood. In some circumstances, it appears to depend on the absorption of oxygen; and, as will be found, *one* eq. of tannic acid, *plus eight* eq. of oxygen, contains the elements of *two* eq. of gallic acid, *four* eq. of carbonic acid, and *two* eq. of water.

The addition of any of the mineral acids to a solution of tannic acid causes a precipitate of tannic acid combined

with the acid employed. This precipitate is very soluble in water, and when prepared by the addition of sulphuric acid, in a hot solution, it dissolves in hot diluted sulphuric acid, and when this solution has been boiled a short time, it will contain no tannic acid, the whole being converted into *gallic acid*.

Again, tannic acid, when simply heated, is converted into metagallic and pyrogallic acids. It seems, also, that an excess of alkali is likewise capable of converting tannic into gallic acid.

Application.—Astringents are generally applicable, and become important remedies in cases where there is prevailing a morbidly relaxed and debilitated condition of the system, especially such as are caused by colliquative discharges, as in diabetes, cholera, dysentery, hæmorrhages, gleet, menorrhagia, &c.

The topical application of astringents is also extensive. The history of disease furnishes many instances of excessive local relaxations, that are more circumscribed than those cases of this character which require the ordinary internal application of the remedy. Some of the most prominent of these are pathological relaxations of the uvula and tonsils, prolapsus uteri, prolapsus ani, hernia, hæmorrhoides, etc. These may generally be successfully treated by the topical application of astringents, except, indeed, some cases of hernia, where there is much organic lesion.

Besides all this, astringents will also be found serviceable, when exhibited either in combination or collaterally, with other remedies, in view of their tendency to promote the operation of the latter. Thus we find, that they tend manifestly, to maintain the action of tonics, as is proven by combining galls with quinine, when it will be found that one-third less of this article will prove equally effective. The power of *stimulants* is no less promoted in this way, and hence, the popular practice of combining them with astringent articles. The celebrated formula, improperly called *pulvis diaphoretica*,* is an example of such combinations, and the high

* It is proper to remark that astringents are not so successfully combined with diaphoretics. This compound, therefore, is improperly named *diaphoretic*, and

character of this compound may be considered as a popular assent to the principle here laid down. The practice of improving the stimulant virtues of the common incitants originated, and has thus far been peculiar to our new system, and if there were no other claims for improvement except such as may justly be founded on this principle, there would be much to boast of in our enterprise. The power that astringents have to promote emesis has already been noticed.

The antiseptic power of astringents should not be unnoticticed here. It has long been known, that tannic acid possesses a peculiar control over the putrefactive process. The acid unites with the constituents of the soft solids, that have lost their vitality, and which are very susceptible of putrifaction, as the albumen and gellatine, and thus forms insoluble compounds with them, that will hence resist the putrefactive process. Tannin also tends remarkably, to maintain the integrity of the living tissues, and thus, all proper astringents are of service in low putrescent conditions of the system, as, for example, in typhus, low remittents, variola, hospital fever, etc.

In view of their anti-septic effects, astringents are also applied topically, in the forms of lotions, plasters and cataplasms.

Incompatables.—The incompatables of astringents are the alkalies, which will neutralize the acids upon which the astringent principle is dependant.

Order I.—SIMPLE ASTRINGENTS.

This order is designed to embrace all those articles of the present class, that are pure astringents, or which possess no acrid, stimulant, or bitter principles.

The importance of this distinction will be readily seen when it is considered that the latter properties, or at least some of them are often contra-indicated, while the simple astringent virtues alone are necessary; and it is no hard mat-

has only been placed in the order where it stands, in conformity to custom. Nevertheless, it is true that the astringent agents combined, are not sufficient to destroy the diaphoretic power of the other articles of the compound, and although the article is chiefly valuable as a stimulant, it may still be profitably employed as a diaphoretic.

ter to possess any simple astringent agent at any time, with other virtues simply by combing them with other articles, as the circumstances may require.

GERANIUM MACULATUM.—The Root.

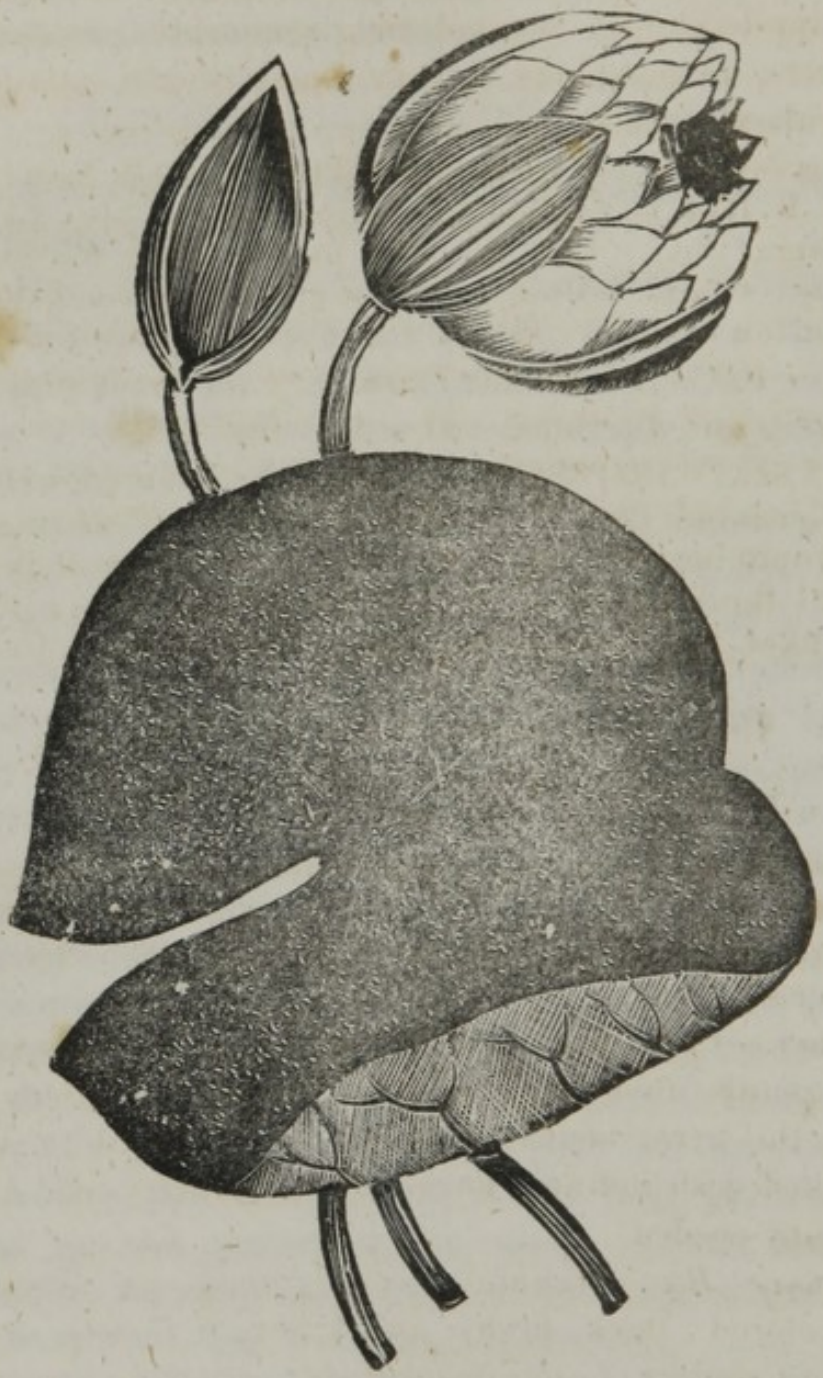
Botany.—*Sex. Syst.* Monadelphia Decandria.—*Nat. Ord.* Geraniaceæ.

Gen. Char.—*Calyx* five-leaved. *Corolla* five-petalled, regular. *Nectary* five melliferous glands, united to the base of the longer filaments. *Arilli* five, one seeded, awned at the base of a beaked receptacle; awns simple, naked, neither spiral nor bearded, *Willd.*

Spec. Char.—*Root* perennial, horizontal, tortous, fleshy, about the thickness of the finger, of a brownish color without, and a flesh color within, beset with fibres, and of a powerful astringent, but not acrid taste. *Stem* erect, roundish, dichotomously branched, from ten to twenty inches high, and thickly beset with reflexed hairs. *Leaves* large, round, cordate, with a sinus from the the base to the petiole, deeply divided into three, five, or seven lobes, which are incised, or toothed at their outer extremeties, hairy, and of a rather palish green color, mottled with still paler spots. Those that arise immediately from the root, are supported on long slender footstalks; those of the stem are opposite, the lower petiolate, the upper sub-sessile, with lanceolate or linear stipules. *Flowers* of a purple color; corolla with five obovate petals. *Capsules* five, joined by a beak to the long persistant style, curling up and scattering the seeds. Grows abundantly throughout the country, in open woods and hedges. Flowering time from May to July.—*Cranes-bill.*

Analysis.—The root contains *Tannin*, (a large portion) *Extractive*, *Knic*, or some peculiar *Acid*, which does not redden vegetable blues, and will not pass over in distillation. The virtues are readily imparted to water, cold or hot, and to some extent, to spirits. The alkalies destroy the astringency.

Therapeutic Properties.—The Geranium Maculatum, is perhaps the purest and best astringent that we possess. It is an article of great power, but acts without producing disturbance in the system. It is eminently adapted to all cases in



Nymphæa Odorata.

which a pure astringent is indicated, but particularly in diabetes, secondary stage of dysentery, and cholera infantum, as a local application in leuchorrhœa, gonorrhœa, fistula, cancers, ulcers, hemorrhoids, hernia, hemorrhages, aphtha, relaxed uvula and tonsils, etc.

PHARMACEUTIC PREPARATIONS.—SYRUPUS GERANIUM: *Syrup of Geranium.*—℞ Rad. Geranium in coarse powder ℔iv, Aq. Ciij, White Sugar ℔vj. Boil the root in the water for three or four hours; strain; reduce to four pints; add the sugar; boil for five or ten minutes; skim off and remove from the fire.

Action. Use.—An excellent article in the secondary stage of dysentery and diarrhœa. *Dose* f℥j—f℥ss.

SYRUPUS GERANI COMPOSITUM: *Compound Syrup of Geranium.*—℞ Rad. Geranium ℔iv, Rad. Rhei ℥viij, Cort. Cinnamomum ℥vj, Caryophylus ℥iv, Aq. Cong. ℥iv; Saccharum Alba ℔vij. Boil until the strength is extracted, strain, reduce to Ov, add the sugar, boil ten minutes, skim off, and remove from the fire.

Action. Use.—Same as the above. *Dose* f℥j—f℥ss.

NYMPHÆA ODORATA.—The Root.

SYNONYMES.—NYMPHÆA ALBA; Nenuphar Odorant, *Fr.;* White Pond Lily, *Eng.*

BOTANY.—*Sex. Syst.* Polyandria Monogynia.—*Nat. Ord.* Nymphaceæ.

Gen. Char.—*Calyx* four to seven-sepalled. *Corolla* many-petalled, petals about equalling the length of the sepals attached to the germ beneath the stamens. *Stigma* a broad disk, marked with radiated lines. *Pericarp* berry-like, many-celled, many-seeded.

Spec. Char.—*Root* perennial, creeping, rough and brownish, or dark-colored; thick, fleshy, and knotty. *Petioles* one to six feet long, spongy. *Leaves* floating, sub-pellate, entire, round, cleft at the base; upper surface glossy, of a deep green; lower, reddish or brownish, with radiating nerves. *Peduncles* terete, smooth, bearing one flower each. *Calyx* four-sepalled. *Flowers* large, white, many-petalled, of a very sweet odor. Grows in ponds and marshes in many parts of the U. States.

ANALYSIS.—The constituents of the root are *tannin, gallic acid, starch, mucilage, sugar, resin, ammonia, ulmine, tartaric acid, fecula,* &c. The virtues are imparted readily to water.

Therapeutic Properties.—The root of the white pond lily is considered among our best simple astringents, and although very efficient, it is quite mild in its effects. Professor Rafinesque considers it demulcent, anodyne, and anti-scrofulous. It may be applied with confidence in all cases in which articles of this order are indicated; but, as an internal remedy, it is chiefly regarded as an astringent in dysentery and diarrhœa, and as a topical application, in the form of a strong infusion for aphtha, scarlatina maligna, &c. It is also employed, and with great success, in combination with ulmus fulva, in the form of a cataplasm. The medicine may be taken in powder, in doses of a half drachm, but is best administered in the form of infusion .℞ Root in coarse powder, ℥j, boiling Aq. Oj; macerate for thirty minutes. *Dose* f℥ij--f℥iv. A syrup may be made, either simple or compound, in the same way as directed for those of the Geranium Maculatum.

HAMAMELIS VIRGINICA.—The Leaves.

Synonymes.—Hexehasel, *Ger.;* Hamamelier D'Hyver, *Fr.;* Witch Hazel, *Eng.*; Winter-bloom, *Vul.*

Botany.—*Sex. Syst.* Tetrandria Digynia.—*Nat. Ord.* Berberides.

Gen. Char.—*Involucre* three-leaved. *Perianth* four-sepalled or four-cleft. *Petals* four, very long, linear. *Nut* two-celled, two-horned.

Spec. Char.—A shrub, or small tree, growing usually in groups, and attaining to ten or fifteen feet in height. The bark is smooth and gray, interspersed with whitish spots. *Leaves* petiolate, ovate, roundish, entire, with a small sinus at the base, margin with unequal teeth obscurely developed. *Flowers* on short pedicels, clustered; petals yellow, linear, often undulate or revolute. *Stamina* four, opposed to petals, shorter than the calyx. *Fruit* a nut-like capsule, sometimes fancied to resemble a hazle-nut, but is bilobed and split above, with two cells containing each a hard oblong black seed. The flowers appear late in the fall, or, rather, in the winter, and the seed is matured the ensuing season. The



Rubus Strigosus.

shrub grows in thickets and woods, in sandy or rocky places, in most parts of the United States.

THERAPEUTIC PROPERTIES.—The leaves of the Hamamelis Virginica is a mild but somewhat efficient astringent, much used in some sections, both as an external and internal remedy.—The cases in which this medicine seems most indicated are chronic dysentery, diarrhœa, gleet, luchorrhœa, diabetes, &c., but will answer well in most other cases in which the more irritant astringents are serviceable. It makes a good wash for chronic sore eyes that are attended with a purulent discharge; ulcers, cancers, fistula, &c., also furnish instances for its employment as a wash. With ginger and ulmus fulva it forms an excellent cataplasm for painful and angry sores, ulcers, cancers, &c. It is best taken in strong watery infusion. *Dose*, ʒ—ʒiv. Water is its best menstruum.

RUBUS STRIGOSUS.—The Leaves.

SYNONYMES.—RUBUS IDICUS; Rhoten Hœmbaren *Ger.*; Red Raspberry; *Eng.*

BOTANY.—Icosandria Polygynia.—Nat. Ord. Rosacea.—**Gen. Char.**—*Calyx* five-cleft, inferior. *Corolla* five-petalled, *Pistils* numerous. *Berry* composed of many, juicy, one-seeded acines, on a dry receptacle.

Spec. Char.—*Stem* shrubby, unarmed, about four feet high. *Leaves* pinnately three to five-foliate; leaflets, ovate, lanceolate, rough, serrate, green above, pale beneath. *Flowers* in panicled corymbs, white. *Fruit* red, of rich flavor, delicious. Grows throughout the United States. Cultivated in gardens.

THERAPEUTIC PROPERTIES.—The leaves of this plant afford a very pure and mild astringent, analogous in its effects to those of the Hamamelis Virginiana; useful generally where the simple astringents are indicated. But it is supposed that the medicine is peculiarly indicated in tedious cases of parturition, where the pains, *or contractions* are insignificant.—Dr. Thomson supposed that the raspberry has a specific influence over the uterus and will excite its contractions when other agents have failed to produce any good effect. It is

generally used in strong infusion, and drank freely. It yields its virtues best to water.

Order II.—BITTER AND ACRID ASTRINGENTS.

Most of our vegetable astringents have united with them marked bitter and acrid properties. This is more particularly the case with the different barks of trees, which mostly abound with tannin, gallic acid, bitter extractive, and acrid principles.

The simple astringents were placed in a separate order as they are capable of fulfilling many indications that cannot be answered by the articles of this order. On the other hand, again, the acrid and bitter astringents have special adaptations that do not obtain in case of the foregoing order. They are generally more powerful and durable in their effects.

When astringents are exhibited internally in view of their remote effects, the articles of this order are much the most available. These are, therefore, generally selected when it is intended to combine astringents with stimulants, tonics or other classes, the virtues of which they are capable of improving, as already stated.

The acrid and stimulating astringents possesses a remarkable power to disengage the superfluous or impaired secretions of the mucous membranes. The tannic acid is always sufficiently free to unite readily with albumen, and coagulating it, renders the coating of those tissues, of a firm and rather impervious consistence. The acrid and stimulant properties excite the flow of serum which is interposed between the living tissues and their now coagulated coating, and thus the latter is disengaged. The physiological action of the tissues, which is promoted by the astringent power of the medicine, contributes also to the disjunction of those materials. This property of astringents, and particularly of this order, has induced Dr. Thomson to call them "*canker medicines.*"



Myrica Cerifera.

MYRICA CERIFERA.—The Bark.

SYNONYMES.—Bayberry, *Eng.*; Sweet-gale, Wax-myrtle, &c., *Vul.*

BOTANY.—*Sex. Syst.* Diœcia Tetrandria.—*Nat. Ord.* Amentaceæ; Myricaceæ.

Gen. Char.—MALES: *Ament* oblong. *Scales* lunate. *Stamens* four to six. FEMALES: *Ament* oblong, more compact, than the sterile. *Sepals* two, ovate, acute, scale-like. *Ovary* ovate, flatish, superior. *Stigmas* two, filiform, spreading, longer than the calyx. *Fruit* vaccate, one-seeded. *Leaves* evergreen.

Spec. Char.—A shrub attaining the height of from three to ten feet, much branched. Leaves cuneo-lanceolate, narrowest at the base, remotely serrate or sub-toothed at the apex, of a shining green color, on their upper side, paler below. *Flowers* amentaceous, appear in May. *Fruit* small, globose, clustered, covered with a greenish-white wax. Grows plentifully on the Atlantic coasts, from New England to Lousiana;—grows largest in the south.

ANALYSIS.—The bark of the Myrica Cerifera contains *Tannin*, *Gallic Acid*, *Extractive Matter*, and *Woody fibre*. The astringent virtues are readily extracted by boiling water, less so by cold, and sparingly by spirit. The stimulant properties are most readily taken up by alcohol.

THERAPEUTIC PROPERTIES.—The bark of the root may be regarded as an acrid, stimulating astringent, of great value. It is also emetic, antiseptic, sialogogue, and errhine.

Bayberry bark is an important article in the new Materia Medica, and has been very highly esteemed by all our practitioners. The combination of stimulant and astringent powers so potent as those of this article, must make its application extensive. Its effects on all the mucous surfaces are remarkable, and hence, its extensive employment by the early Thomsonians, under the idea of a "*canker medicine.*" Its tannic acid is rather free, and will readily combine with the albumen of the mucous secretions, coagulating them so far as they have lost their vitality or improper consistence. The stimulant and acrid properties will excite the flow of serum, and thus, as explained in the description of this order, the

impaired coating of the mucous tissues is disengaged. These principles are so obviously developed in the operation of this article, that the discriminating Thomson was induced, from his observation, to adopt this article as the type of his *canker medicines*, and, indeed, for a few years before his death, it is stated, he employed, and recommended this article alone, to the exclusion of his favorite astringent compound, "No. 3."

Besides the general internal application of bayberry bark, which is in most cases in which articles of this order are indicated, but particularly in diarrhœa, dysentery variola, typhoid and secondary stage of typhus fever, scorbutus, secondary stage of phthisis &c., it is also of great avail as a topical application, in leuchorrhœa, blenorrhœa, fistula, ulcers, cancers, tenia capitis, &c.

The pulverized bark makes an excellent tooth-powder, and cephalic snuff. It is taken in substance, infusion, and decoction. The dose of the powder is *gr.* x—*gr.* xxx.

PHARMACEUTIC PREPARATIONS.—EXTRACTUM MYRICA CERIFERA: *Extract of Bayberry.* This is prepared in the same way as the extract of cornus florida. *Dose gr.* v—*gr.* xv.

SYRUPUS MYRICA CERIFERA: *Syrup of Bayberry.* ℞ Bayberry bark, in coarse powder, ℥viij. White Sugar ℔jss. Aq. Ov. Boil for three hours, strain, boil down to one pint, add the sugar, boil ten minutes, skim, and stir while cooling.

Action. Use.—An excellent remedy in diarrhœa, and secondary stage of dysentery. *Dose* a table-spoon-ful.

GEUM.—The Root.

SYNONYMES.—Benediktenwurzel, *Ger.*; Cariofillata, *Ital.*; Cariofilata, *Span.*; Evans' Root, *Vul.*

BOTANY.—*Sex. Syst.* Icosandria Polygynia.—*Nat. Ord.*—Rosaceæ.

Gen. Char.—*Calyx* ten-cleft. *Petals* five. *Seeds* with a bent awn.

Spec. Char.—There are a number of species of this genus medicinal, but only two are officinal, the *G. Rivale*, and the *G. Urbanum.* The latter is an European species and is not used here. The G. Rivale alone, therefore, will here be described. The root of this is perennial, horizontal, jointed,



Trillium Erectum

tapering, six inches long, reddish-brown externally, white internally, with yellowish fibres. *Stems* one or more, a foot or more high, simple, erect, pubescent, purplish. *Radical* leaves pinnate, on long hairy footstalks; those on stems in three serrate segments. *Flowers* few, nodding, and yellowish-purple. *Fruit* composed of little nuts.

Therapeutic Properties.—A powerful astringent, combining the virtues of a tonic. It has long been in use as a remedy in passive hemorrhages, leuchorrhœa, phthisis, diarrhœa, and dysentery. It is most commonly used in the form of decoction. ℞ Rad. G. Rivale, in coarse powder, ʒj. Aq. Oj. Boil to Oss. and strain. *Dose* fʒj—fʒij, repeated. The dose of the powder is from a scruple to a drachm. The infusion is made by macerating an ounce and a half of the root in a pint of boiling water.

The virtues are most readily imparted to boiling water.

TRILLIUM.—The Root.

Synonymes.—Triole dilatee, *Fr.*; Wild Lily, *Eng.*; Beth Root, Birth Root *Vul.*

Botany.—*Sex. Syst.*—Hexandria Digynia—*Nat. Ord.* Asparagi.

Gen. Char.—*Calyx* three-sepalled, inferior, spreading. *Corolla* three-petalled. *Style* none. *Stigmas* three. *Berry* three-celled, many-seeded. *Eaton.*

Spec. Char.—This genus affords many species that are medicinal, and very analogous in their virtues. Linnæus however, only gave three, the *T. Sessile*, *T. Erectum*, and the *T. Cernum*. Nuttall, Michaux, Pursh, Elliot, and others, increased the species to the number of fifteen, and Rafinesque, who has given the subject considerable attention, has discovered thirty-four, embracing many varieties, which he, however, arranges under three sub-genera. As the history of this genus of medical plants, has created some interest among our practitioners, and as many of the species are destined to become important articles of our Materia Medica, the author has deemed it proper to give this Botanist's monography of the genus.

I. Sub-genus *Sessilium*. *Petals* erect; *anthers* adnate; *filaments* flat; *stigmas* sessile; *flowers* sessile,—corresponds to the T. Sessile of Linnæus.

1. Sp. Trilitum longiflorum. Raf. Leaves sessile, spreading, ovate acute, five-nerved: petals lanceolate, twice as long as the calyx, sessile, acute and purple. The Tr. sessile of modern authors, which name is wrong and illusive. Found from Lake Ontario to Carolina. Root thick premose, and berry purple, as in most all the species; many varieties: 1. Maculatum. 2. Atropurpureum. 3. Parvifolium. 4. Pumilum. 5. Rubricaule. 6. Undulatum 7. Latifolium.

2. Tr. Rotundifolium. Raf. Leaves spreading, sessile, rounded ovate, obtusely acuminate, five-nerved; Calyx erect lanceolate, petals rather longer lanceolate, obtuse, undulate, dark purple, sessile; stamens short. From Lake Erie to Tennessee. Var. 1. Flexicaule. 2. Rubricaule. 3. Maculatum. 4. Orbiculatum, 5. Pallidum. 6. Undulatum.

3. Tr. Isanthum, Raf. Leaves drooping sessile, oval elliptic, with an obtuse point, five-nerved. Calyx and petals equal, erect, oblong acute; stamens nearly as long. In Ohio, Kentucky, Arkansas. Petals pale purple. Var. 1. Albiflorum. 2. Pariflorum.

4. Tr. Tinctorium, Raf. Root concatenate, red inside: leaves drooping sessile, oval lanceolate, acute trinerve; calyx and petals equal erect, oval lanceolate acute. In the islands of the Missouri river. Is it a variety of Tr. Isanthum?

5. Tr. Viride. Beck. Leaves ovate acute, maculate; Calyx ovate lanceolate erect obtuse, petals green, rather longer, spatulate and thick; stamens short. In Missouri.

6. Tr. Recurvatum. Beck. Leaves subpetiolate, ovate lanceolate acute trinerve. Calyx recurved lanceolate acute, petals equal to it, ovate lanceolate, purple; stamens short. From Kentucky to Missouri. Variety. 1. Sessilifolium. 2. Obovatum. 3. Maculatum. 4. Undulatum.

7. Tr. Angustifolium. Raf. Stem slender, leaves lanceolate acuminate, trinerve, undulate, often erect; calyx erect linear lanceolate acute, petals equal, white, lanceolate obtuse; stamens short. In Kentucky, &c. Variety 1. Gracile. 2. Stenopetalum. 3. Maculatum. 4. Roseum.

8. Tr. Membranaceum. Raf. Stem slender, leaves sessile, thin, and membranaceous; ovate elliptic, obtuse trinerve; calyx erect, ovate lanceolate, obtuse; petals pale, subequal, cuneate acuminate. Glades of Kentucky, Illinois, and Missouri: Flower small, petals of a dirty pale purple. Var. 1. Ellipticum. 2. Obovatum. 3. Parvifolium.

9. Tr. Unguiculatum. Raf. Leaves petiolate, oval, both ends acute, trinerve; calyx reflexed, lanceolate obtuse; petals subequal to it, unguiculate, oval, oblong, obtuse, and purple. In the glades of Indiana, west Kentucky, &c. Var. 1. Crassicaule. 2. Undulatum. 3. Maculatum.

10. Tr. Petiolatum. Pursh. Leaves long petiolate, oval lanceolate acute trinerve: calyx erect, petals lanceolate linear acute, longer than the calyx. In the mountains Taconick, Alleghany, &c.

11. Tr. Maculatum. Raf. (Tr. sessile, Elliot,) Stem spotted, leaves sessile, ovate acute, trinerve, spotted; calyx erect oblong, petals spatulate, twice as long, dark, purple. In Carolina, &c.



Trillium Sessile

II. Sub-genus *Anthopium*. *Petals* spreading; *anthers* terminal; *filaments* not flat; *stigmas* sessile: *Flowers* pedunculate, erect, or drooping.

12. Tr. Acuminatum. Raf. Leaves sessile, ovate acuminate, undulate, trinerve; peduncle erect, equal to the leaves, calyx and petals subequal lanceolate acuminate. In the mountains Alleghany. Petals red, not reflexed.

13. Tr. Pictum. Pursh. (Tr. Erythrocarpium. Michaux.) Leaves oval acuminate, base rounded, subpetiolate, five-nerved, peduncle nearly erect, shorter than tne leaves, calyx lanceolate acute, petals recurved, oval lanceolate; acute, twice as long as the calyx. From Canada to Carolina, petals white, with purple veins, berries bright red. Var. 1. Undulatum. 2. Roseum.

14. Tr. Amblopsis. Raf. Leaves petiolate, ovate, with a long obtuse acumen trinerve; peduncle erect, shorter than the leaves; calyx and petals subequal, narrow lanceolate, obtuse. In the mountains Alleghany, &c. Petals white. Var. 1. Longifolium. 2. Incarnatum. 3. Undulatum. 4. Stenopetalum. 5. Angustifolium 6. Pumilum. 7. Cuneatum. Petals cuneiform.

15. Tr. Pusillum. Michaux. Leaves sessile, oval oblong, obtuse, trinerve: peduncle erect and short, calyx oval lanceolate obtuse, petals subequal, undulate, cuneate obtuse. From Pennsylvania to Arkansas, in glades, stem flexuose, purple, three or four inches high, leaves small, petals of a pale flesh color.

16. Tr. Nutans. Raf. (Tr. Erectum of many botanists.) Leaves subsessile-subrhomboidal, very wide, base acute, end acuminate, trinerve: peduncle nearly as long, inclined, flower nodding, calyx and petals subequal, oval lanceolate acute. From Canada to Carolina, large plant, leaves and flowers. Petals red or white. Var. 1. Atropurpureum. 2. Bicolor, flower smaller, white, pistil red. 3. Obovatum. 4. Undulatum. 5. Rhomboideum. 6. Flexuosum. 7. Album.

17. Tr. Flavum. Raf. Leaves sessile, rhomboidal acuminate, trinerve: peduncle as long, erect, flower nodding: calyx narrow lanceolate, petals longer lanceolate, yellow, acute. In the mountains from New York to Virginia, rare.

18. Tr. Pendulum. Wildenow. Leaves sessile, rhomboidal acuminate, base acute, trinerve: peduncle inclined, flower drooping; calyx and petals subequal, oval acuminate, petals white, with red veins. In the mountains Catskill, Alleghany, &c.

19. Tr. Undulatum. Raf. 1807. W. and Elliott. Leaves sessile, ovate accuminate, undulate, trinerve; peduncle erect, calyx lanceolate, petals much longer, undulate, oblong, obtuse, dark purple. Mountains Alleghany in Pennsylvania, &c.

20. Tr. Brevipetalum. Raf. Leaves sessile, ovate rhomboidal acuminate, base acute, trinerve: peduncle erect, elongated, calyx lanceolate acute; petals shorter, ovate, undulate, acute, white. Near the lakes Ontario and Erie. Var. 1. Latifolium. 2, Roseum.

21. Tr. Ovatum. Pursh. Leaves sessile, ovate, gradually acute, trinerve: peduncle erect, calyx linear, petals longer and larger, oblong lanceolate acute, and purple. Southern States.

22. Tr. Obovatum. Pursh. Leaves sessile, ovate rhomboidal, acuminate: peduncle erect, calyx oval lanceolate, petals equal obovate obtuse flat, flesh colored. From Canada to Ohio.

23. Tr. Grandiflorum. Salisbury. (Tr. Rhomboidum Mx.) Leaves sessile, ovate rhomboidal, acuminate, base acute, five-nerved, reticulate; peduncle inclined, elongated, calyx ovate, lanceolate acute, petals longer, obovate acute, white. From lake Ontario to Virginia and Kentucky. Petals thin, reticulate, forming a campanulate flower, base connivent. Var. 1, Roseum. 2, Elatior. 3, Rhomboideum. 4, Pumilum. 5, Parviflorum. 6, Macropium. 7, Obovatum. 8, Longifolium. Often called Ground Lily, as well as the following species.

24. Tr. Lirioides. Raf. Leaves shortly petiolate, ovate acuminate, base rounded, trinerve and reticulate: peduncle short and erect, calyx oval lanceolate obtuse; petals larger, oblong cuneate obtuse, white. Near Lake Erie, in the glades of Ohio, Illinois, &c. Commonly smaller than the last, flower also nearly campanulate. Var. 1, Parviflorum. 2, Pumitum. 3, Roseum. 4, Crassicaule. 5, Longifolium. 6, Maculatum. 7, Undulatum.

25. Tr. Obcordatum. Raf. Stem short and thick, leaves sessile obcordate, trinerve reticulate; peduncle as long, inclined, calyx lanceolate obtuse, petals equal in length, obovate obtuse, white. In the mountains Alleghany; is it a variety of Tr. Grandiflorum? only four inches high.

26. Tr. Latifolium. Raf. Leaves subsessile, very broad, dilatate, wider than long, subrhomboidal, undulate, both ends shortly acuminate, many nerved and reticulate; peduncle reflexed and short, calyx and petals subequal, oval acuminate reflexed and revolute; stamens shorter than the pistil. In Kentucky; stem thick, eighteen inches high, petals dark purple. This and all the next species, belong to the Tr. Cernuum of Linnæus, while the foregoing fourteen species answer to his Tr. Erectum.

27. Tr. Spatulatum. Raf. (Tr. Purpureum. Kin. and Elliott.) Leaves sessile, spatulate ovate acuminate, trinerve reticulate: peduncle drooping, petals dark purple, longer than the calyx, ovate lanceolate. In the mountains Alleghany.

28. Tr. Nervosum. Elliot. Leaves sessile, ovate lanceolate, both ends acute, membranaceous, reticulated: peduncle recurved, petals oblong lanceolate, larger than the calyx, rose colored. In Carolina and Georgia.

29. Tr. Catesbei. Elliot. Leaves sessile, oval and obovate, both ends acuminate; peduncle recurved, petals lanceolate, larger than the calyx, rose colored. In Carolina, figuered by Catesby 1, perhaps the type of Tr. Cernuum of Linnæus. Var. 1, Obovatum. 2, Incarnatum.

30. Tr. Hamosum. Raf. Leaves sessile, rhomboidal rounded, base acute, end sharply acuminate, membranaceous, trinerve; peduncle very short, reflexed, crooked like a hook, calyx and petals oblong lanceolate obtuse, petals larger and white. In the Pocono mountains of Pennsylvania; root fasciculate, fibrose, stem six inches only, leaves and flower small, discovered by Mr. Steinhauer.

31. Tr. Medium. Raf. (Tr. Cernuum of our modern botanists.) Leaves shortly petiolate, broadly rhomboidal, both ends abruptly acuminate, five-nerved, reticulate; peduncle recurved short, calyx and petals equal, ovate lanceolate, flat white. From New England to Virginia. Var. 1, Gracile. 2, Pudicum. 3, Undulatum. 4, Grandiflorum.

32. Tr. Glaucum. Raf. Leaves sessile, broad deltoid, both ends acute, glaucous beneath, five-nerved and reticulate: peduncle reflexed, calyx and petals subequal,

oval obtuse, calyx erect, petals reflexed back, and white. In Pennsylvania, near Philadelphia, Maryland, Virginia, &c. This is the Tr. Cernuum of W. Barton, Fl. Am. fig. 40.

33. Tr. Divaricatum. Raf. Leaves sessile, obovate acuminate: peduncle divergent, horizontal, petals lanceolate acute, longer than the calyx, flat and purple. In the Alleghany and Cumberland mountains, six inches high.

III. Sub-genus *Delostylium*. A *style*; *stigmas* three: *Flowers* pedunculate.

34. Tr. Stylosum. Nuttal. Leaves with short petioles, oval lanceolate, acute at both ends; peduncle recurved, very short, petals oblong obtuse, undulate, larger than the calyx, a style as long as the stigmas. In the Southern States. Stem a foot high or less; slender, petals rose colored. This is probably the Tr. Cernuum of Michaux.

Of the above, the most commonly used are the T. nutans, T. pictum, T. rodundifolium, T. grandflorium, T. medium, and T. longifolium. But this preference is chiefly founded on the circumstance that these are the most common species, and hence more readily obtained.

The roots of these plants are commonly oblong or terete, tuberose, dark or brownish on the outside, white within, from one to five inches in length, and from a half to one and a half in diameter, beset with fibres laterally. They have a faint odor and a peculiar acrid astringent and sweetish taste.

Analysis.—The root of the trillium contains *Volatile oil*, a little *Gum*, *Resin*, *Extractive*, *Tannin*, and much *Fecula*. Water is its best menstruum, but spirit will take up its stimulant and tonic virtues, as well as the astringent to some extent.

Therapeutic Properties and Use.—The trilliums are acrid but rather mild astringents, diaphoretics, anti-septics, expectorants, vulnerants, and tonic. They have long been in medical use among the Indians. They considered them capable of promoting parturition: hence, one of the vulgar English names. The most astringent varieties are highly esteemed as a remedy for hæmoptysis, hematuria, and uterine hemorrhage. The most acrid are regarded of much value in asthma, hectic fever, and catarrhal cough. All are considered serviceable in leucorrhœa, amenorrhœa, and all morbid discharges from mucous tissues.

Externally applied, in the form of a cataplasm, the roots and tops are of great service in the treatment of mortified

parts, ulcers, cancers, carbuncles, buboes, poisonous bites and stings, burns, and chill-blains.

The medicine is best taken in substance, but may be exhibited in decoction, syrup, tincture, infusion, or extract. The *dose* of the powder is *gr.* x—*gr.* xxx. That of the extract is *gr.* v—*gr.* x. The latter is prepared in the same way as directed for the preparation of the extract of cornus florida.

STATICE.—The Root

SYNONYMES.—STATICE CAROLINIANA; STATICE LIMONIS; Statice d'Amerique, *Fr.;* Marsh Rosemary, *Eng.;* American Thrift, *Vul.*

BOTANY.—*Sex. Syst.* Pentandria Monogynia, *Linn.;* Pentandria Pentagynia, *Wood.*—*Nat. Ord.* Staticea, *Raf.;* Plumbaginaceæ, *Wood.*

Gen. Char.—*Calyx* monophyllous, scarious, and plaited. *Petals* five, inserted on their claws. *Pistil* one. *Styles* five. *Seed* one, invested by the *calyx*, *Raf.*

Spec. Char.—*Root* perennial, large, fleshy, fusiform or branched, premose or obtuse, purplish-brown. *Radical leaves* erect, on long petioles, cuneiform, entire, very smooth, with only one nerve; end broader, obtuse, but with an acute point. *Scapes* long, slender, round, smooth, loosely pannicled at the top. *Flowers* sub-sessile, blue-colored, axillary to an ovate, mucronate scaly bract. Grows plentifully in the salt marshes along the sea-coast from New England to Florida. It flowers in August and September.

ANALYSIS.—The dried root contains *a Volatile Oil, Tannic Acid, Gum, Extractive, Albumen, Resin, Caoutchouc, Coloring matter, Lignin,* and various *Salts.* It yields its virtues most freely to boiling water.

THERAPEUTIC PROPERTIES AND USE.—Statice is powerfully astringent and somewhat tonic. It may be considered analogous, in its properties, to Geum, and may be used in the same way and for the same purposes as that. It is very much employed throughout New England, and is considered particularly serviceable in cynanche maligna, and aphtheous sore mouth. It is commonly prepared in strong decoction and taken freely.



Statice Limonium.

CATECHU.—The Extract of the Wood.

Synonymes.—Catechu, *Ger.;* Cachou, *Fr.;* Catecu, Catin, Catto, *Ital.;* Catecu, *Span.;* Cutt, Hin. Catechu, *Eng.*

Botany.—*Sex. Syst.* Polygamia Monœcia.—*Nat. Ord.* Leguminosæ.

Gen. Char.—Hermaphrodite. *Calyx* five-toothed. *Corolla* five-cleft. *Stamens* four to one hundred. *Pistil* one. *Legume* bi-valve. Male: *Calyx* five-toothed. *Corolla* five-cleft. *Stamens* four to one hundred, *Willd.*

Spec. Char.—Acacia Catechu. *Willd.* A tree from fifteen to twenty, but sometimes thirty feet high, with hard and heavy wood, of which the interior is of a dark-red or brownish color, and the sap-wood white. *Branches* with stipulary thorns. *Leaves* bi-pinnate. *Pinnæ* ten to fifteen pairs. *Leaflets* thirty to fifty pairs; linear oblong, unequal and auricled on the lower side at the base; *petiole* angular, often armed in arid situations with a row of prickles on the under side, with one large *urceolate gland* below the lowest pair of pinnæ, and smaller ones between the two and four terminal ones. *Inflorescence* a spike, one to three together in the axillæ of the leaves. *Flowers* numerous, white. *Calyx* downy, five-fid. *Petals* united into a five-fid *corolla*. *Stamens* numerous, distinct, double the length of the corolla. *Ovary* shortly stipulate. *Style* the length of the stamens. *Legumes* straight, thin, flat, and smooth, with about four or six seeds. A native of the jungles and low hills of many parts of India.—(*Roxb. Corom. Plants*, 11, *t.* 175), *Royle.*

Description.—Catechu occurs either in roundish, or square pieces or balls varying in color, from a pale whitish or light reddish-brown to a dark brown; either earthy in texture, or lamellated, or presenting a smooth shining fracture. Some kinds are hence more friable than others; all are without smell; the taste is bitter, astringent, followed by a little sweetness. The pieces are generally of a darker color externally than they are in the inside. "Some of the kinds are covered with rice husks, others are enveloped in leaves, which Dr. Pereira has ascertained to be those of *Nauclea Brunonis*, a native of the Mayan peninsula. The *pale* variety

is usually distinguished from the *dark*-colored, and said to be imported from Calcutta; but we have obtained both kinds in the bazaars there, the pale being imported from the upper provinces, and the dark from Pegu and Singapore. The dark-brown Catechus are obtained from Bombay; but both kinds may no doubt be prepared from the same tree, as a greater degree of, or longer continued heat, and greater exposure to light, is said to produce the dark color. The dark are heavier, more dense in texture, and have a resinous fracture."

A large proportion of good Catechu is taken up by water, especially when boiling, the infusion being of a light or reddish-brown color according to its strength: "it reddens litmus, and is strongly astringent in taste. It yields a precipitate with the salts of Alumina, also with Acetate of Lead, and one of a blackish-green color with the salts of the Sesquioxide of Iron."

Analysis.—Sir H. Davy, in analyzing the *dark* and *pale* varieties of the drug, obtained the following results:

	Of Tannin.	Extractive.	Mucilage.	Insol. residuum.		
Dark Catechu	109	68	13	10	=	200
Pale "	97	73	16	14	=	200

"The Tannin of Catechu is very similar in its properties to that obtained from Galls. The principle called Extractive by Sir H. Davy, has by others been called Resinoid matter, Resinous Tannin, and of late *Catechine* and *Catechuic acid*. This is most easily obtained by treating Gambir with cold water: the Tannin being dissolved, the insoluble residue is impure Catechine, which may be purified by solution in Alcohol and subsequent crystallization, when it appears as a white powder, but in silky needles, and has something of a sweetish taste, producing a green color with the salts of Iron. It is composed of C^{15} H^{6} O^{6}.

Therapeutic Properties.—Catechu is a powerful astringent, and is much used by old school physicians. It is also somewhat bitter and tonic in its effects, but otherwise is rather purely astringent. Prof. Pereira gives the following as among its prominent applications:

1. *Affections of the mouth and throat*,—aphtha, relaxed uvula, &c.

2. *As a stomachic in dyspeptic complaints.*

3. *As an alvine astringent*,—in diarrhœa, dysentery, &c.

4. *As an astringent in hemorrhages of an atonic character.*

5. *In lead cholic.*

6. *In mucous discharges*,—gleet, fluor albus, crystirrhœa, &c.

7. *As a topical application to ulcers.*

Dose gr. x to 3j, taken in substance, in form of a bolus, or in a mixture with sugar.

KINO.

Synonymes.—Kino, *Ger., Fr., Ital.*; Quino, *Span.*

Description.—Kino is an organic vegetable principle, afforded by many different species of plants. The commercial drug, however, is now chiefly produced by only a few different plants of the East and West Indies, Africa, and South America. Thus we have several commercial varieties of the medicine, as 1, The *East India*, or *Amboyna Kino;* 2, *West India*, or *Jamaica Kino;* 3, *African Kino;* 4, *South American Kino.*

The East Indian variety is supposed to be produced by the Pterocarpus Marsupium. The West Indian and South American varieties, it is thought, are obtained from the Coccoloba Uvifera. It is pretty certain that the African variety is produced by the Pterocarpus Erinaceus. Another variety, called the *Botany Bay Kino*, is the concrete juice of the *Eucalyptus Resinifera.*

Kino occurs in small, irregular, somewhat angular, glistening fragments, of a dark brown or reddish-brown color, brittle, and affording a powder which is rather of a lighter color than the masses. It is without odor, and has a bitterish, highly astringent, and ultimately sweetish taste. It is not softened by heat; cold water partially dissolves it, boiling water more largely, and the saturated decoction becomes turbid on cooling, and deposites a reddish sediment. Alcohol

dissolves the greater portion. It consists chiefly of a peculiar modification of tannin, with extractive matter, and, in some of the varieties, of a minute proportion of resin.

Analysis.—Kino, according to Vauquelin, contains no *Gallic acid*, but *Tannin* and peculiar *Extractive red gum*, and *Insoluble Matter*. Its aqueous solution is precipitated by gelatine (with which it produces a green color, in consequence of the presence of a little *catuchine*).

Therapeutic Properties.—Kino is a valuable astringent, though less powerful than catechu. It is much employed by the old profession in the passive hemorrhagia. It is quite analogous, in its general effects, to the article just named, and may be used in the fulfilment of the same indications noted for that. The dose of the powder is from *gr.* xx—*gr.* xxx. The infusion is a very common form in which the medicine is exhibited. ℞ ʒijss. of the extract is to be dissolved in Oj of boiling aq., and straining when cool. Aromatics may be added, if desired. The dose of this is fʒj.

QUERCUS.—The Bark.

Botany.—*Sex. Syst.* Monœcia Polyandria.—*Nat. Ord.* Amentaceæ.

Gen. Char.—Monœcious. Male: *Catkins* long, pendulous, lax. *Stamens* five to ten. *Perianth*. Female: *Flower* solitary, with a cup-shaped scaly involucre. *Stigmas* three. *Ovary* three-celled, two of which are abortive. *Nut* or *acorn* one-celled, one-seeded, surrounded at the base by the enlarged cup-shaped involucre.

Spec. Char.—There are many species of the oak that have been reckoned among medicinal plants. The barks of them all, are more or less astringent and tonic. The following, however, are among those whose barks are considered the strongest:

1. Q. Alba: *White Oak.* A most common, majestic, hardy, indigenous forest tree, seventy to eighty feet high. *Bark* rough, grayish-white. *Branches* large. *Leaves* oblong, sinuate-pinnatifid, pubescent beneath; lobes obtuse, entire, narrowed at their base. *Fruit* peduncled. *Cupule* somewhat bowl-form, flattened at the base. *Acorn* ovate.

2. Q. Tinctoria: *Black Oak.* A large and common indigenous forest tree,

sixty to seventy feet high. *Bark* rough, black or dark colored. *Branches* large. *Leaves* obovate, oblong, a little sinuate, pubescent beneath; lobes oblong, obtuse, obtusely denticulate, setaceous mucronate. Fructification biennial. *Cupule* saucer-form. Acorn depressed, globose.

3. Q. Montana: *Chestnut Oak.* A middling sized, indigenous tree, growing in mountains and rocky places. Forty to fifty feet high. *Bark* rough, grayish. *Branches* large, crooked. *Leaves* broad, ovate, oblong, white-downy beneath, shining above, coarsely toothed; teeth very obtuse, short. *Fruit* in pairs, short peduncled. *Capsule* hemispheric; scales rugose, tuberculated. *Acorn* ovate.

4. Q. Prinos: *Swamp Oak.* A large, indigenous tree, growing in swamps and wet places. Seventy to eighty feet high. *Bark* rough, of a grayish color. *Limbs* rather slender, straight. *Leaves* long-petioled, obovate, acute, pubescent beneath, coarsely toothed; teeth equal, spread, callous at the apex. *Capsule* bowl-formed, tapering at the base. *Acorn* ovate, large, sweet-tasted.

5. Q. Falcata: *Spanish Oak.* A large, indigenous tree, growing on bottom lands, in a rich soil. Seventy to eighty feet high. *Bark* rough, grayish. *Limbs* slender, straight. *Leaves* long-petioled at the base, obtuse, downy beneath, three-lobed or sinuate, lobes sub-falcate, setaceous-mucronate, terminal one elongated. *Capsule* bowl-form. *Acorn* globose.

The Q. Pedunculata, (*European White Oak,*) and Q. Robur, (*Common European Oak,*) are European species, and made officinal in the British colleges.

Analysis.—Oak bark contains *Tannin, Gallic Acid, Uncrystallizable Sugar, Pectin, Tannates of Lime, of Magnesia, and of Potash,* &c. The inner part of the bark contains the largest portion of Tannin, particularly in the spring of the year. From the presence of this principle, a precipitate necessarily takes place with gelatine, and a blackish-colored one on the addition of a sesquisalt of Iron.

Therapeutic Properties.—Oak bark is an excellent astringent tonic, and but for its commonness, would be much more used. It is capable of fulfilling most of the indications that mark the use of acrid or bitter astringents. The extract which is made by evaporating carefully the decoction, forms one of the best applications to recent ruptures, or hernia, either in children or adults. Plasters of the extract need only be worn over the breach to insure, in many cases, a radical cure. They should be spread upon stiff leather. As a pedaluvium, in cases of chill-blains, the decoction is of great advantage.

The extract may be taken in doses of *gr* x—*gr*. xx.

GALLA.

Synonymes.—Noix de Galle, *Fr.*; Gallapfel, *Ger.*; Galla, *Ital.*; Agallas de Levante *Span.*; Galls, *Eng.*

Description.—Galls are produced as a consequence of injuries inflicted by an insect upon several species of Quercus, but particularly the Q. Infectoria, or *dyer's oak*, a shrub growing throughout Asia Minor, "from the Archipelago, to the confines of Persia."

Galls are not only known by their commercial names, but are distinguished by their physical characters, as into *blue* and *White Galls*. The Blue Galls vary in size, and are of a bluish-gray color. They are gathered before the insect has become perfect, or worked its way out. Some of these are larger, and are called Green Galls, from being of a greenish color. They display on their otherwise smooth surface, a number of bluntly-pointed tubercles, which would appear to be the apices of leaves, stimulated into unnatural growth. The best are heavy, hard, shining, and break with a short flinty fracture. White Galls are so called, from being of a lighter color than the others, but still of a grayish or yellowish hue. They are distinguished by being perforated with a small round hole, that by which the insect had escaped. They are usually less heavy than the others, have a larger internal cavity, and are not so astringent. Both are easily reduced to powder, which is without odor, but with a slightly bitter and powerful astringent taste. They yield their properties to water, which is the best solvent; also to Proof Spirit, and slightly to Alcohol and Ether.

Analysis.—From five hundred parts of galls, Sir H. Davy obtained one hundred and eighty-five of matter soluble in water, of which he states one hundred and thirty were *Tannin*, thirty-one *Gallic Acid*, with a little *Extractive*, twelve of *Mucilage*, &c., and twelve of saline and calcareous salts, the insoluble matter consisting chiefly of Lignin. But a larger proportion of Tannin has been obtained by other chemists, as from thirty or forty to sixty, instead of the above twenty-six per cent.

Therapeutic Properties.—Galls are very powerfully astringent, as may be readily inferred, from the large amount of

gallic acid that they contain. But, although they are very pure, and by no means more unpleasant to the taste than the bitter astringents generally, they have not been so much used as an internal remedy as many other articles of this order. The chief employment of galls has been as a styptic, a gargle, and as an external application. But this will not always be said of an article so potent as this. The medicine is capable, not only of supplying the place of every article of this order, but will prove successful in many cases in which the weaker astringents fail.

It has long since been known that galls will very much improve the power of the anti-intermittents. Thus, ten grains of quinine combined with twenty grains of pulverized galls will be equal to fifteen grains of quinine, given alone. As an astringent in diarrhœa, dysentery, luchorrhœa, and all depressing discharges, and especially as a styptic, few articles are of more value. Of its topical application as a styptic, and as a stimulant astringent and antiseptic, to parts affected with gangrene, ulceration, &c., it needs no encomium.—The decoction, injected into fistulous ulcers, anthracia, and the cavities of hydarthrus, will often bring about a healthy condition and dispose the parts to heal even in the most inveterate cases. Galls may be taken in powder, infusion, decoction or extract. These preparations are made in the same way as directed for other articles of this order. The dose of the powder is *gr.* x—*gr.* xx. That of the extract, *gr.* v—*gr.* x.

The following list will serve to complete the examples of this order of astringents:

1. Piper Angustifolium, (Matico,) the Herb.
2. Abies Canadensis, (Hemlock Spruce,) the Bark.
3. Rubus Trivialis, (Dew-berry,) the Root.
4. Rubus Villosus, (High Blackberry,) the Root
5. Rhus. Glabrum, (Shumac,) the Leaves.
6. Ceanothus Americana, (Red Root,) the Bark of the Root.
7. Diospyros Virginiana, (Persimmon,) the Bark and unripe Fruit.

8. Spiræa Tomentos, (Meadow Sweet,) the Leaves and Flowers.

9. Krameria, (Rhatany,) the Root.

Class IV.—NERVINES.

The term *nervine* (Nervinus, from *nervus*, a 'nerve,') is applied to that class of medicines calculated to remove nervous disorders.

All medical substances effect the nervous system to some extent, but those of this class operate upon it in a peculiar way. They in a very special manner (either by relaxing the nervous tissue or modifying its sensibility,) restrain their spasmodic action, and relieve pain.

These powers of this class are considered of two distinct orders, and are called *anti-spasmodic* and *anodyne*, which will be considered respectively.

It is supposed by some therapeutists that nervines are dependant, for their specific or peculiar effects, upon their special influence over the *cerbro-spinal* nerves. But if the new views of the celebrated Prof. M. Hall are correct, these speculations are illy founded.

It is evident that nervines very prominently effect at least two of Hall's sub-divisions, that is the cerebral, or *sentient*, and *voluntary*, and the true spinal or *excito motory:* as we find that the different remedies of this class will operate both as anodynes and anti-spasmodics.

It is not difficult to perceive how an anodyne may occasionally prove anti-spasmodic, and *vice versa*, even admitting all Prof. Hall's views, seeing that both the sentient and motory systems involve the ganglionic system, and are thus connected. Again, the circumstance of the anodynes operating as anti-spasmodics may be explained without regard to the intervention of the ganglionic system. Thus as the sentient nerves convey their impressions always *inward*, or toward the encephalon and the motory from the medulla spinalis *outward*, the anti-spasmodic effect may be the result of a reflex action.

There is, indeed, strong reason for the conclusion that all

nervines, like most other remedies produce their primary impression upon the sentient nerves, and then their anti-spasmodic effect by a reflex action.

Order I.—ANTI-SPASMODICS.

Anti-spasmodics are remedies which, as the name denotes, are calculated to assuage spasm. But as the latter is dependant upon so many different causes it is difficult to fix this order. When spasm arises from intestinal irritation, the best remedy may be found among the anthelmintics, antacids, purgatives, &c., which remove the source of irritation. Again, when spasmodic movements attend severe pain, anodynes, fomentations, and other soothing means may prove anti-spasmodic. Finally, we find mere debility, when excessive, will often occasion spasm, when tonics will afford complete relief.

There are, nevertheless, in this order of nervines a number of articles which possess a relaxing or quieting influence that seems to be of quite a specific character. It is very reasonable to suppose that the functions of the motory nerves may be specifically influenced as well as any other parts of the organization. This order is designed only to embrace such articles as are considered to have this peculiar power over the motory nerves.

LOBELIA.

Lobelia Inflata, without doubt, stands at the very head of our anti-spasmodics. But it may be well, in contemplating these virtues of the medicine, to know how much of the anti-spasmodic power that it possesses, is peculiar to it as an *individual* article, and which is not common to all nauseants.

It has already been intimated that the latter agents possess a peculiar power over the motory nerves, and that *spasmodic movement is incompatable with nausea;* and, it is evident that the anti-spasmodic power of lobelia is principally owing to its nauseating virtues; for we find that there is generally a correspondence between the extent of both these effects of the medicine. There is also some analogy existing between

the anti-spasmodic effect of lobelia and that of other nauseants.

But still we find that although these facts *generally* obtain, instances do occur, in which the anti-spasmodic effects of lobelia precede the nauseant, and again, it seems, that there is, sometimes, a want of correspondence, in the *extent* of the two. These circumstances may, perhaps, be much dependant upon the peculiar stimulant power of the medicine; but can only be satisfactorily accounted for in view of its specific anti-spasmodic virtues, which it most undoubtedly possesses.

Application.—It was remarked, in the general consideration of this order of nervines, that spasm is the result of a diversity of causes that induce nervous irritation; and it was briefly shown that a discrimination is necessary in the application of anti-spasmodic remedies. If there be an exception to this fact, it is illustrated in the paramount influence of lobelia over spasmodic action generally. Reformers may justly glory in the triumph of this article over the success of the lancet. The latter has been regarded the only general anti-spasmodic that can be at all depended on. But that it is inferior to lobelia as an agent of this kind, every one acquainted with the latter, and who has had opportunities to witness the effects of the former can fully testify. Besides, the deplorable mischiefs that are the common attendants of phlebotomy are not to be feared from the use of lobelia.

Those spasmodic affections, in which this article seems to be particularly available, are hydrophobia,* tetanus, spasmodic asthma, pertussis, hysteria, some varieties of epilepsy, apoplexy, convulsions attending the taking of poisons, (in which case emesis should always be excited), spasms attending intoxication, etc. But the medicine may be serviceable in many other cases, which the foregoing remarks will suggest.

* The author has had many opportunities to try the virtues of lobelia in this dreadful disease, and is happy to state that it has never failed to prevent the occurrence of the disease, in a number of persons that had been bitten by dogs which died in the fits of the disease, and which had bitten animals that also died of the disease.

The *dose*, or the manner of taking the medicine varies exceedingly, depending entirely upon the cause of the disease, and other existing circumstances. There should, however, always be enough given to produce nausea, and the doses must be repeated frequently, so as to keep up the nausea. In very many cases it is necessary to give enough to excite vomiting; this is especially the case in violent attacks, as hydrophobia, tetanus, and apoplexy. In such cases as the latter, the lobelia must be administered by injection into the rectum.

ICTODES FŒTIDA.—The Root, and Seeds.

Synonymes.—Dracontium, *U. S., Willd.;* Symplocarpus, *Nutt., Barton, &c.;* Pothos, *Mich. Pursh.;* Spathyema Fœtida, *Raf.* Calls Arum; Stinkende Zehrwuntz, Biskatzenkraut, *Ger.;* Anhangsel, *Hol.*; Swamp Cabbage, Skunk Cabbage, *Eng.;* Skoka, *Ind.;* Skunk-weed, *Vul.*

History.—This singular plant is peculiarly a native of America, but in 1735, it was introduced into England by P. Collinson, Esq. Its medical character has been variously regarded by the profession. But, excepting with a few individuals it had never gained much attention, until it came in use by our Botanic physicians.

Botany.—*Sex. Syst.* Tetrandria Monogynia.—*Nat. Ord.* Aroideæ.

Gen. Char.—*Calyx* a spathe; *Spadix* simple, covered with flowers. *Perianth* coral-like, deeply four-parted, permanent, becoming thick and spongy. *Style* pyramid-form, four-sided. *Stigma* simple, minute. *Berries* globose, two-seeded, inclosed in a spongy spadix-receptacle.—*Eaton.*

Spec. Char.—*Root* perennial, large, abrupt, and thickly beset with numerous large fleshy fibres. *Leaves* very large; sometimes two feet in length, about one or more in width, radical, numerous, folded at first, then spreading, with long grooved petioles, strongly veined, oblong, pointed, cordate, fleshy, entire, smooth, of a green color when mature. *Spath* ovate, acuminate, auriculated at the base, folded, appears before the leaves, of a brownish-purple, and speckled with red, yellow, and green. *Flowers* within the spath, purplish, numerous, crowded upon a globose peduncled, spadix. *Seeds* globular,

many, large, embedded in the spadix beneath the syles. The flowering time is early in the spring.

The plant is characterized by a peculiar odor, but which is supposed, by some, to be somewhat similar to that of the Viverra Mephritis, or Skunk.

W. P. C. Barton has given the figures and descriptions of two species, that he calls Symplocarpus Fœtida, which is the most common one, and S. Angustispatha, so called from its narrow spathe. The entire plant of this latter species, though in the main resembling the former in its general appearance is more slender, narrow-leaved, and narrow-spathed. The latter is of a plain purple, that is, it is not speckled. Its medical virtues do not differ from those of the former. Both species grow in low wet grounds, as meadows and in swamps.

Analysis.—The root of the Ictodes, contains a *Volatile Oil*, *Volatile Fatty Matter*, *Fixed Oil*, *Wax*, and *Fecula*. The virtues of the plant consist in its volatile principles, and has hitherto eluded all our menstruums.

Physiological Effects.—This plant was formerly regarded as poisonous, which idea had its origin in the circumstance of its disagreeable odor. But it is now considered harmless. In its recent state the root is very acrid and imparts a taste and impression upon the mouth, very analogous to those of *arum*, though not quite so powerful as the latter article. In large doses, it proves stimulant, and evinces a marked influence over the nervous system, demonstrating its anti-spasmodic power.

Therapeutic Properties and Use—If we except the *lobelia*, there is no better general anti-spasmodic than the *ictodes*. Although the medicine has chiefly been regarded for its expectorant virtues, by our practitioners, it is very certain that its anti-spasmodic powers are five times more valuable than these.

Both the root and seeds may be given with confidence, as a general anti-spasmodic, but are particularly serviceable in cases of spasmodic asthma, pertussis, hysteria, the convulsions attending pregnancy, and parturition, &c. The dose is from ten to twenty grains of the fresh root, and from twenty to one drachm, of the dried root or seed.

The medicine is to be given in substance, as it does not yield its virtues to either alcohol, ether, water, or oil, to any considerable extent. This fact should not be overlooked seeing that not only the reputation of a very valuable remedial agent is at stake, but much time may be lost in depending on ineffectual preparations of this article, which in many cases may determine the fate of the patient.

The common practice of combining this with other articles, when preparations of it are made, has much tended to prevent the discovery that its virtues are not imparted to the common menstruums.

Age or even dessication impairs its virtues, and boiling destroys them entirely. These facts are important to be borne in mind.

ASSAFŒTIDA.—The Gum-resin.

Synonymes.—Ferula Assafœtida; Stinkasant Teufelsdreck, *Ger.;* Ungoozeh, *Per.*; *Οπος κυρηναικος, Gr.*; Hilteet, *Arab.*; Assafetida, *Ital.;* Asafetida, *Span.;* Assafetida, *Vul.*

History.—Assafœtida, a product of Persia and Affghanistan, is mentioned in the ancient Sanscrit Amera Cosha. The ancients highly esteemed a gum-resin which the Romans called *Laser*, and the Greeks *οπος κυρηναικος*, or the Cyrenaic Juice, from being produced in that region. The plant *σιλφιον* yielding it was an Umbellifer, and is represented on the coins of Cyrene. It has been discovered of late years, and named *Thapsia Silphium.* This Laser had become scarce even in the time of Pliny, who as well as Dioscorides describes anoth, er kind as obtained from Persia, India, and Armenia, which was probably the same that was known to the Hindoos. Avicenna describes *hulteet* as of two kinds; one, of good odor from Chiruana (Cyrene?), and the other fœtid, the present *Assa-fœtida.* The term *assa* is no doubt of oriental origin, since it is applied to other gum-resins. Thus Benzoin is called *hussee looban;* it used to be called *Assa dulcis* in old works. Dr Lindley has received the seeds of a Ferula called *hooshee. Anjedan*, the fruits or seeds (*φυλλον* of the Greeks), is usually translated *Laserpitium.* The plant is called *Angoozeh* by the Arabs. The root of *Silphion* is described by Arrian, as

tida and Galbanum in the Alcohol with the aid of a water affording food to herds of cattle on Paropamisus. *Royle.*

Assafœtida is a product of Asia, found in the south of Persia, on the mountains of Fars and of Beloochistan, but principally in Khorassan, and Affghanistan; also, on the north of the Hindoo Khoosh range of mountains.

Botany.—Assafœtida has generally been considered to be the product of the *Ferula* genus, and is no doubt yielded by it, as stated by Kæmpfer and others, who report from actual observation. The following is the *Botany* of the *Ferula Assafœtida.*

Sex. Syst. Pentrandia Digynia.—*Nat. Ord.* Apiaceæ or Umbellifera.

Gen. Char.—Margin of the *Calyx* shortly five-toothed. *Petals* ovate, entire, acuminate, with an ascending or incurved point. *Fruit* flattened at the back, with a dilated flat border. *Mericarps* [half-fruits] with three dorsal filiform ridges, the two latter obsolete and lost in the dilated margin. *Vittæ* in the dorsal channels three or more; in the commissure four or many. *Seed* flat. *Carpophorus* bipartite.—*Herbs. Root* thick. *Stem* tall. *Leaves* supra-decompound; the segments usually divided into linear lobes. *Umbels* of many rays, lateral, often opposite or verticillate. *Involucre* various. *Flowers* yellow. *De Cand.*

Spec. Char.—*Stem* terete, simple, clothed with leafless sheaths. *Leaves* radical, pinnatisect; the segments one or two pinnatifisinuate; lobes oblong, obtuse. *Involucre* none. *De Cand.*

Dr. Falconer, superintendant of the East India Company's Botanic Garden, at Saharunpore, thinks that the true *Assafœtida* plant belongs to a "genus allied to, but distinct from, Ferula," and which he calls *Narthrex.* In an account of the plant, which he sent to Dr. Royle, he says:—

"*Narthex*, both in the characters of the flowers and fruit, and in its 'Pæony-leaved' habit, differs widely from any known species of Ferula, and appears to constitute a distinct and well-marked genus.

"In the Dardoh or Dangree language (the Dardohs being the Daradi of Arrian) the plant is called 'Sip' or 'Sup.' The

young shoots of the stem in spring are prized as an excellent and delicate vegetable.

The species would appear to occur in the greatest abundance in the provinces of Khorassan and Laar in Persia, and thence to extend on the one hand into the plains of Toorkestan on the Oxus north of the Hindoo Khoosh mountains, where it seems to have been met with by Sir Alex. Burnes, and on the other to stretch across from Beloochistan, through Candahar and other provinces of Affghanistan to the eastern side of the valley of the Indus, where it stops in Astore, and does not occur in great abundance. The whole of this region, which constitutes the head-quarters of the gum-bearing Umbelliferæ, possesses the common character of an excessively dry climate, indicated in Berghaus's hygrometric map in Johnson's Physical Atlas, by a belt of white.

"Besides the gum-resin, the fruit of *Narthex Assafœtida* is imported into India from Persia and Affghanistan, under the name of 'Anjoodan,' being extensively employed by the native physicians in India: 'Anjoodan' being the epithet applied to the seed of the 'Heengseh,' or 'Hulteet,' by Avicenna, also quoted by Kæmpfer, and used by the Indo-Persian and Arabic writers generally in describing the Assafœtida plant. Another umbelliferous fruit is also imported with it, and sold under the name of "Dooqoo' a word evidently connected with the δαυκος of the Greeks), being recommended as an excellent substitute for 'Anjoodan,' which it closely resembles in its general appearance. This I found to be the fruit of a species of true Ferula; it is one of the two Assafœtida-like fruits mentioned by Dr. Royle as occurring in the bazarrs of northern India. The species of Ferula yielding this fruit may furnish some one of the obscurely-known gum-resins resembling Assafœtida produced in Persia."

Description.—Assafœtida is obtained by making incisions into or taking successive slices off the top of the root, and then collecting the produce, which is united in masses, and in this state is usually, met with in commerce. It is at first soft, but becomes hard, of a yellowish or reddish-brown color. When broken, an irregular, whitish, somewhat shining surface is displayed, which soon becomes red. The

mass is composed of various-shaped pieces, some like tears pressed together, and in some parts agglutinated together by darker-colored gum-resin. Some parts are cellular. By thus becoming red on exposure to the air, and its intolerable alliaceous odor, assafœtida may be readily distinguished. The taste is garlicky, bitter, and acrid. It is best preserved covered by bladder. It is powdered with difficulty, even when hard; softens by heat, and burns with a clear flame. *Royle.*

Analysis.—Assafœtida is composed of *Resin* 65 parts, *Volatile Oil* 3·6, *Gum* 19·44, *Bassorin* 11·66, *salts* 0·30. (*Pelletier.*) Brandes obtained less *Resin*, *Volatile Oil* 4·6, and 10·5 of various salts and impurities. The Oil is at first colorless, but becomes yellowish-brown, has an exceedingly offensive odor, a bitter and acrid taste, and contains some Sulphur. Water will dissolve the Gum, and form an emulsion with the other ingredients. Pure Alcohol is a good solvent, but on the addition of water the tincture turns milky owing to the elimination of the resin.

Pharmaceutic Preparations.—MISTURA ASSAFŒTIDA. L. D. U. S. *Assafœtida Mixture, or Emulsion.* ℞ Rub up, until well mixed, Assafœtida ʒv, (ʒj. D.) Aq. Oj. L. (Aq. Pulegii gradually added by measure ʒviij. Make an emulsion, D.) (Assafœtida ʒij., Water Oss. U. S.)

Action. Use. Anti-spasmodic. Useful in Hysteria, and feigned diseases.

TINCTURA ASSAFOETIDA, L. E. D. (U. S.) *Tincture of Assafœtida,* ℞ Take Assafœtida (in small fragments, E.) ʒv. (ʒiv. rub it up in Aq. ʒviij. by weight, D.) (ʒiv. U. S.) Macerate for fourteen days (7 E.) in Rectified Spirit Oij. (℔ij. by weight, D.) Strain. (Not easily made by percolation, E.)

Action. Use.—Anti-spasmodic. Prescribed in Hysterical cases, &c., in doses of fʒj—fʒij.

EMPLASTRUM ASSAFOETIDA, E, (U. S.) *Assafœtida Plaster.* ℞ Melt together Assafœtida ʒij. Galbanum ʒj. Strain them. Add melted Lithurge Plaster ʒij. and Bees' Wax ʒj. Mix thoroughly.

℞ Assafœtida, Lead Plaster, Galbanum, Yellow Wax, each half a pound; Diluted Alcohol Oiij. Dissolve the Assafœ-



Scutellaria Lateriflora

bath ; strain the liquor while hot, and evaporate to the consistence of honey ; then add the Lead Plaster and Wax previously melted together, stir the mixture well and evaporate to the proper consistence. U. S.

Action. Use.—Anti-spasmodic. Applied to the epigastrium, or over the abdomen in protracted hysteria, and to the chest or between the shoulders in whooping cough.

PILULÆ ASSAFOETIDA; *Assafœtida Pills.*—℞ Select a pure article of Assafœtida, warm it by the fire ; form into pills and coat them with gum or flour.

SCUTELLARIA.—The Herb.

Synonymes.—Toque Lateriflore, *Fr.* ; Sculcap, Madweed, Hoodwort, Blue Pimpornel, *Vul.*

History.—Scutellaria was known as early as 1772 when it was brought into notice by Dr. Vandesveer, as a prophylatic against hydrophobia. It was stated that from the time of his discovery till 1815, the period of his death, he by means of this plant, had prevented hydrophobia in 400 persons, and 1000 cattle, that had been bitten by mad dogs. His son is also said to have cured 40 persons with it, in the space of three years, in New York and New Jersey. In the first part of the present century, the plant sustained great popularity as a remedy for hydrophobia. But at present, its character as such is insignificant, since it has been denounced by Barton, Tully and others, as being inefficient

Botany.—*Sex. Syst.* Didynamia Gymnospermia, Linn.—*Nat. Ord.* Labitæ, *Juss.*

Gen. Char.—*Calyx* bilabiate persistent, upper lip with a lid covering the seeds like an operculum. *Corolla* bilabiate, upper lip concave entire, lower trilobe. *Seeds* four in the closed calyx. *Raf.*

Spec. Char.—There are several species of scutellaria that possess very nearly the same virtues.

1. S. Lateriflora.—*Root* perennial, fibrous, yellow. *Stem* erect, one to three feet high, branched, smooth, quadrangular. *Branches* opposite. *Leaves* on long petioles, opposite, thin, entire, subcordate, ovate lanceolate, acute, dentate, slightly rugose. *Flowers* pale blue, situated laterally on the long axillary racemes,—whence the specific name,—bractated, each flower axillary to a bract. Grows in open and wet places, pastures and meadows. Flowers from July to September.

2. S. Hysopifolia.—*Root* perennial, branched, fibrous. *Stem* eight inches to two feet high, four-sided, sometimes simple, but usually very much branched above; branches opposite erect, terminating in loose racemes, garnished with bracts.—*Leaves* lanceolate—oblong, obtuse, attenuated at base; those at the root ovate, with one or two obscure teeth, petioled. The few first pairs of the stem very entire, sub-petioloid, with petiole somewhat winged; upper stem leaves sessile.—*Corolla* bilabiate, with lower lip divided, invested densely with down, purplish, with a white confluent, divided spot on the lower lip of the palate. *Stamens* flax-blue. *Anthers* purple, globose. *Pistil* blue. The entire plant covered with a dense, short down. Grows in low wet grounds. Flowers in July and August.—Perennial.

3. S. Galericulata. *Stem* branching. *Leaves* sub-sessile, lance-ovate, at the base, crenate, a little white-downy beneath. *Flowers* large, blue, axillary, subcordate to the pairs. A native of Europe and America. Flowers in June. Perennial.

4. S. Integrifolia. *Stem* rather simple, densely pubescent. *Leaves* lower ones, ovate, crenate, tapering to the base; upper ones lance-linear, obtuse, entire, sessile. *Racemes* loose, leafy. *Flowers* blue. Grows in low grounds. Flowers in July.

Analysis.—Scutellaira contains, 1. An *Essential Oil*. 2. *Fixed Oil*, soluble in ether. 3. A *Bitter Principle*, soluble in water, alcohol, and ether. 4. *Chlorophylle*. 5. A *Peculiar Volatile Matter*. 6. *Albumen*. 7. A sweet *Mucous Substance*. 8. A *Peculiar Astringent Principle*. 9. *Lignin*. 10. *Chloride of Soda* and *other Salts*.

Water and alcohol extract its medical virtues.

Therapeutic Properties and Use.—Scutellaria is of late considerably used by Reformers as an anti-spasmodic and nervine tonic. Many practitioners esteem it very highly, and the medicine bids fair once more to become popular.

Prof. Rafinesque says "it has been used chiefly, of late, in all nervous diseases, convulsions, tetanus, St. Vitus' dance, tremors, &c., and has availed in many instances. In hydrophobia, it appears to be a good prophylactic, if not a certain cure: a physician, (Dr. White, of Fishkill,) bitten by a mad dog, has assured me that himself alone avoided the disease by using it, while others bitten by the same dog, died. Many instances of the same kind are on record: nay many, who believe in this property, say that it never fails. We lack, however, a series of scientific and conclusive experiments made by well informed men; they have been discouraged by the ridiculous denial of sceptics."

The author has treated a number of persons that had been

bitten by rabid animals, (which at the same time also, had bitten other animals, and which went mad,) with a combination of this article and lobelia, and it affords him pleasure to state that, in every case the remedy was a successful prophylactic. He has been disposed to believe, however, that the lobelia was the principle agent that effected the purpose.

The scutellaria may be used in powder, decoction, infusion, or extract. The dose of the powder is from *gr.* xx to ʒj.

PHARMACEUTIC PREPARATIONS AND USE.—TINCTURA SCUTELLARIA: *Tincture of Scutellaria.* ℞ Scutellaria ʒiijss. Alcohol Oij, digest in the sun for seven days and strain.

Action. Use.—An excellent Nervine tonic, and moderately good anti-spasmodic. Useful in most nervous diseases that are accompanied with debility. *Dose* fʒj—fʒiij.

EXTRACTUM SCUTELLARIA: *Extract of Scutellaria.* ℞ Scutellaria ʒxvj. Aq. Ovj. Boil for three hours and strain; evaporate to proper consistence.

This extract is best given in the form of pills. From *gr.* v to *gr.* x is a dose.

MUSCHUS.

SYNONYMES.—Bisam, *Ger.;* Musc, *Fr.;* Muschio, *Ital;* Amizcle, *Span.;* Kustooree, *Hindoo;* Mishk, *Arab.;* Musk, *Eng.*

HISTORY, ETC.—"The Musk animal differs from common Ruminants, in the absence of horns, and in having long canine teeth on each side of the upper jaw. It inhabits the mountainous regions of central Asia, extending from the Himalayas to the Atlai Mountains, and from these to China. Hence, as in the case of rhubarb from the same regions, we have Russian, China, and Indian musk. It is singular that the common Hindoo name of the musk, and in the Himalayas that of the musk animal, is *kustooree*, a name similar to Castoreum, a substance which musk so closely resembles in nature. The name *musk* is no doubt derived from the Arabic *mishk* or *mooshk*, which is evidently the same word as the Sanscrit *mooshka*. This has been used as a perfume and as a medicine by the Hindoos from very early times. It seems to have been adopted from the Hindoos by Serapion, but it was previously mentioned by Ætius.

"The musk animal is particularly distinguished by the males secreting the remarkably strong-smelling secretion called

Musk, in a plano-convex, oval, hairy bag, of which the orifice is situated just before the præputial orifice. The sac is flat, smooth, and naked above, where it is applied to the abdomen, convex below, and hairy, composed of several coats. The musk is secreted by small gland-like bodies situated in little pits on the most internal of these coats. The quantity in each sac varies from one and a half to three drachms. It is most abundant in the rutting season, and when fresh is soft, and of a reddish-brown color. When dried, and contained in its native sacs, it forms the musk of commerce. The kinds known are the Chinese and Siberian; the last is inferior, in its fragrance to the other. The Chinese is probably from the same kind of cold and lofty regions as the Himalayan. Some of this is imported into and apparently consumed in India." *Rolye.*

Zoology.—*Class:* Mammalia, *Linn.* *Order:* Pecora, *Linn.;* Ruminantia. *Cuvier.*

Gen. Char.—*Horns* none. *Fore-teeth* eight in the lower-jaw. *Tusks* one on each side in the lower, projecting out of the mouth.

Spec. Char.—Moschus Moschiferus, *Gmelin.*

The animal bears a close resemblance to the deer tribe in shape and size. It is usually less than three feet in length, with the haunches somewhat more elevated than the shoulders. The want of horns and the projecting canines have already been mentioned. There are, altogether, thirty-two teeth: namely, eight incisors in the lower jaw, two canines in the upper, and twenty-four molars. The canines are not met with in the female. The ears are long and narrow, and the tail very short. The fleece, which consists of strong, elastic, undulated hairs, varies in color with the season, the age of the animal, and perhaps the place which it inhabits. The general color is a deep iron-gray. The individual hairs are whitish near the root, and fawn-colored or blackish towards the tip. The gestation of the female was quite unknown until Mr. Hodgson, in Nepal, ascertained that it was about one hundred and seventy days. They are extremely timid, mild, and gentle in their nature. Found on the tops of difficultly-accessible and generally open moun-

tains, usually in the neighborhood of the snow, but coming nearer to the plains according to the inclemency of the seasons, springing from rock to rock with great agility.

Description.—"Musk is in grains or lumps, soft and unctuous to the touch, of a reddish-brown color, with a powerful, penetrating, and diffusive smell. It is usually adduced as an instance of the subtlety of the particles of matter. The taste is bitter, disagreeable, and somewhat acrid; very inflammable. Rectified spirit and ether are the best solvents of musk. Analyzed by different chemists, it has been found to contain a variety of principles, as Stearine, Elaine, Cholesterine, an Oily Acid combined with Ammonia, free Ammonia, various salts and animal principles, as Albumen, etc., an Odoriferous Principle, which seems particularly attached to the Ammonia. But the quantity and portion of the constituents vary considerably, perhaps from the difficulty of obtaining specimens which have not been subjected either to abstractions or to additions. The hunters even are said to adulterate it, and if they do not, the Chinese merchants do."

Therapeutic Properties and Use.—Musk is an anti-spasmodic and stimulant, which has long been in use. In its effects it appears rather to exalt nervous power, while at the same time it regulates it. "In almost all spasmodic diseases," says Dr. Wood, "so far as mere relaxation of spasm is desirable, it is more or less efficacious; but peculiar advantages may be expected from it in those cases in which a prostrate condition of the system, attended with great nervous agitation, or irregular muscular action, calls for the united influence of a highly diffusible stimulant and powerful antispasmodic. Such are very low cases of typhus disease, accompanied with subsultus tendinum, tremors, and syngultus. Such, also, are many instances of gout in the stomach, and other spasmodic affections of this organ." He also names "convulsions of infants, which have their origin in spasms of the intestines," epilepsy, hysteria, asthma, pertussis, palpitations, cholera, and colic as being "among the numerous spasmodic affections in which circumstances may render the employment of musk desirable."

PHARMACEUTIC PREPARATIONS.—MISTURA MOSCHI, L.: *Musk Mixture.*—℞ Rub up Musk and Sugar, aa. 3iij; then add powdered Acacia, 3iij; gradually adding Rose Water, Oj.

TINCTURA MOSCHI, D.: *Tincture of Musk.*—℞ Digest for seven days, Powdered Musk, 3ij; in Rectified Spirit, by measure, ℔j. Strain.

CASTOREUM.

SYNONYMES.—Bibergeil, *Ger.*; Castoreum, *Fr.*; Castoro, *Ital.*; Castores, *Span.*; Castor, *Eng.*

HISTORY.—This article was employed by Hippocrates. He considered it to possess a power of acting on the uterus. The Arabs also used the medicine, and described it under the head of *joond bedustur*. Dioscorides gives a description of the animal. It is singular, however, that the castor sacs were formerly confounded with the testicles. The castor sacks can be distinctly seen only on the removal of the skin of the abdomen. Besides these, there are two others, i. e. oil sacks. All are situated between the pubic arch and the cloaca, a common hollow which is covered with a wrinkled hairy protuberance, into which open the oil and castor sacs, and the rectum and prepuce. The castor sacs are somewhat pear-shaped and compressed, communicate by the same opening at their narrow extremities, but their fundi diverge. Like the musk-bags, these sacs have several coats; within all there is a convoluted mucous membrane, covered with scales, with a small brownish body, supposed to be a gland. The secreted matter, or castor, in these sacs is at first of a yellow orange-color, but turns of a brownish color as it becomes exposed to the air.

ZOOLOGY.—*Class* Mammalia, *Linn.* *Order* Rodentia, *Cuvier;* Glives, *Linn.*

Gen. Char.—*Incisors* four, two above and two below. *Canines* none. *Molars* sixteen; four in each maxillary on either side. Five toes on each foot, the anterior short and close, the posterior long and palmated. *Tail* broad, thick, flattened hoizontally, of an oval form, naked, and covered with scales.

Spec. Char.—*Castor Fiber* (*Linn.*) *Fur* consisting of two sorts of hair, one coarse and brownish, the other downy, more

or less gray. About two feet long. The usual color of the beaver is brown, but individuals of other colors have been met with, as black, yellow, white, and spotted, but the latter two are rarely met with. The animal is remarkable for its habits, in building huts and dams, and in Europe, for their burrowing.

Description.—"Two kinds of castor are known in commerce: one American, imported by the Hudson's Bay Company, and the other Russian, which is very rare. This may be distinguished by a tincture of 1-16th part in alcohol being of the color of deep Sherry; while that of the American castor is of the color of London porter. The American, moreover, effervesces when dropped into an acid, which the Russian does not do. (*Per.*) The sacs are usually united together by a part of the excretory duct, and sometimes the oil sacs may be seen with them. Internally they are divided into numerous cells, of which the membranes may be seen when the castor is dissolved out; or when torn they may be seen intermixed with the castor, which often breaks with a resinous fracture, and is of a reddish-brown color." The odor is strong, fœtid, heavy, and the taste bitter, rather disagreeable. *Royle.*

Analysis.—The chemical constituents of castor are a *Volatile Oil, Resin, Ozmazome, Albumen, Mucus; Urate, Carbonate, Benzoate, Phosphate* and *Sulphate of Lime*, with *Salts of Soda* and Potash, some *Carbonate of Ammonia*, and a peculiar *non-saponifiable substance*, which crystallizes, and has been called *Castorin*; but there has been no proof given of its being the active principle.

Therapeutic Properties and Use.—Castor is an anti-spasmodic of some reputation. Some have questioned its power as an agent of this kind. But Dr. Trousseau has justly remarked that, "we are not justified in inferring that, because a medicine does not affect those in health, that therefore it will have no effect on those laboring under disease, especially when this is of a nervous nature." He found it decidedly useful in many nervous and spasmodic affections, and in all its actions to resemble valerian and assafœtida rather than musk.

He recommends its union with tincture of assafœtida or of aloes. It may be exhibited in powder or in pills in doses of ʒss—ʒij.

PHARMACEUTIC PREPARATIONS.—TINCTURA CASTOREI (ROSSICI,) D. L. E. U. S. *Tincture of Castor.* ℞ Macerate for 14 (7, D.) days bruised (Russian, D.) Castor ʒijss. (ʒij. D., U. S.) in Rectified (Proof, D.) Spirit Oij. (by measure ℔ij D.) Strain. (Prepare by digestion or percolation, as Tinct. Cassia, E.)

Action. Usc.—This article is intended to be anti-spasmodic, but is too weak a preparation.

TINCTURA CASTOREI AMMONIATA, E. *Ammoniated Tincture of Castor.* ℞ Digest for seven days in a well-closed vessel, Bruised Castor, ʒijss.; and Assafœtida, in fragments, ʒx; in Spirit of Ammonia, Oij. Strain and express strongly the residuum. Filter the liquor. Not conveniently prepared by percolation.

Action. Usc.—"Stimulant Anti-spasmodic in doses of fʒj—fʒij. The Spirit of Ammonia is a good solvent, and both itself and the Assafœtida are useful in the same class of cases as the Castor."

ORDER II.—ANODYNES: PAREGORICS.

The terms *Anodyne* (from α,αν, *priv.*, and ωδυνη, *pain*,) and *Paregoric* (from παραγορεω, to *mitigate*, to *assuage*,) are terms applied to medical substances which possess the power to allay pain.

It is not a little strange that the general medical profession should, in the present advanced state of physiological and therapeutic knowledge, be so unaccountably inclined to confound the narcotic and simple paregoric effects of agents upon the system. It is admitted, indeed, by all experimentalists that, a narcotic power is not necessary to the development of the simple paregoric or pain-assuaging effect; but, practically the mass of practitioners, nay, even most of the *professors* and *authors* on practical medicine, have lost sight of this very important truth.

Narcotics have universally been employed to fulfil indications requiring simple paregorics alone; and it would seem that practitioners could scarcely think of relieving pain without recurring to opium.

Errors so gross, and which involve matters of so much importance, cannot be too soon abandoned.

Nervines or cerbro-spinants, as they have been called, possess properties whose action upon the system is characterized by quality of impression as well as that of any other class of agents. These qualities, as must be presumed, are dependent upon different principles contained in the article used.

Would it not be an anomaly in nature to find that all other organic substances possess not only different physical principles but different medical virtues, these alone can have but a single identicle power? Rhubarb possesses two apparently opposite powers, *astringent* and *cathartic*. Sanguinaria is emetic, cathartic, diaphoretic, expectorant, antiseptic and corroberant, some of which properties seem also to be in opposition to each other. With these facts before him, the author feels safe in risking the paradoxical theory that contemplates an anodyne power in some of our remedies, independently of any narcotic properties.

It might not, indeed, be venturing too far, if it were even assumed that the soporific power may be independent of the sedative.

The doctrine which contemplates a sedative power necessary to the development of a full anodyne effect, or even the *soporific*, stands opposed to observation: and does it not conflict with the doctrine of animal magnetism?

The principles of the new anti-poison system very justly exclude narcotics and sedatives, as medical agents, from our Materia Medica: nay more—articles *otherwise valuable*, are also rejected when found to be possessed of these properties to any considerable degree. Thus, opium, stramonium, hyoscyamus, digitalis, &c., are not admitted.

Nevertheless, refusing to investigate articles of this kind could only be regarded as a display of the greatest folly. The improvements in organic chemistry, for which the present age is distinguished, have made it an easy matter to analyze medical agents, and to isolate the valuable and harmless principles from those that are useless and pernicious. Thus opium, and many other similar articles, have been made the subjects of experiment with the most gratifying success.

Modus Operandi.—It must be admitted that the sensibility may be morbidly increased, as well as any other emdowment of the nerves. To say that this principle is incapable of derangment is to assume more than has been proven of any other principle or structure of the entire system.

Now that the nerves are susceptible of being sanatively influenced in such a way as may moderate excessive or morbid sensibility is not in the least more strange, than that *other* specific influences should be developed. The questions, why and how do *stimulants*, *tonics*, or any other class of agents produce their respective specific effects? are no less difficult of solution. The reason why one agent will stimulate one organ or set of organs to a certain specific action, and another, *different* ones, is chiefly dependent upon the special endowments of those structures. It is very improper to conclude that an agent capable of modifying sensibility when morbidly exalted, by obviating the cause of such derangement, is, necessarily, a sedative power, any more than any other agent which may modify other excessive or morbid movements, by removing *their* cause.

Application.—Objections have been urged against the employment of anodynes, on the ground that pain is nature's "intelligencer," reporting encroachments or the invasions of disease; and, that as its intensity is always indicative of the extent of the mischief or danger, it should not be interfered with under any circumstances.

Irritation, fever, inflammation, etc., are also "intelligencers" of the invasion of disease; and do we never attempt to modify them by removing their causes? Nor is pain always an index to the extent of the mischief or danger of disease. What comparison is there between the danger and pain of tooth-ache, arthritis, paronychia, ferunculus, the sting of a bee, or even a slight burn or the contusion of the finger-nail? And is not the chief indication, in all these cases, the mitigation of pain?

Nothing is more clear than the range of influence possessed by this order of remedies, it being dependant upon the manifestations of pain. All the particulars to be observed in their employment, are two obvious points: *First*, it is im-

portant to know just how much of our future diagnosis and prognosis may be dependant upon the development of pain, so that when this is our chief index to the case we may be governed accordingly in our efforts to assuage it. *Secondly* it is well to know the particular circumstances that give rise to pain. This is not always the result of a morbidly increased sensibility, but may be depandant upon various mechanical conditions, etc., in which, if it were even proper to employ anodynes, they would be of little avail. In *cephalalgiae* occasioned by violent congestion, *pain* caused by the obtrusion of foreign substances into sensitive parts, *that* attending surgical operations, etc., cannot reasonably be supposed to be susceptible of much mitigation until the several causes are discontinued or obviated. Paregorics, therefore, would be of little avail here.

EXTRACTUM PAPAVERIS, NON NARCOTUM.

It has long been a desideratum to find a potent and harmless anodyne that can always be depended on. This has been a matter of still greater concern with reformers than with old school men, for as the principles of the latter do not lead them to reject sedatives or narcotics, they have used opium, and thus have supplied the place of an article like that in question. True, reformers have never employed opium and *cannot*, agreeably to our principles. Now, although the author is prepared here to offer to the profession a number of preparations that are just what we need to perfect our Materia Medica in all its classes and orders of remedies, and which, representing a potent anodyne, will possess therapeutics with the long sought member that will complete the grand phalanx of remedial powers, he has his misgivings as to the propriety of presenting them at the present juncture. Our system, though established in its principles, is not yet under the patronage of men whose opportunities for observation and maturity of judgment will enable them to take a proper position under all circumstances of real or apparent innovation.

Opium has ever been justly denounced, by all true reformers as an *unsafe* and "*treacherous*" remedy. But no truly enlightened and scientific medical man will presume to say that this article is not possessed of at least three different medical properties, which, if isolated, would not only be

perfectly safe in their use, but eminently valuable; these are its *anodyne*, *stimulant* and *diaphoretic* properties, than either of which there is not a single power in medicine of more importance. Now, to say that our present knowledge of organic chemistry is insufficient properly to analyze opium, or to isolate its valuable principles, would be the greatest insult to good sense, nay, it would be what is contradicted in the analysis of almost every valuable article of our Materia Medica.

Preparation.—Take of the capsules of the *Papaver Somniferum* or white poppy, immediately after the petals have fallen off, lbj. Aq. Cong. ijj. Fresh lime ʒiij. Animal Charcoal ʒiij. Bruise the capsules and macerate in Cij of the Aq. at the ordinary temperature, for ten days, and strain; boil down to the consistency of syrup; remove to a water-bath and evaporate to perfect dryness; dissolve in one-half gallon more of the water, at 50°, to which the lime is previously added; let it stand for twenty-four hours in a cool place, and filter; evaporate as before to perfect dryness; dissolve in the remainder of the water, at a temperature of 50°; add the Animal Charcoal and boil; set aside until cool; filter; evaporate as before to perfect dryness, and rub into powder.

The philosophy of this process is as follows:—As the great objeo tis to procure the anodyne principle of the plant divested of its narcotic and other mischievous agents, the process must be conducted with strict reference to the chemical character of those several principles as well as that of the principle to be obtained.

The first thing to be known, is the physical and chemical properties of the substance to be obtained. This is an extractive and may be *named* according to fancy, either in allusion to its origin or its properties; for present convenience it may be called *Anodynum.* It is extremely soluble in water, cold or hot, also in Alcohol and sparingly in Ether. The next step is to know the physical and chemical properties of the principles that are intended to be rejected. Experiments have proven these to be several, and to be possessed of different characteristics. One of the most pernicious principles, —the narcotic power,—is nearly neutral, in reference to its chemical reaction; it has been called *Narcotina* and *Narcotin* according as it has been considered alkaline or neutral, bearing the former name with those persons who consider it an alkaline substance. This is not very soluble in water, especially when cold. In using this menstruum, therefore we, in the very first part of the process, get almost entirely rid of the narcotina. It is completely insoluble in milk of lime, so

that in the filtration of the second solution we remove it entirely.

Another, and perhaps the most powerful and mischievous of all the constituents of the plant, is called *Thebaina*, and sometimes *Paramorphia*, from its resemblance in physical properties to morphia.

This is an alkaline substance, which, when pure, is insoluble in water, but as existing in the plant in combination with meconic or the sulphuric acid, is sparingly dissolved in it, but it is readily precipetated with lime which neutralizes the acid, and thus lets the thebaina fall. Here also, then, we find that on filtering the second solution the last trace of this principle is removed. Thebaina is said to resemble strychnia and brucia in its effects upon the system. Whence the spasms and other terific symptoms that opium sometimes produces upon the nervous system.

Morphia is an alkaline constituent of the poppy that is combined with the meconic acid, and is somewhat soluble in water, but when free from narcotina and thebaina is quite mild in its effects, and is considerably anodyne. It is not precipitated by the lime, but may be thrown down, if desired, by means of ammonia.

Codeia, another alkaline principle, is also a constituent of this plant and is found combined, like morphia, with mechonic acid. It is insoluble in alkaline solutions, and is hence removed in the fliltration of the second solution. Codeia, according to some authors, is not particularly injurious in its influence. It is somewhat anodyne, and is supposed to be still more mild than morphia.

Narceine, Meconin, Meconic acid and some other unimportant constituents have also been discovered in the plant, but they have never been found to have any influence over the system in any way, and although a number of them are retained in the extract, it is a matter of no consequence. The object of the Animal Charcoal is to remove the coloring matter, while the additional filtration will also be of importance, as when the previous processes may have been imperfectly or unskillfully conducted, this will still insure success.

This preparation may be made from opium by observing the following particulars: A half pound of opium is taken in place of the capsules; and then making three several processes of the first solution, that is, only one-third of the two gallons first ordered is taken, and, after digesting, straining, and pressing, one other third is taken in the same way, and, after this, the remaining portion, thus to take up all the strength of the opium. The three solutions are then to be

evaporated together as directed for the first solution of the preparation from the capsules. After this the process is to be conducted in the same way as in the corresponding part of the other process.

Action. Use.—This, if properly prepared, is an invaluable article of medicine, possessing the anodyne, diaphoretic, and stimulant properties of the opium without any of its pernicious principles.

It is unnecessary to enlarge in reference to its application. Very few practitioners will be at a loss here. A few hints in relation to the principles which should govern its use will be all-sufficient. *First*, its anodyne power indicates its use in nervous irritation, attended with pain, as in neuralgia, tetanus, and all cases in which there is an excruciating and depressing sensation, arising from local irritations as in carcinoma, the passing of calculi through the biliary ducts, ureters, and urethra, as well as from the presence of foreign bodies in wounds. Sometimes, also, there is a perpetuation of pain by the irritation resulting from various other obstructions, as in colic, amenorrhœa, suppressed lochia, etc. *Second*, its anodyne, diaphoretic, and stimulant powers make it eminently serviceable in the secondary stage of dysentery, cholera, etc. In fever also, and especially in the low nervous grades, these properties make it one of our best remedies. The constipation that commonly follows the use of opium is not here to be feared, for although in some cases it seems to act somewhat in this way, this is by no means to be expected in all cases. In the *third* place, it is proper to remark that in pectoral affections, especially when there is much irritation of the mucous surface, this article is second to none in point of utility. Its use, in those cases, will generally be attended by the manifestations of a soothing influence over the pulmonary organs, and an arrest of the hacking and coughing, that will generally be followed by an easy expectoration from the effects of the stimulant power of the medicine.

As a local application to assuage pain, a solution of the extract may be applied. *Dose*, from one-eighth of a grain to half or three-fourths of a grain, according to circumstances.

Misapprehensions sometimes occur in reference to the character or safety of some of our concentrated remedies, and it has been objected that no article that is not a poison is limited to so small a compass. But it must be remembered that a single grain of some of the alkaloids or extracts contains the power of perhaps an ounce of the crude substances from which they are obtained. Then when two grains are taken there may possibly be the force of two whole ounces! Who, for instance, would think of giving even an ounce of any of our prominent medicines, as lobelia and capsicum. From a half to five grains of lobelina is a full dose, and more would be as improper as an increase of the dose of the medicine in question. It should be bourn in mind that intrinsically the medicine is harmless, and hence when mischief follows its use, it must be attributed to the circumstances attending its employment, as in other cases in which innocent articles are made to result in mischief.

PAPAVERUM ACETAS.

℞ Proceed, as above directed, for the preparation of the denarcotized extract. When completed, dissolve in pure acetic or pyroligneous acid, in the proportion of one ounce to every drachm of the extract; evaporate to perfect dryness; rub into powder, and bottle up speedily.

The author formerly prepared an article very similar to this from morphia, in the following way: ℞ Morphia, ʒj; Sulphuric Ether, fʒiv; Pyroligneous Acid, fʒiij; Aq., fʒvj. Boil the morphia in the ether slowly for ten minutes to denarcotize it; filter, and dissolve what remains on the filter in the water and acid, previously mixed; evaporate in a water bath to the consistence of syrup. This preparation is conveniently made, but it is not so good as the others, as it is not so well freed from the narcotic power. Still the excess of acid very much atones for this.

Action. Use.—Same as the foregoing. *Dose*, from a fourth of a grain to half a grain.

LACTUCA.—The Extract.

Synonymes.—Laitue, *Fr.*; Lattig, *Ger.*; Lattuga, *Ital.*; Lechuga, *Span.*

Botany.—*Sex. Syst.* Syngenesia Æqualis.—*Nat. Ord.* Compositæ—Cichoracæ, *De Cand.*; Cichoraceæ, *Lind.*

Gen. Char.—*Receptacle* naked. *Calyx* imbricated, cylindrical, with a membranous margin. *Pappus* simple, stipitate. *Seed* smooth, *Willd.*

Spec. Char.—It is uncertain, in the present stage of inquiry in reference to the physiological effects and therapeutic properties of the Lectucas, as to how many of the species should be admitted into our Materia Medica. Some of them have been considered narcotic and sedative in their effects.

1. L. ELONGATA: *Wild Lettuce.* *Root* biennial. *Stem* from three to six feet in height, cylindrical, terete, smooth. *Leaves* clasping, long, smooth below; lower ones toothed, and runcinate; top ones lanceolate. *Flowers* in corymbose panicles, small and of a pale yellow color. The stem and leaves, when wounded, emit a milky juice. Indigenous, and growing in all latitudes of the United States, from Canada to the Carolinas. It is common in open woods and uncultivated fields. Its flowering time is in June and July.

2. SATIVA: *Garden Lettuce.* Of this species there are so many varieties that a general description is difficult. The Var. *Romana* has oblong, straight leaves, narrowed at the base. Var. *Crispa* has sinuate-crenate leaves, toothed, undulated, crisped; the radical ones hairy on the keel. Var. *Laciniata* has the lower leaves pinnatfid, and *the upper ones runcinate.* Fructification same as the foregoing Introduced, cultivated in gardens as a salad.

There are other species; some of which have been made officinal, as the *L. Virosa*, or European species, which is considered quite narcotic and sedative in its effects; *L. Hirsuta*, *L. Integrifolia*, *L. Sanguinea*, *etc.*. But little is yet known of their therapeutic character.

DESCRIPTION.—When young, the leaves of Lettuce contain a peculiar pellucid pleasant-tasted juice containing mucilage and sugar; but when the flowering stem begins to appear, the juice becomes milky, bitter in taste, and of a strong and peculiar odor. These characteristics increase until the flowers have blown. "If slices of the stem be cut off, or incisions be made into its cortical portion, the milky juice exudes, and on drying becomes of a brownish color, forming what is called *Lettuce Opium* or *Lactucarium*, to which Dr. Coxe, of Philadelphia, and Dr. Duncan, sr., of Edinburgh, first called attention. Dr. François subjected it to further examination, calling it *Thridace.* Lactucarium is prepared by collecting the above exuded juice, and by pressing out



Lactuca Elongata.

that of the incised stems when in flower, and then evaporating it to the proper consistence in a water-bath. This forms the best kind. It is of the consistence of a dry extract, and is sold in roundish rather hard lumps, having a brown color, an opium smell, and a bitter, mixed with a little acrid taste. It is apt to attract moisture. It yields to analysis about half its weight of Bitter Extractive, Wax, and Resin, with a principle analogous to Caoutchouc, in considerable quantities. No crystalline principle has as yet been discovered."

Physiologcal Effects.—Authors generally have regarded the L. Virosa as being considerably narcotic and sedative; and some also consider the L. Sativa of like character, although many assert that from extensive trials of its virtues, they were led to conclude that it is not only a pure anodyne, but a most valuable medicine. One thing is certain, that when *young* the latter is not possessed, to any considerable extent, of these powers, it is eaten in quantities so large as would necessarily produce unequivalent testimony on this point; yet, although the general opinion is that when lettuce is eaten, as usually prepared at table, to something near a full meal, which would amount to from eight ounces to a pound, it will dispose the individual to sleepiness, and in some persons it will give rise to obtuseness or dullness of feeling, still there is no evidence of a sedative narcotic power. Sleep is a physiological phenomenon, and when not attended with debility or any other unpleasant condition, it cannot be said to be the result of a mischievous influence.

The *L. Elongata* is perhaps more purely anodyne than any other one of the species. *M. Aubergier*, who made numerous experiments with different species of lactuca with a view to ascertain from which lactucarium might be most advantageously obtained, appears to have furnished evidence that this species is absolutely without narcotic power.

Therapeutic Properties.—There can be no rational doubt in reference to the therapeutic virtues of the lactuca. The medicine has been fully tested by many experienced practitioners, and competent judges. It is applicable in most cases in which anodynes are indicated, but particularly in

the distressing irritation that often attends pulmonary affections. In some cases of phthisis there is a distressing hacking, and coughing dependent upon an irritable condition of the nerves, and which has seemingly become chronic. Some of the preparations of lactuca will obviate this irritation and thus relieve the patient astonshingly. Some practitioners who have been in the practice of using opium, on their discovery of the virtues of this medicine, have been induced to employ it in preference to the former, stating that this, though not quite so active as that potent article, possesses to some extent its calming influence over the nerves without being attended with any of the unpleasant effects that often follow the use of opium. Among other affections in which the lactuca is particularly useful, are chorea, nuralgia, periodic headache, hemicrania, gout, tetanus, and other spasmodic affections. The medicine is never used in substance as the quantity necessary is too inconvenient. It is important to bear in mind that all the species of lectua require to be in full maturity before they are fit for medical use.

Pharmaceutic Preparations.—LACTUCARIUM: *Lettuce Opium.* This which is the medical portion of the plant, has been obtained in various ways. One method is to cut the stalk transversely, remove the juice repeatedly as long as exuded, then cutting again at a short distance below, and thus continuing until the stalk is gone. This juice is inspissated in the sun, and forms the lactucarium, a darkish colored substance of the consistence of opium.

The London College direct an extract, prepared by inspissating the expressed juice of the leaves.

The best plan to procure the lactucarium is to cut up in small transverse pieces, the entire plant when in flower, and placing it in layers between clean pieces of linnen, of suitable size, and pressing under a screw, or by other means.—The cloths absorb the milky juice, which may then be removed by soaking in a very little water for a day, and then wringing and pressing the cloths. The liquid may then be inspissated spontaneously in shallow vessels placed in the sun.

Dose, from *gr.* v—*gr.* xx.



Cypripedium Pubescence

PHARMACEUTIC PREPARATIONS.—EXTRACTUM LACTUCA; *Extract of Lettuce.* ℞ Take of lettuce bark, (obtained by scraping the stalk of lettuce when in bloom, and drying,) ℔j. Dilute Alcohol Ovj, digest for four days, strain and press. Evaporate the tincture spontaneously to the proper consistence.

Dose, *gr.* v—*gr.* xv.

VINUM LECTUCA: *Wine of Lettuce.* ℞ Bark of Lettuce, prepared as above, ℔j. Good Madeira Cj. Digest for seven days strain, and press.

Dose, f℥j.

TINCTURÆ LACTUCA: *Tincture of Lactuca.* Prepared with Dilute Alcohol as directed for the Vin. Lactuca.

Dose, f℥iij—f℥vj.

CYPRIPEDIUM.—The Root.

SYNONYMES.—Frauenschuh, *Vul. Ger.*; Venus Jaune, *Fr.*; Ladies Slipper, American Valerian, Umbil. &c., *Vul.*

BOTANY.—*Sex. Syst.* Gynandria Diandria.—*Nat. Ord.* Orchideæ.

Gen. Char.—*Calyx* colored, four-sepalled, spreading. *Corolla* none—by some the calyx is considered a corol.—*Nectary* large, hollow, inflated. *Style* with a terminal lobe, and petal-like appendage on the upper side.—*Eaton.*

Spec. Char.—All the species of the present genus possess analogous virtues. There are some six species discovered with many varieties, which are best noticed separately.

1. C. PUBESCENS, (*Barton* &c.) C. LUTEUM, (*Raf.* &c.) *Roots* perennial, fibrous, fleshy, undulated or crooked, long, about a line in diamater, and of a peculiar, somewhat aromatic taste and smell. *Stem* round, leafy about a foot to eighteen inches in height. *Leaves* large, sheathing, oblong, lanceolate, entire, plaited, cauline, generally only about four in number, nearly the same on both sides. *Flowers*, of singular structure, generally solitary; the corolla considered by Prof. Eaton as being a colored calyx, is four-petaled; petals long, linear, pointed, generally spiral, of a brownish yellow or siskin-green color, nectary or labellum very large, globular or mocason-shaped, of a bright gamboge yellow. The entire plant is pubescent.

Rafinesque, who calls this species *lutenum*, makes eight varieties, viz: 1. Pubescens,—pubescent throughout; 2. Glabrum,—nearly smooth; 3. Grandiflorum,—slightly pubescent, labellum very large; 4. Parviflorum—slightly pubescent, labellum small; 5. Maculatum—labellum more or less spotted with red dots, lobule often red; 6. Biflorum,—with two flowers and bracteoles; 7. Concolor—the whole flower yellow, or yellowish, unspotted; 8.

Augustifolium—leaves and bracteoles lanceolate. Grows throughout the United States in woods and rich soil.

2. C. Spectabile.—*Leaves* crowded, embracing each other, rather sheathing, elliptical, very acute or accuminate at the apex, and attenuated at the base, nerved or plated. *Petals* white broad-ovate. *Nectary* deeply striped with reddish-purple; belly white, and spotted internally with red. Grows in mountainous land. Flowers in June. Often two-flowered. Pubescent throughout.—Not very common.

3. C. Acaule.—Identical with the *Humile* of W. P. C. Barton. *Root* perennial, an irregular bulb, beset with numerous carnose fibres. *Leaves* two, radical ovate lanceolate, pubescent, sheathing each other, and the scape deeply nerved. *Scape* naked about eight or twelve inches high, erect, embraced by the folded leaves while the plant is in flower. *Flower* solitary, terminal. *Petals* dull purplish-green or purple and yellow, long. *Nectary* large, pendulous, globose, lake-red, delicately striped with darker lines of the same hue. Grows in most parts of the United States, in shady swamps and morasses, in accumulations of mould or decayed vegetable matter, more rarely in dryer and poorer places. It flowers in May and June.

4. C. Candidum.—*Stem* leafy. *Leaves* lance-oblong. *Flower* white; lobe of the style lanceolate, rather obtuse; lip compressed, shorter than the lanceolate petals. Not very abundant.

5. C. Arietinum. (Eaton.) *Stem* leafy, about six inches high. *Lobe of the style* orbicular, obtusish. *Petals* five; the two lower ones lance-linear, deflexed; the two lateral linear, spreading; upper one ovate-oblong, acute. *Lip* of the length of the petals, ob-conic before, saccate. Grows in Canada and Maine.

6. C. Parviflorum.—This is the *Calceolus* of Michaux. *Stem* leafy. *Flower* whitish-green; *ovate lip of the style* triangular, acute. Outer *petals* oblong-ovate, accuminate, inner ones linear, contorted. *Lip* compressed, shorter than the petals. Grows from New England to Virginia.

Therapeutic Properties.—Cypripedium is an excellent nervine, and, when properly exhibited, proves anodyne. As usually prepared, however, its virtues are not displayed to the fullest extent, as we find that water will not take up all its valuable properties; and, when taken in substance, it is inconvenient to take a quantity sufficient.

The alcoholic extract is the only form in which the medicine can be administered with a hope of displaying its full powers. This preparation will be found available in most cases of nervous derangement, but particularly in subsultus tendinum, shaking palsy, and all cases of pure nervous debility. The author arrested at once a most alarming paroxysm of delirium tremens, with two doses of this medicine.

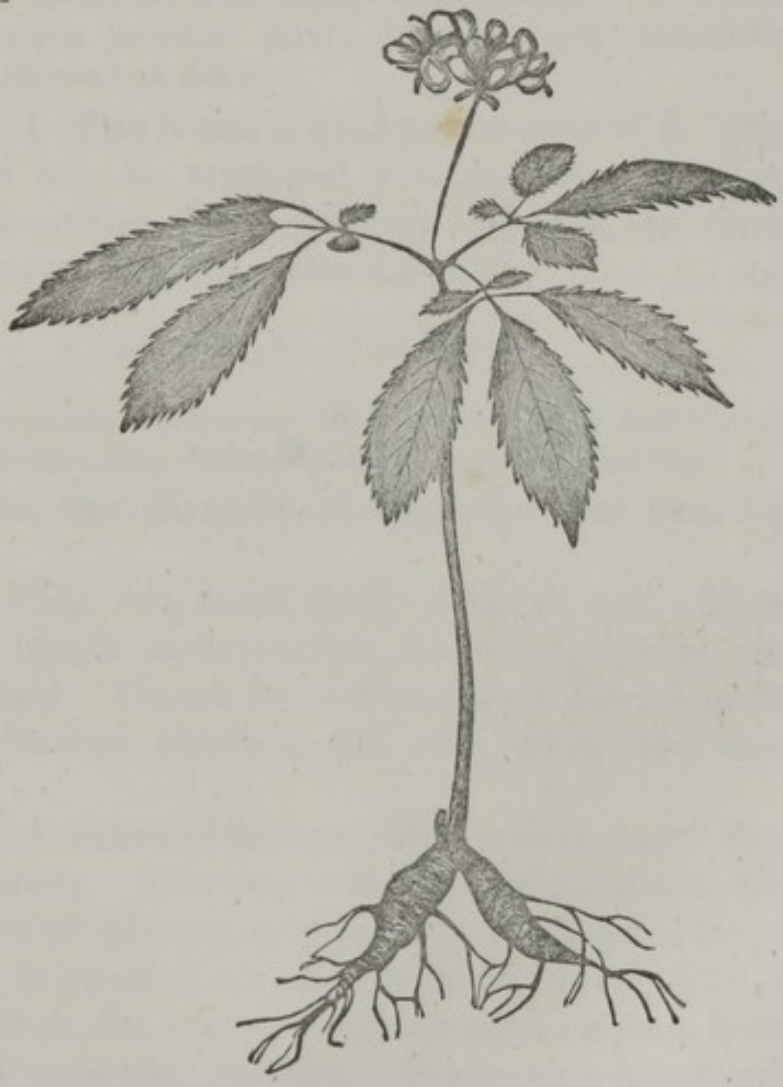
There is little doubt, but that the improved mode of its ex-



Cypripedium Spectabile.



Cypripedium Humile.



Panax Quinquefolium.

hibition will again restore this article to its former reputation in the new physiological practice.

The dose of the powder is 3ss.—3jss.

PHARMACEUTIC PREPARATION.—EXTRACTUM CYPRIPEDIUM: *Extract of Cypripedium.* ℞ Cypripedium, in coarse powder, ℔ij; Alcohol Cj; proceed by percolation to obtain the tincture; distil off until there remains one pint; place over a water or sand bath and evaporate to the proper consistence.

Action. Use.—This preparation contains the virtues of the plant in a highly concentrated form, and is hence an article that may be employed with confidence in all cases in which a nervine tonic and mild anodyne is required. *Dose gr.* x—*gr.* xx.

TINCTURA CYPRIPEDIUM: *Tincture of Cypripedium.* ℞ Cypripedium, in coarse powder, 3xvj; Alcohol, Ovij; macerate ten days, and decant or filter.

Action. Use.—This is also a good preparation of the cypripedium, and may be employed with confidence in most cases in which articles of this order are indicated, especially in cases of nervous debility. *Dose* f3j—f3iij.

VALERIANA.—The Root.

SYNONYMES.—VALERIANA OFFICINALIS; Valeriane, *Fr.*; Wilde Baldrinwurzel, *Ger.*; Valeriana Silvestre, *Ital.*; Valerian Sylvestre, *Span.*; Valerian, *Eng.*

BOTANY.—*Sex. Syst.* Triandria Monogynia.—*Nat. Ord.* Valerianaceæ.

Gen. Char.—*Calyx* very small, finally enlarged into a feathery pappus. *Corolla* monopetalous, five-lobed, regular, gibbous at the base. *Capsule* two-celled, (Lond. Encyclopedia of Plants.) *Stamens* exserted, one, two, three, and four. *Nutt.*

Spec. Char.—A native of Europe. Herbaceous plant. *Root* perennial tuberous. *Stem* two to four feet high, smooth, furrowed. *Leaves* all pinnate, or pinnately cut; leaflets lanceolate-dentate, in seven to ten pairs, terminal one very little, if at all, larger than the others. *Inflorescence* a corymb, becoming at length somewhat panicled. *Bracts* ovate-lanceolate. Calyx-limb involute during flowering, then unrolled into a deciduous pappus, consisting of many plumose setæ. *Corolla*

roseate; tube funnel-shaped, gibbous at the base; limb five-lobed. *Stamens* three. *Fruit* smooth compressed, one-celled, one-seeded.

Description.—The root is the officinal portion. As brought to us, it consists of numerous long, slender, cylindrical fibres, issuing from a tuberculated head or rhizoma. Its color, externally, is yellowish or brown—internally, white. The taste is, at first, sweetish, then bitterish or aromatic.

Analysis.—Trommsdorf found the root of valerian to consist of 1·2 parts of *Volatile Oil;* 12·5 of a *Peculiar Extractive*, soluble in water, insoluble in ether and alcohol; 18·75 of *Gum;* 6·25 of a soft, odorous *Resin;* and 63 of *Lignin*. The virtues appear to reside in the essential oil, and, perhaps, the resin; they are imparted to alcohol, and, to some extent, to water.

Therapeutic Properties.—An excellent nervine tonic, and somewhat anodyne in large doses; very applicable in hysteria, hypochondriasis, epilepsy, hemicrania, and most nervous affections of this kind. *Dose* of the oil four or five drops; that of the root *gr.* xxx—ʒjss. The decoction, or extract, is nearly insipid.

Pharmaceutic Preparations.—INFUSUM VALERIANÆ, D. (U. S.) *Infusion of Valerian.* ℞ Digest for one hour the root of Valeriana Sylvestris in coarse powder ʒij, in boiling Aq. by measure ʒvij. When cold, strain. (U. S. Valerian ʒss., boiling Water Oj.)

Action. Use.—Moderate stimulant in doses of fʒj—fʒij.

TINCTURA VALERIANÆ, L. E. D. (U. S.) *Tincture of Valerian.* ℞ Take bruised (powdered, D.) Valerian Root ʒv; (ʒiv D. U. S.); Proof Spirit Oij, (by measure ℔ij.) Macerate for fourteen (seven, D.) days. Strain. (Proceed by percolation or digestion, as for Tinct. Cinchonæ, E.)

Action. Use.—Stimulant adjunct to draughts, in doses of fʒss. to fʒiv.

TINCTURA VALERIANÆ COMPOSITA, L. (AMMONIATA), E. D. (U. S.) *Ammoniated Tincture of Valerian.* ℞ Take Valerian Root bruised ʒv, (ʒij, D.) (ʒiv, U. S.); Aromatic Spirit of Ammonia Oij, (Spirit of Ammonia Oij, E., by measure; ℔j, D.) Macerate for fourteen (seven, D.) days, and strain. (Proceed by percolation, as directed for Tinct. Cinch. E.)



Sanicula Marilandica.

Action. Use.—Anti-spasmodic, and more stimulant from presence of ammonia; may be given in doses of f3ss—f3ij.

SANICULA.—The Root.

Botany.—*Sex. Syst.* Pentandria Digynia.—*Nat. Ord.* Umbelifereæ.

Gen. Char.—*Carpels* hispid, with hooked prickles. *Calyx* five-parted, permanent. *Umbel* sub-simple, capitate. *Involucre* few-flowered, *Eaton*.

Spec. Char.—There are several species, of analogous properties. But the *S. Marylandica* is the most commonly employed. This has a perennial fleshy, fibrous root; young radicles whitish; older ones darker, of an aromatic taste and rather grateful smell. *Leaves* digitate; leaflets oblong, gashed. *Flowers* white; part fertile, sessile and sub-ternate; others barren, pedicelled and the most numerous. The variety *Canadensis*, has its leaves sub-ternate; leaflets ovate, and coarsely toothed. Both grow from one to three feet in height. Found in most parts of the United States, in woods and new grounds.

Therapeutic Properties and Use.—Nervine tonic, and slightly anodyne in large doses. Very analogous to valerian, and may be substituted for it. It is a useful adjunct to other more powerful anodynes. Applicable in most nervous affections. Said to be a remedy for snake-bites. The virtues reside chiefly in a volatile oil, procured by distillation with water. Its decoction and extract, as may be inferred from the fact of its virtues existing in a volatile principle, are almost worthless. *Dose* of the powdered root, 3ss.—3jss.; that of the volatile oil, v to x *gtt.*

ASARUM.—The Root.

Synonymes.—Asarum Canadensis; Canadischeschlangenwurzel, *Ger.*; Canada Snake-Root, *Eng.*; Wild Ginger, *Vul.*

Botany.—*Sex. Syst.* Gynandria Decandria.—*Nat. Ord.* Aristolochiæ.

Gen. Char.—*Calyx* somewhat bell-form, three or four-cleft, superior. *Corolla* none. *Anthers* proceeding from the mid-

dle of the filaments. *Stigma* six-cleft. *Capsule* coriaceous, six-celled, crowned with the calyx, *Eaton*.

Spec. Char.—*Rhizoma* horizontal, fleshy, about a third of an inch in diameter, jointed, beset with radicles, of a fragrant and peculiar smell and spicy taste. *Leaves* broad reni-form, in pairs, wooly. Fructification close to the ground, singular. (*See Generic Description.*)

THERAPEUTIC PROPERTIES AND USE.—An aromatic nervine tonic, and in large doses anodyne. It may, like valerian, be used in most cases of nervous derangement, and forms an excellent adjunct to more active articles of this order. Its virtues reside chiefly in a volatile oil, and are hence most readily imparted to alcohol, but are also yielded to water in virtue of its extractive and mucilage. It is chiefly employed in the form of tincture and the essential oil. The dose of the latter is from five to ten drops. The tincture is taken in doses of from a tea-spoon-ful to a table-spoon-ful. The infusion is prepared strong and taken freely. The powder is inconvenient, as the dose necessary is too large.

PANAX.—The Root.

SYNONYMES.—PANAX QUINQUEFOLIUM; Ginseng, *Ger., Fr., Span.*; Ginsen, *Ital.*

BOTANY.—*Sex. Syst.*—Pentandria Digynia (Polygamia Diœcia. Linn.)—*Nat. Ord.*—Araliaceæ.

Gen. Char.—*Flowers* polygamous. *Umbel* simple. *Calyx* five-toothed. *Corolla* of five petals. *Berry* inferior, sub-cordate, two, sometimes three-sided. *Calyx* in the male flower entire.—*Nutt.*

Spec. Char.—*Root* perennial, tuberose, spindle-shaped, often dichotamous. *Stem* annual, about a foot high, simple, round, smooth, and divided at the summit into petioles. *Leaves* compound, consisting of five, more rarely seven or three petiolate, oblong, lanceolate, ovate, accuminate, serrate leaflets. *Flowers* small, greenish, and arranged in a simple umbel, supported by a penduncle, which rises from the fork of the stem. The plant is indigenous, and found in rich open wood-lands in most parts of the United States.

THERAPEUTIC PROPERTIES AND USE.—The genseng is a mild

aromatic nervine tonic and annodyne, in large doses. Its popularity as a medicine or universal panacea, among the Chinese, is well known. Its virtues are nearly similar to those of Valerian or Sanicle. It may be employed in all nervous affections dependant upon debility and irritability. It should be taken in substance, although the dose is necessarily large. It contains an essential oil, and abounds with fecula and gum. It yields its virtues to some extent to alcohol and water. Dose ℈ij—3jss.

Camphor, Cajupeti, Crocus Sativus, Ictodes, &c., are among other examples of this order, not noticed.

PULVIS ANODYNUM.

℞	Ext. Pap. Nonnarcotum,	3j
	Camphorum,	3ij
	Pul. Lobelia,	3ij
	Pul. Ictodes,	3ij

Pulverize the camphor by moistening first with alcohol and then mix the articles well.

Action. Use.—One of the best anodyne and anti-spasmodic preparations the author has ever used. Scarcely anything like it in assuaging *after pains*, and the distress attending dismenorrhœa. *Dose gr.* j—*gr.* iij.

Class V.—ALTERATIVES—EUTROPHICS.

The profession has for many years admitted a class of remedies, which, although capable of effecting an important influence upon the condition of the system, do not, like most articles, produce effects immediately sensible, but seem to display their power either directly on the elements of the blood, in modifying its condition so as to influence the functions of assimilation, or they operate on the nervous system, and thus indirectly effect the functions of secretion, assimilation, and the metamorphosis of the tissues. These remedies are called *alteratives*, as they simply alter the condition of the system, without apparently invoking any mechanical or evacuent effects. The term, however, is rather too general, and may mean

much more than is intended in this restricted sense. All medicines, in one sense, are alteratives, as they literally alter the condition of the system, or at least are intended to alter it from a pathological to the physiological state. Some authors have esteemed the term *eutrophic* (from ευ, '*well*,' and τροφη, '*nourishment*'; i. e. *well nourished*) best, as they have supposed this class of agents to produce their effects upon the functions of assimilation only.

Alteratives, as understood here, are agents, therefore, that will sooner or later, after their exhibition, produce an improvement upon the symptoms and the constitution, without evincing any other evidence of their action. It may, however, be readily supposed, that it will be difficult in all cases, to judge whether any improvement that may follow the use of alteratives, is really the effect of the medicine, or whether it is not simply the result of the recuperative power of the system.

It will be observed, that although alteratives are considered to be agents which do not necessarily occasion any evacuation from the system, still there are articles embraced in this class, that are also evacuent. Such articles are not embraced here with any view to their additional properties, being found to produce effects that could not be attributed to any other principle, but that characterizing the action of alteratives proper, and these being their most prominent virtues, they are here embraced.

Application.—Alteratives are more applicable to chronic forms of disease, particularly those that implicate more peculiarly the glandular and cuticular tissues, as scrofula, phthisis, syphilis, and the exanthema.

SARSAPARILLA.—The Root.

Synonymes.—Sarza; Smilax Officinalis, *L.*; Smilax Sarsaparilla, *D.*; Sarsepareille, *Fr.*; Sarsaparille, *Ger.*; Sarsapariglia, *Ital.*; Zarzaparilla, *Span.*

Botany.—*Sex. Syst.* Diœcia Hexandria.—*Nat. Ord.* Smilaceæ

Gen. char.—Male: *Calyx* six-leaved. *Corolla* none. Female: *Calyx* six-leaved. *Corolla* none. *Styles* three. *Berry* three-celled. *Seeds* two, *Willd.*

Spec. Char.—1. SMILAX SARSAPARILLA. This was considered by most authors to be the source of the drug, until of late. But it is doubted by some of the most respectable writers whether any of the Sarsaparilla of the shops was ever procured from this species It is a native of the United States. Its stem is long, slender, shrubby, angular, and beset with prickles. The leaves are unarmed, ovate, lanceolate, with about five nerves, rather glaucous beneath, and supported alternately upon foot stalks, at the base of which are long tendrils. *Flowers* three or four on a peduncle which is longer than the petiole. Grows in swamps and hedges in the middle and southren states.

2. SMILAX OFFICINALIS. This species was discovered by Humboldt and Bonpland in New Grenada, on the banks of the Magdalena, in Colombia. As its roots are collected by the natives, called *Zarzaparilla*, and taken to Carthagena, and thence exported to Jamaica, it is more than probable that this yields some of the Sarsaparilla of commerce; hence it is adopted in the L. and E. pharmacopeas. It has a twining, angular, smooth and prickly stem; but the young shoots are unarmed. The leaves are ovate, oblong, acute, cordiform, five or seven nerved, coriaceous, smooth, twelve inches long, and four or five in width with smooth petioles, about an inch long, and furnished with tendrils.

3. S. SYPHILITICA. *Stem* round, smooth, armed at the joints, with from two to four thick, straight prickles. *Leaves* oblong, lanceolate, acuminate, three-nerved, coriaceous, shining, and about a foot in length. A native of South America, growing in New Grenada, upon the banks of the River Cassiquiare, and by, the Rio Negro. It is supposed to yield the Brazilian Sarsaparilla.

4. S. PAPYRACEA.—An under-shrub with compressed stem, angular below, and supplied with spines at the angles. *Leaves* elliptical, accuminate, and three-nerved. A native of Brazil, inhabiting the banks of the Amazon and its tributaries. It is supposed to yield a part of the Brazilian Sarsaparilla.

5. S. MEDICA.—*Stem* angular, and armed with straight prickles at the joints, and a few hooked ones between. *Leaves* variable in form, sometimes cordeate auriculate-hastate, or cordate-ovate; they are smooth, bright green on both sides five-nerved, with the veins prominent beneath. *Inflorescence* in an umbel, of from eight to ten flowers, with an axilary peduncle. A native of Mexico. Yields Mexican Sarsaparilla.

DESCRIPTION.—Sarsaparilla roots are usually imported in bundles, formed of the roots folded up, but sometimes unfolded, as in the Brazilian variety, frequently still adhering to the *rhizoma*, (chump of druggists). These roots are flexible, several feet in length, about the thickness of a quill, cylindrical, but wrinkled longitudinally, with radicles attached along their length. The color varies, probably owing to adventitious circumstances. They are composed of a thick celular cortex, covered by a thin epidermis, and of the meditullium or duramen, an inner layer of ligneous intermixed with cellular tissues, having a central pith, often containing starch, in its interior. Hence, a transverse section resembles one of an

exogenous stem, but without medullary rays. Sarsaparilla is without odor, often with little else than a mucilaginous taste; but when good and fresh it is a little bitter, nauseous, and acrid, which affords, according to Dr. Hancock, the best criterion of its goodness. The roots are often split in the middle and cut into short pieces, for the facility of making preparations. In this, it is more difficult than in the entire state, to distinguish the different kinds, *Royle*.

"*Jamaica Sarsaparilla*, which is usually the most esteemed, is in bundles of from twelve to twenty inches in length, and from four to five in breadth, distinguished from other kinds by its reddish color, and by having more rootlets attached to it, hence it is sometimes called *red-bearded* Sarsaparilla. It is less mealy, but yields more extract than the other kinds, and the bark five times more than the woody part, (*Pope.*) Its powder is of a reddish color, and does not produce so blue a color as the Honduras, and similar kinds when tested with Iodine. *Brazilian*, called also *Lisbon* and *Rio Negro* Sarsaparilla, ought to be of as good quality as any other, if yielded by the above *S. papyracea*, which, according to Martius, has the sensible properties more marked than other species and may be the plant alluded to by Dr. Hancock. Some is yielded perhaps also by the *S. cordato-ovata*. The roots are in bundles of from three to five feet in length, and not folded up, often with the chump attached, are less wrinkled longitudinally, have fewer radicles, a reddish-brown color, and are amylaceous. The *Honduras* Sarsaparilla is grayish-brown in color, and, like the last, has but few radicles attached, is very amylaceous, so as to appear mealy when broken, and becomes blue when either its powder or decoction are tested with Iodine. *Lima* Sarsaparilla, though originally brought from Lima, is also imported from Valparaiso and Costa Rica. (*Per.*) On account of its resemblance to Jamaica Sarsaparilla, it is often sold for it. It is folded in bundles three feet long and nine inches across, having the chump still attached, and contained in the interior."

Adulterations.—The inferior sorts are often passed off for superior kinds. The roots of Agave, and of Furcræa, also of Herreria Stellata, and Aralia Nudicaulis, and even the

stems of Dulcamara and of the Hop, are substituted. Those of Phormium Tenax have been likewise used for Sarsaparilla.

Analysis.—Sarsaparilla contains much *Lignin*, *Starch*, and *Mucilage*, a little *Acrid Bitter Resin*, a trace of *Volatile Oil*, (which has the odor and acrid taste of Sarsaparilla), and a *Peculiar Principle*, which has been variously named, because thought to be different by different chemists, as, first, *Pariglin*, by Pallota, *Smilacin*, *Salsiparin*, and *Parallinic Acid*, all which have been proved to be identical by Poggioli. *Pariglin* (*Smilacin*) is white, crystallizable, without odor, but having a bitterish taste, very slightly soluble in cold, more so in boiling water, and in hot spirit, also in ether and oils. Strong Sulphuric Acid turns it red, and finally yellow. Muriatic Acid dissolves it, and becomes red. It is composed of Carbon 62·53, Oxygen 28·8, Hydrogen 8·67 = 100, (Poggioli). The active properties of Sarsaparilla are taken up both by hot and cold water, but are impaired by long boiling. They are also extracted by diluted spirit; a little addition of this, therefore, in making its preparations, is probably useful, while long boiling is positively injurious, *Royle*.

Therapeutic Properties and Use.—There has been much fluctuation in the reputation of this article. When its use was introduced into Europe, about the middle of the sixteenth century, it was highly extolled as a specific for the venereal disease. But as the greatest displays of its virtues, to which its popularity was then chiefly owing, was in the West Indies, and as, perhaps, much of the drug employed in Europe was of an inferior kind, the reputation of Sarsaparilla was soon lost, and the medicine was little used until about a century ago, when it was again brought into notice by Fordyce and others, as a remedy in *lues* venerea. Since its re-introduction, very different opinions have been entertained in reference to its merits; while some have had the most unbounded confidence in it, others, among whom was Cullen, considered it entirely inert. This discrepancy, no doubt, has been much dependant upon disappointments caused by a want of due discrimination in the selection of the medicine, and from a want of due attention to other circumstances necessary to insure its good effects.

Sarsaparilla, at present, has perhaps as high a reputation, as at any time, and were the medicine, indeed devoid of any virtues at all, it must be presumed that the discrimination now practiced among the profession, would have clearly settled the matter.

On the whole, a genuine article of Jamaica or Honduras Sarsaparilla, an article which possesses originally, (that is, without its being produced artificially,) the acrid and stimulant properties that are characteristic of the good kind, may be justly regarded as among our best alteratives. It may, therefore, be confidently employed in all cases in which alteratives are indicated.

In referring to its particular applications, Dr. Wood, in the U. S. Dispensatory, justly remarks that they are, in "the treatment of secondary syphilis, and syphiloid diseases, and that shattered state of the system which sometimes [often] follows the imprudent use of mercury, in these affections, chronic rheumatism, some cutaneous diseases, and other depraved cachetic habits of the system.

The medicine may be taken in powder, infusion, syrup or extract. But it is rather inconvenient to take the powder, as the dose of this required is necessarily too large, being half a drachm or more, three times a day.

PHARMACEUTIC PREPARATIOMS.—INFUSUM SARSAPARILLA COMPOSITUM: *Compound Infusion of Sarsaparilla.* ℞ Macerate sarsaparilla root, first washed in cold water, and then sliced ʒj, and lime-water, by measure, ℔j, in a covered vessel for twelve hours, occasionally agitating. Strain. The lime-water is now considered unnecessary.

Action. Use. Alterative in doses of fʒiij, two or three times a day.

DECOCTUM (SARSAPARILLÆ, D.) SARZÆ, L. E. *Decoction of Sarsaparilla.*

℞ Macerate sliced Sarza (washed in cold water, D.) ʒv (ʒiv D.) in boiling *Aq. dest.* Oiv (℔iv D,) for 4 (2, E,) hours, in a lightly covered vessel, near the fire, L, (at a temperature somewhat below ebullition, E.) Then take out the sarza, and bruise it. Replace it and in the same way macerate for two hours. Then boil down to Oij, (℔ij, by measure, D. Squeeze out the decoction, E,) and strain.—The long boiling, L. D, is injurious; as good a preparation may prob-

ably be made by the maceration without the boiling down. The sarza ought to be well divided, perhaps bruised. The extract is often prescribed with it, and the syrup also added.

Action. Use. Alterative. Much used in doses of f℥iij—f℥vj, two or three times a day.

DECOCTUM (SARSAPARILLÆ, D. U. S.) SARZÆ COMPOSITUM, L. E. *Comp. Dec. of Sarsaparilla.*

℞ Boil together for one-quarter of an hour Decoction of Sarza Oiv, by measure (℔iv, D,) bruised Sassafras, rasped Guaiacum Wood, and bruised (fresh, E,) Liquorice Root aa. ℥x, (℥j, D,) Mezereon ℥iij, (℥ss, E.) Strain.—The boiling will necessarily dissipate the Volatile Oil of the Sassafras.

℞ Take of Sarsaparilla sliced and bruised ℥vj, Bark of Sassafras Root sliced, Guaiacum Wood rasped, Liquorice Root bruised, each ℥j, Mezereon sliced ℥iij, Water Oiv. Boil for a quarter of an hour and strain.

Action. Use. Alterative. A substitute for the Lisbon diet drink, in doses of f℥iij—f℥vj, two or three times a day.

EXTRACTUM (SARSAPARILLÆ D. U. S.) SARZÆ, L. *Extract of Sarsaparilla.*

℞ Prepare as Extr. Gentian, L. Take cut Sarsaparilla Root ℔j, and boiling Aq. Cj. Macerate for twenty-four hours, then boil down to ℔iv; while hot, strain, and with heat evaporate to the proper consistence, D.

Action. Use. Alterative. Often given with the Decoction in doses of ℥ss—℥ij.

It is proper to remark, that the extract of this article, prepared according to the Lond. or Dub. formulæ, is of comparatively little value, as we find that the virtues of sarsaparilla, are very apt to be dissipated by the heat necessary in the ordinary process of evaporation. Moreover, the active principle is not readily imparted to water, or at least not all of the amount of root employed, is given out to a quantity of water so small as that ordered in the formulæ. The following method of preparing the extract, recommended in the U. S. Dispensatory, and which corresponds to that of the French Codex, is much better.

℞ Sarsaparilla in coarse powder ℔j, diluted Alcohol Oiv; moisten the sarsaparilla with the alcohol, and having allowed it to stand for twenty-four hours, transfer to an apparatus for displacement, and gradually add the remainder of the diluted alcohol. When the last portion of this shall have penetrated

the sarsaparilla, pour in a sufficiency of water from time to time, to keep the powder covered; cease to filter when the liquid which passes begins to produce a precipitate as it falls into that already passed. Distil off the alcohol from the filtered liquor, and evaporate the residue to the proper consistence. Taste acrid.

Dose, *gr.* x—℥j.

Dr. Wood, one of the authors of the U. S. Dis., considers the dry, or concentrated extract alone worthy of confidence, on the ground that the virtues are not sufficiently soluble in water to be held in solution in so small a quantity as there is in the fluid extracts, but states that when the latter form of preparation is especially desired, the formula of Dr. Hodgson, Jr. is the best. This is a compound liquid extract, the formula of which is here given :—

℞ Sarsaparilla bruised ℥xvj. Liquorice Root bruised, Guaiacum Wood, rasped, Bark of Sassafras Root, each ℥ij. Mezereon ℥vj. Dilute Alcohol Oviij. Digest for fourteen days at a common temperature; then strain, express, and filter; evaporate in a water bath to f℥xij; then add ℥viij of white sugar, and remove from the fire as soon as the sugar is dissolved.

Dose, f℥j.

SYRUPUS (SARSAPARILLÆ, D.) SARZÆ L. E. *Syrup of Sarsaparilla.*

℞ Macerate cut Sarza ℥xv, (℔j D,) in boiling *Aq.* Cj for twenty-four hours. Then boil down to Oiv, (℔iv D,) and while hot, strain. Then add Sugar ℥xv, L. E., and evaporate to the consistence of syrup. (Proceed as for making Syrup, D.)

Action. Use. Alterative in doses of f℥iv, with water, or added to the Decoction.

SYRUPUS SARSAPARILLÆ COMPOSITUS, U. S. *Compound Syrup of Sarsaparilla.*

℞ Take of Sarsaparilla bruised ℔ij. Guaiacum Wood rasped ℥iij. Hundred-leaved Roses, Senna, Liquorice Root bruised, each ℥ij. Oil of Sassafras, Oil of Anise, each ♏ v. Oil of Partridge Berry, ♏ iij. Diluted Alcohol Ox. Sugar ℔viij. Macerate the Sarsaparilla, Guaiacum Wood, Roses, Senna and Liquorice Root, in the diluted Alcohol for fourteen days, then express and filter; evaporate the tincture, by means of a water-bath to four pints; filter. Add the Sugar, and proceed in the manner directed for Syrup. Lastly, hav-

ing rubbed the Oils with a small quantity of the Syrup, mix them thoroughly in the remainder.

Dose, f ʒss. three or four times daily.

STILLINGIA.—The Root.

Synonymes.—Stillingia Sylvatica; Queen's Root, *Eng.*; Cock-up-hat, Queen's Delight, *Vul.*

Botany.—*Sex. Syst.* Monœcia Monodelphia.—*Nat. Ord.* Euphorbaceæ.

Gen. Char.—Male: *Involucre* hemispherical, many-flowered, or wanting. *Calyx* tubular, eroded. *Stamens* two and three, exserted. Female: *Calyx* one-flowered, inferior. *Style* trifid. *Capsule* three-grained. *Nutt.*

Spec. Char.—An indigenous, perennial, herbaceous plant. *Root* large, woody. *Stem* herbaceous, two to three feet high. *Leaves* sessile, alternate, oblong or lanceolate-oblong, obtuse, serulate, tapering at the base, and accompanied with stipules. *Flowers* yellow, stamenate and pistilate flowers separate on the same plant; they are arranged in a spike, of which the upper part is occupied by the male, and the lower by the female. When wounded, the plant yields a milky juice. Grows in pine barrens, from Virginia to Florida. Its flowering time is from May to June. There are two other species, the *S. Sebifera* and *S. Ligustriana*.

Therapeutic Properties.—Stillingia is one of the most valuable alteratives known; it is also somewhat purgative, but its alterative virtues seem to be in no way connected with the latter. There is, perhaps, no article known that is more available than this in the treatment of syphilis. It appears, also, equally available in the various skin diseases, as lepra, elephantiasis, frambœsia, as well as in other affections of a chronic character, dependent upon a depraved and cachectic habit of the system. It was an ingredient of Swaim's Panacea. It is taken in doses large enough to keep up a laxative effect.

GUAIACUM.—The Wood.

SYNONYMES.—GUAIACUM OFFICINALE; Lignum, D.; Guayaco, *Span.*; Legno Guaiaco, *Ital.*; Pockenholz, *Ger.*; Bois de Gayac, *Fr.*; Guaiac, *Eng.*

BOTANY.—*Sex. Syst.* Decandria Monogynia.—*Nat. Ord.* Zygophyllaceæ.

Gen. Char.—*Calyx* five-cleft, unequal. *Petals* five, inserted into the calyx. *Capsule* angular, three or five-celled. *Willd.*

Spec. Char.—A large evergreen tree, forty to sixty feet in height, and sometimes as much as four feet in diameter. The wood is extremely hard and heavy, being very compact. Its fibres are cross-grained, the strata running obliquely into one another in the form of an X (Browne, 1789), or obliquely at an angle of 30° with the axis. The leaves are opposite, abruptly pinnate, with two, sometimes three or four pair of leaflets; these are smooth, obovate, or oval obtuse, delicately veined. The flowers are borne on long, single-flowered peduncles, eight or ten generally rising together from the axils of the upper pairs of leaves. (Royle.)

DESCRIPTION.—The virtues of the guaiac tree exist in the juice of the wood, which is extracted, and affords a separate article of commerce. It is proper, therefore, to consider the wood and the gum-resin separately.

GUAIACI LIGNUM, *Guaiacum Wood*, known in commerce by the name of *lignum vitæ*, is imported in great logs, generally without, but sometimes covered with, a smooth, gray bark, from Jamaica, Cuba, St. Domingo, &c. "It is remarkable for its weight (sp. gr. 1·33), hardness, and toughness, and is therefore much used in machinery, also rollers, pestles and mortars, &c. It is distinguished by its cross-fibre, and is surrounded with the alburnum or *sap-wood*, which is smooth, hard, and yellow, like box; while the *heart-wood* is of a dull, brownish-green color, from containing a large proportion of guaiac. It is usually met with in shops, in the form of shavings and turnings, which are, however, apt to be intermixed with those of other woods, as of box. The sawdust of guaiacum, as stated by Richard, becomes green by exposure to the air." The chips and dust may be known by their becoming bluish-green by the action of nitric acid, or its fumes. The bark, which is of a dark greenish color with grayish spots, has sometimes been used officinally. It is acrid in taste, and has been thought by some to be as efficacious as

the wood. The wood is without smell, except when rubbed or heated; it has a slightly bitter and pungent taste, chiefly affecting the throat. It is very combustible.

Guaiaci Resina: *Guaiac.* This is the concrete juice of the tree, obtained either by spontaneous exudation, or by incisions made into the trunk. Sometimes it is procured by sawing the wood into billets, boring them through longitudinally, and placing one end over the fire, when the juice will run out at the orifice. It is also obtained by boiling the chips, or sawdust, of the wood, with water, and skimming off the resin. Guaiac occurs in grains, sometimes agglutinated, but usually in homogeneous lumps (sp. gr. 1·2—1·23); but sometimes mixed with pieces of the wood and bark; of a brownish-green color, often with a tinge of red; fracture brilliantly shining, glass-like, and resinous; brittle, powder at first of a grayish color, but becoming green like guaiac wood and resin generally, when exposed to light. It softens in the mouth: the taste, at first scarcely perceptible, is slightly bitter, but becoming acrid, produces burning in the fauces. The odor is slight, increased on pounding or on heating it, when it melts and evolves a balsamic odor. Water has but moderate action on it, dissolving about nine per cent., chiefly extractive. The fixed and volatile oils scarcely act upon it. Alcohol dissolves 91 per cent. of the peculiar substance called Guaiac, becoming of a deep brown color. The Guaiac is precipitated on the addition of water. Ether also dissolves the resin, and separates *Guaiacic Acid* from the extract. Solutions of Potash and Soda dissolve it freely, as does Ammoniated Alcohol. Chlorine produces remarkable changes of color in the tincture, from green to blue, and from that to brown. The changes of color seem to be dependent on the absorption of oxygen.

The Tincture of Guaiac imparts a blue color to Gluten, and to substances containing it; also to mucilage of Gum Arabic made with cold water, and to transverse sections of various roots; hence slices of the potato are employed as a test of its purity.

Analysis.—Guaiac consists of an *Extractive-like Matter*, which is taken up by water, and the *Resin*, which, having peculiar characters, has been called *Guaiacin* (Guaiacic acid, *p.*) Underdorben considers this to be composed of two resins, one soluble in ammonia, and the other, which forms the largest portion of Guaiac, merely mixes with it.

"M. Thierry has by means of Ether separated from the

extract of Guaiacum what he calls Balsamic Resin, and from it obtained an acid which he calls Guaiacic acid, and which resembles Benzoic and Cinnamic acids, but differs from them in being perfectly soluble in water. Besides the Balsamic Resin, the extract he states contains another resin, which is soluble in Ammonia. Dr. Ure, in an ultimate analysis of Guaiacum, found it composed of Carbon 67·88, Hydrogen 7·05, Oxygen 25·07=100. Prof. Johnston considers its composition to be C^{40} H^{23} O^{10} and its Eq. 343."

Tests. "Fresh fracture red, slowly passing to green: the tincture slowly strikes a lively blue color on the inner surface of a thin paring of a raw potato." E. P.

THERAPEUTIC PROPERTIES.—Guaiacum is one of our best general alteratives, and is now extensively employed in every country. Its special applications are in rheumatic and gouty affections, but is serviceable in most cases indicating the use of alteratives. It is also considerably stimulant and cathartic in its effects, and hence may be employed in fulfilling compound indications.

Dose, gr. x—ʒss. in powder or bolus, or in the following mixture:

MISTURA GUAIACI, L. E. *Guaiacum Mixture.*

℞ Triturate *Resin of Guaiacum* ʒiij. with *Sugar* ʒss. then with *Mucilage of Gum Arabic* fʒss., lastly, add gradually *Cinnamon Water* fʒxix. (xixss. E.) constantly rubbing up.

An emulsion is formed with the aid of the Sugar and Gum, in which all the constituents of the Guaiac are suspended. It may be given in doses of fʒss. to fʒij. two or three times a day.

DCOCTUM GUAIACI, E. DECOCT. GUAIACI COMPOSITUM, D. *Compound Decoction of Guaiacum.*

℞ Boil *Guaiac* (Wood, D.) *turnings* ʒiij. and *Raisins* ʒij, E. gently in *Aq.* Oviij. (by measure ℔x. D.) till reduced to Ov. (half, D.) towards end adding *Sassafras rasped* ʒj. (ʒx. D.) and *Liquorice Root bruised* ʒj. (ʒijss. D.; ʒij. E.) Strain the liquor.

Dose fʒij–fʒiv.



Silphium Perfoliatum.



Celastrus Scandens.

SILPHIUM.—The Root.

SYNONYMES.—SILPHIUM PERFOLIATUM; Cup-plant, Indian, Cup-plant, *Vul.*

BOTANY.—*Sex. Syst.*—Syngenesia Polygamia Necessaria.

Gen. Char.—*Involucre* squarose; scales leafy, broad; egret a two-horned margin. *Receptacle* chaffy. *Akenes* compressed, obcordate, margined, bi-toothed.—*Eaton.*

Spec. Char.—*Rhizome* perennial, horizontal, pitted, beset with radicles. *Stem large*, herbaceous, four-sided, smooth, about three to six feet high. *Leaves large*, opposite, connate, lanceolate, ragged at the edge. *Flowers* terminal, with numerous oblong, lanceolate, yellow rays, and a large dark colored disk. There are several other species.

THERAPEUTIC PROPERTIES.—The root of this plant is stimulant diaphoretic, and alterative. It has long been in use by the aborigines, who considered it a medicine of gerat value, stating that it was capable of making an old man young—thus intimating the character of its virtues. In the recent state, the root has quite an acrid taste, which is very durable to the taste. The author has not had much experience in its use. The dose is *gr.* xx of the powder.

CELASTRUS.—The Bark of the Root.

SYNONYMES.—CELASTRUS SCANDENS; Staff-vine, Bitter-Sweet, *Vul.*

BOTANY.—*Sex. Syst.*—Pentandria Monogynia.—*Nat. Ord.* Celastrineæ. Rhamni.

Gen. Char.—*Calyx* five-lobed, flat. *Corolla* spreading. *Capsule* obtusely three-angled, three-celled, berry-like. *Cells* one or two-seeded. *Seeds* calyptred or aurilled.

Spec. Char.—*Root* very long, creeping, red or yellowish-red without. *Bark* thick, woody within. *Stem* twining. *Leaves* oblong, elliptical, accuminate at both ends, serrate, and scattered upon the branches. *Flowers* yellowish-white. *Berries* red, with red arils; they hang on through the winter. Indigenous, growing in woods and hedges.

THERAPEUTIC PROPERTIES.—Celastrus has long been esteemed as an alterative, and has been employed with a view to this effect, in various cutaneous affections. The *Solanum Dulcamara* has been confounded with this article, owing to the

identity of their vulgar names *bitter-sweet*. This is another evidence of the impropriety of using the delusive vulgar names of plants. For ordinary external use, however, this mistake can do little harm as this species of solanum is considerably detergent. But for internal use, careful discrimination is necessary, as this last mentioned article is considerably narcotic.

In view of the decided effects, of celastrus, its use must be long continued. It is best taken in the form of extract, which may be prepared in the same way as directed for the preparation of the extract of cornus florida. The dose of this is *gr.* x—*gr.* xxx. The powder is taken in portions of ʒj—ʒjss. Its topical use is in the form of ointment.

RUMEX CRISPUS.—The Root.

Synonymes.—Schmallbattericher-halvergaul, *Vul. Ger.*; Narrow-leaved Dock, *English.*

Botany.—*Sex. Syst.*—Hexandria Trigynia.—*Nat. Ord.*—Polygonaceæ.

Gen. Char.—*Calyx* three-leaved. *Petals* three, converging. *Seed* one, three-sided.

Spec. Char.—*Root* perennial, yellow, spindle-shaped, branched. *Stem* smooth furrowed, reddish-brown, or greenish, about three feet high. *Leaves*, radical ones large, lanceolate, long, undulate or crisped, entire, pointed, with prominent ribs or veins on the under side, and standing on long grooved foot-stalks; cauline one ssmaller, linear, more pointed. Fructification in terminal spikes. *Seeds* three-sided. A very common indigenous plant, growing in meadows, pastures and along streams. There are many other species which much resemble each other, and which are possessed of analogous properties, and may be used as substitutes for each other. Among the other species most used, are the R. Aquaticus, R. Britannica, R. Obtusifolis, and R. Verticillatus.

A number of the species have acid leaves, and are much esteemed as topical remedies. The inspissated juice of the R. Acetosa or *sorrel*, is much employed as an application to cancers, ulcers, and all sores difficult to heal.



Rumex Crispus

THERAPEUTIC PROPERTIES.—Rumex crispus is a good alterative and detergent. It has been long employed both externally and internally, in the treatment of cutaneous diseases. For external use, the fresh root is often simply scraped into fresh cream, and left to remain in a warm place for twenty-four hours, when the cream is separated for use. This is applied in the treatment scabies and different varieties of herpes. A soft extract may be employed with profit in the same way. Internally the powdered root is taken in doses of *gr.* x—*gr.* xxx.

IODINUM.

PREPARATION.—Iodine is procured from certain *sea-weeds*—particularly the *Fucus Palmatus*. The most common method of obtaining Iodine, is to take Kelp in powder, lixiviate with water, evaporate, and remove the Soda salts (such as Carbonate and Sulphate) as they form; allow the liquor to cool, when crystals of Chloride of Potassium will be deposited. Decant the dark-colored mother liquor, which contains the Iodide of Sodium with other salts; supersaturate with Sulphuric Acid, when an evolution takes place of Carbonic Acid, Sulphuretted Hydrogen, and Sulphurous acid gasses. After standing for a day or so, the residuary liquor, or Iodine ley, is mixed with Binoxide of Manganese, and heat applied. Water and Iodine pass over, and are condensed in receivers.

In the mutual action of Sulphuric Acid, and Binoxide of Manganese or any chloride in the Iodine ley, there will be the detachment of Chlorine (*v.* Hydrochloric Acid). This, as stated above, will decompose the Iodide, set the Iodine free; or, as usually explained, one equivalent of the Oxygen of the Binoxide, combining with the Sodium equally, sets the Iodine free; and the sulphuric acid will combine with the Soda and the Oxide of Manganese, and thus form a Sulphate of Soda (the Oxide of Sodium), and a Sulphate of the Oxide of Manganese.

PHYSICAL PROPERTIES.—Iodine occurs in bluish-grey, metallic-like scales. It has an acrid taste, and an odor resembling that of Chlorine. Its Sp. Gr. is 4·94—still it is somewhat soft and crumbles when rubbed. It stains the skin, and other substances brownish-yellow. In water it is almost insoluble, but is very soluble in alcohol and ether.

THERAPEUTIC PROPERTIES.—Iodine is an excellent alterative

and detergent; being capable of discussing tumors and enlarged glands, even those which are not inflamed, and seemingly in a healthy state, as enlargments of the thyroid and submaxillaries. The medicine, however, is not sufficiently safe for internal use, and can only be employed externally, under circumstances which will not admit of its absorption to any considerable extent. Ungents and tinctures made of it, may thus be very successfully used.

TINCTURA IODINII: *Tincture of Iodine.* ℞ Iodine ʒijss. Rectified Spirit Oij. Dissolve.

TINCTURA IODINII COMPOSITUM: *Compound Tincture of Iodine.* ℞ Macerate Iodine ʒj. Iodide of Potassium ʒij in Rectified Spirit Oij, until dissolved; strain.

Use.—Both these tinctures may be employed alone, or mixed with soap liniment, and then applied over the tumors to be discussed. The latter of the tinctures is the best.

UNGUENTUM IODINI. *Iodine Ointment.*

℞ *Iodine* ℈j. *Alcohol* ♏ xx. *Lard* ʒj. Rub with the Alcohol first and then with the Lard. *Uses* as below.

UNGUENTUM IODINII COMPOSITUM: *Compound Iodine Ointment.*

℞ Rub *Iodine* ʒss. *Iodide of Potassium* ʒj and *Rectified Spirit* fʒj together, then rub up with *Lard* ʒij.

Use.—Employed as an external application in Bronchocele, scrofulous enlargements of the glands, or tumors.

Among the most important examples of this class, unnoticed, are the following:

1. Arctium Lappa, (Burdock,)
2. Alnus Serrulata, (Black Adder,)
3. Aralia Nudicaulis, (False Sarsaparilla,)
4. Aralia Racemosa, (Spikenard,)
5. Ammonia Hydrochloras, (Sal Ammoniac,)
6. Sodi Chloridum, (Salt.)

DIVISION II.

CHEMICAL REMEDIES.

Although chemical, or rather chemico-vital phenomena are extensively displayed in the various remedial actions, as well as in the simple *physiological* movements, yet the number of articles used as medicine, whose remedial influence is *purely* chemical is comparatively small. This is more especially the case with the agents of the Materia Medica of the new system. The action of acids and alkalies, however, (for example) in neutralizing each other, must be regarded to be strictly on chemical principles, *in* the system as well as *out* of the system. All the articles of the Materia Medica, which act thus obviously on chemical principles, are intended to be embraced in this division.

This division has been disposed in three classes, viz: 1. Acids, 2. Alkalies, 3. Antidotes.

Class I.—ACIDS.

Acids (from *aceo*, 'to be sour,') are characterized by their sour or peculiar sharp impression upon the organs of taste. They unite with, and neutralize alkalies with avidity, and thus with them form salts. They change the color of vegetable purples &c., into red. They combine with water in every proportion, with a condensation of volume and evolution of heat.

It was formerly supposed that oxygen was the only acidifying principle, and that the generation of an acid always involved the chemical union of this element with a combustible substance. But more modern researches have led to the discovery of a number of acids, as fluoric, hydriodic, hydrochloric, hydrocyanic, &c., in which hydrogen serves as the acidify-

ing principle, and also chloriodic, chloroprussic, fluoboric, &c., in which neither oxygen, nor hydrogen have a part in their formation.

Although acids are often serviceable and sometimes important in the treatment of disease, they are much more important in pharmacy.

Order I.—MINERAL ACIDS.

Mineral acids have, as yet, scarcely, if ever, been employed in the treatment of disease; but they are of incalculable importance in pharmacy, or pharmaceutic chemistry.

It will only be necessary here to notice the different chemical agents of this order in reference to their preparation, and chemical and physical character, as the many different methods of their employment have been so fully exemplified among the pharmaceutic preparations throughout the work.

ACIDUM SULPHURICUM.

Synonymes.—Schwefelsaure, *Ger.*; Acide Sulphurique, *Fr.*; Acido solforico, *Ital.*: Acido sulfurico, *Span.*; Sulphuric Acid, *Eng.*; Oil of Vitriol, *Vul.*

Preparation.—Sulphuric acid is obtained by oxydizing sulphur. When sulphur is burned alone the product is sulphurous acid or a compound of one equivulent of sulphur and two of oxygen. Now as the acid to be obtained has three proportions of the latter combined with one of sulphur, it is necessary to conduct the process of combustion under circumstances which will furnish oxygen in such a quantity as is necessary to impregnate the sulphurous vapor with the amount of this element necessary for sulphuric acid. With this view nitre in the proportion of one eighth in weight is mixed with the sulphur, so that on the combustion of the compound, the nitre may yield its oxygen to furnish the additional equivalent necessary.

Various plans have been adopted to conduct the process of the combustion so as to expose the vapors together. But the course now pursued is to conduct the sulphurous acid from burning sulphur, nitric acid vapor, and steam, simultaneously into oblong leaden chambers, so partitioned that the vapors can only advance slowly, and thus allow the whole of the sulphuric acid formed to be deposited.

When the acid thus forming attains the specific gravity of

1·5 it is drawn off and concentrated, first in shallow leaden vessels, and then in platina or glass retorts until it has a Sp. Gr. of 1·84 when cooled.

Physical Properties.—Liquid Sulphuric Acid ($S O^3 H O$ =49) is a dense oily-looking liquid, usually colorless, devoid of smell, but intensely acid, and powerfully corrosive. At first it feels oily, from destroying the cuticle, but soon acts as a caustic, charring both animal and vegetable substances by combining with the water and setting free the carbon. It freezes at from—15° to—29°, according to its density, and boils at 620° F. Its affinity for water is great, heat and condensation being produced on their union. It absorbs moisture from the atmosphere $\frac{1}{3}$ of its weight in 24 hours, and six times its weight in a twelvemonth, and consequently becomes weaker the longer it is exposed. Professor Graham is of opinion that Sulphuric Acid combines with water in several other definite proportions. It may be diluted with it to any extent. It unites with alkalies, earths, and metalic oxides, rapidly dissolving some metals, as Iron and Zinc, when diluted with water. By its action on alcohol, Ether is produced. Several substances, as Charcoal, Phosphorus, &c., when heated with Sulphuric Acid decompose it, by abstracting its oxygen, and envolving Sulphurous Acid.

Tests.—"The presence of Sulphuric Acid, or of the soluble Sulphates, is easily ascertained by a solution of Chloride of Barium, or of the Nitrate of Barytes, as they form a white precipitate of Sulphate of Barytes, which is insoluble in either acids or alkalies. Sulphuric Acid should be colorless; Sp. Gr. 1·845. What remains after the acid has been distilled to dryness should not exceed $\frac{1}{400}$ part of its weight. Diluted Sulphuric Acid is scarcely colored by Hydrosulphuric Acid. The want of color indicates the absence of organic matter. The E. P. states its density to be 1·840, or near it: Mr. R. Phillips says, he never found it under 1·844. Commercial Sulphuric Acid is apt to contain Nitrous Acid, or an oxide of Nitrogen, Sulphate of Lead. When diluted with its own volume of water, a scanty muddiness is produced by the deposition of Sulphate of Lead, alluded to by the L. P. as amounting to $\frac{1}{400}$ part, and is pointed out by the H. Sulphuric

Acid, which forms a Sulphuret of Lead. No orange fumes escape when no Nitrous acid is present, which, as well as Binoxide of Nitrogen, is indicated by a solution of the Protosulphate of Iron.

Purification.—"The D. P. directs distillation of Sulphuric Acid in a retort of flint glass, containing a few slips of Platinum, to restrain the ebullition; the first twelfth part is to be rejected as containing too much water. Sp. Gr. 1845.

"E. P. If commercial Sulphuric acid contains Nitrous acid, heat f℥viij. of it with between 10 and 15 grains of sugar, at a temperature not sufficient to boil the acid, till the dark color at first produced shall have nearly or altogether disappeared. This process removes the Nitrous acid. Other impurities may be removed by distillation, as in D. P., but in a sand-bath, or with a gas-flame, and having a canopy above to keep it hot."

Use.—Sulphuric acid as shown throughout this work is of the greatest importance in pharmacy, especially in the preparation of the alkaloids and some of the extracts. It is also sometimes used as a caustic.

ACIDUM HYDROCHLORICUM.

Synonymes.—Acidum Muriaticum; Saltzsaure, Kochsalzsaure, *Ger.;* Saltzgaest, *Vul. Ger.;* Acide Hydrochlorique, *Fr.;* Acido Mariatico, *Ital.;* Muriatic Acid, *Eng.;* Marine Acid, Spirit of Sea-Salt, *Vul.*

Preparation.—℞ Take Sulphuric Acid, ℥xx; (pure 3 parts, E.), (of commerce, 87 parts, D.); mix it with Aq. Dest., f℥xij; (Aq., 1 part, E.), (62 parts, D.); Add this to Chloride of Sodium, dried, ℔ij, [purified by solution in boiling Aq., concentrating, skimming off the crystals, draining, slightly washing, then well dried, 3 parts, E.), (100 parts, D.), when the mixture is cold, E., D.] Put the mixture into a glass retort; fit on a receiver containing Aq. Dest., f℥xij, (Aq., 2 parts, E.), (62 parts, D.) Distil over a sand-bath (or naked gas flame with a gentle heat, E.), and let the liquid absorb the gas. Gradually increase the heat. (Keep the receiver cool, E.) (The sp. gr. of this acid is 1170, E.; 1160, D.)

The philosophy of the above process is, that both the Chloride of Sodium and the water are decomposed; the Chlorine of the former, combining with the Hydrogen, forms

Hydrochloric Acid, while the Oxygen of the water unites with the sodium to form Soda, which is seized upon by the Sulphuric Acid to form Sulphate of Soda, which remains as the residual salt, and will be a Bisulphate of Soda if an excess of acid has been employed.

Physical Properties.—Muriatic Acid is a corrosive liquid, possessing a peculiar burning acrid taste, and emiting acrid or suffocating fumes. When pure, it is perfectly colorless, but it is usually of a yellowish pale straw-color, from the presence of a little Chlorine formed from the decomposition of the acid, when long kept, especially when exposed to light. It has a sour, irritating, and corrosive taste, with the odor of its gaseous acid. When heated to 112° F., it bubbles, from the quantity of Hydrochloric Acid gas which escapes. It freezes at — 60° F. Hydrochloric Acid combines with water in all proportions, with the evolution of heat. Sp. gr. 1·16, when it contains about half its weight of Hydrochloric Acid gas.

Tests.—The presence of strong Hydrochloric Acid may be known by the white fumes which are produced in the neighborhood of Ammonia; also by Nitrate of Silver producing in a solution containing it a white curdy precipitate (*chloride of silver*); which darkens in the air, and is soluble in a solution of Ammonia, but insoluble in Nitric Acid. Sp. gr. 1·16.

When pure, Muriatic Acid will evaporate without residue in a platinum spoon. If sulphuric acid be present, a solution of Chloride of Barium will cause a precipitate of Sulphate of Baryta in the acid, previously diluted with distilled water. Free Chlorine may be detected by the acid having the power to dissolve gold-leaf.

Use.—Important in pharmacy, as shown in the preparations of some of the medical alkaloids. Not used as a medicine.

Nitric Acid, and other mineral acids not here mentioned, are seldom used in pharmacy, and never in the practice of the reformed system.

Order II.—VEGETABLE ACIDS.

Vegetable Acids are employed in pharmacy as well as in practice. In a pharmaceutic point of view, they are per-

haps less important than some of the mineral acids, but, in the treatment of disease, they are employed to the exclusion of the latter. Their most obvious internal use is in cases of poisoning by some of the stronger or caustic alkalies.

Vegetable Acids are antiseptic, diuretic, rubefacient and refrigerant. They form agreeable drinks in fever, when combined with sugar and scented with some pleasant aromatic. Stimulant gargles are prepared of them, with capsicum, and other articles, for affections of the throat. Stimulant solutions or lotions are also made by macerating capsicum, etc., in acids, but these are not chemical agents. There is sometimes a peculiar appetency for acids, with the sick, and it is usually the case that a gratification of this, will be followed with an obvious improvement in the symptoms. This longing for acids seems to be dependant upon the prevalence of an excessive alkaline state of the humors.

ACETUM.

Synonymes.—Acetum Britannicum, *L.;* Acetum Gallicum, *Ed.;* Acetum Vini, *Dub.;* Essig, *Ger.;* Aceto, *Ital.;* Vinaigre, *Fr.;* Vinagre, *Span.;* Vinegar, *Eng.*

Preparation.—Vinegar is prepared in various ways, and from many different vegetable substances. It appears that any article that has gone through the vinous fermentation or which is susceptible of this, is capable of producing vinegar. Thus sugar and water, or any of the saccharine vegetable juices, or alcoholic liquors with water, if subjected to the action of a ferment, with an access of air, may be converted into vinegar, if kept at a temperature between 75° and 90°.

For most medical purposes vinegar requires to be distilled to separate it from various impurities it contains in the ordinary state. Its physical properties are too well known to need description.

Use.—This is more used both in pharmacy and practice than any other vegetable acid. When distilled it may frequently be substituted for dilute acetic acid.

It will often serve in place of sulphuric acid, to render the virtues of plants soluble in water. In practice it is employed in poisoning by the stronger alkalies, and in the form of lotions, gargles, oxymels, syrups, effervescing and cooling

draughts, &c. But in these latter applications, it does not operate as a chemical agent.

ACIDUM ACETICUM.

PREPARATION.—℞ Acetate of Soda, in powder ℔j. Sulphuric Acid, ʒviij. Red Oxide of Lead, ʒj. Pour the Sulphuric Acid into a glass retort, and gradually add the Acetate of Soda; distil in a sand-bath, at a moderate heat, into a glass receiver, until the residuum becomes dry; mix the liquid proceeds with the oxide, and again distil, with a moderate heat, to dryness. The specific gravity of the acid thus procured, is 1·06, and 100 grs. of it saturate 83·5 of chrystalized bicarbonate of potassa.

The Dub. P. orders it prepared by distillation from a mixture of Acetate of Potassa and Sulphuric Acid in the proportion of two parts of the Acetate, and one of the Acid.

The philosophy of this process, is, that a sulphate of the alkali is formed by the action of sulphuric acid, while the acetic acid distils over. The object of the oxide of lead, is to retain, in the second process, whatever sulphuric acid may have passed over in the first process—thus to produce the pure acetic acid.

Acetic Acid, when pure, is a colorless, inflammable, volatile liquid, having quite an acrid and acetic taste, and fragrant, pungent smell. It unites in all proportions, with water, and dissolves, to a certain extent, in alcohol.

USE.—Acetic Acid is chiefly used in pharmacy, or pharmaceutic chemistry.

ACIDUM PYROLIGNEUM.

SYNONYMES.—Holzsessig, *Ger.;* Acide pyro-ligneux, *Fr.*; Acido pyro-lignico, *Ital.*; Pyroligneous Acid, *Eng.*

PREPARATION.—Pyroligneous acid is a product of the destructive distillation of wood. The process of distillation is usually conducted in iron cylinders, with condensers attached. The woody matter being decomposed by heat, its elements unite to form new compounds, and by distillation an acid liquor passes over with water, tarry matter, Empyreu-

matic Oil, and much inflammable gas, while a large proportion of excellent Charcoal is left in the retort.

Physical Properties.—Pyroligneous Acid is a brown, transparent liquid; consists essentially of Acetic Acid, diluted with water, holding in solution tar, with some Empyreumatic Oil, and has a smoky smell. It is distilled, and further purified, by the addition of Carb. of Soda. This is saved as *Acetate of Soda*, or used for making a purer Acetic or Pyroligneous Acid. When the acetate of the above alkali is formed, it is purified by crystallization and re-solution, afterwards decomposed with Sulphuric Acid: the Acetic Acid set free, is again distilled, and the processes repeated until a nearly colorless acid, with the odor of the Acetic, is produced, but which is often Empyreumatic.

Tests.—Pyroligneous acid is nearly or entirely colorless; Sp. Gr. at least 1·034; ℥ c. neutralize at least grs. liij. of Carb. of Soda; it is unaffected by Sulphuretted Hydrogen or Sol. of Nitrate of Baryta.

Use.—This acid is sometimes used as a chemical agent in the preparation of medicine, but is much more employed in the treatment of disease. it is a powerful antiseptic; capable of preserving flesh or fresh meat for a long time, or even of restoring it from a state of putrefaction unless the decomposition has gone too far. It may be applied to mortified parts, foul ulcers, cancers, etc.

As the Tartaric, Citric, and other common vegetable acids are not generally employed as chemical agents, they are not entitled to a consideration here. It is true, however, that they are sometimes used in effervescing draughts, and in poisoning by the caustic alkalies, when their chemical characters are displayed.

Class II.—ALKALIES.

Alkalies are of equal importance with acids both in a pharmaceutic and practical point of view. They are employed to precipitate substances from their solutions in acid liquids, and sometimes to render oily or resinous principles soluble in water. When taken internally, they are capable of neu-

tralizing any acids in the same way that they do out of the body. Their most common medical use is in poisoning by acids, and in cases of acidity of the stomach or *heart-burn*, *dyspepsia*, &c., as well as in calculous concretions depending upon the agency of acids. They are absorbed into the circulation and hence may develop their virtues in any part of the system if they should remain free.

SODÆ CARBONAS.

Synonymes.—Carbonate de soude, *Fr.*; Einfach Kohlensaures Natron, *Ger.*; Carbonate of Soda, *Eng.*

"The substance known by the name of Soda is a Carbonate of Soda, but mixed with various impurities, according to the source whence it has been obtained; that is, either from the different Natron lakes, from the burning of maritime plants or sea-weeds, or from the decomposition of other Salts of Soda. It is introduced into the Pharmacopœias for the purpose of obtaining from it pure Carbonate of Soda."

Preparation.—Carbonate of Soda is now obtained very cheaply from Chloride of Sodium or Sea-salt. This is first converted into Sulphate of Soda by the action of Sulphuric Acid, then mixed with pounded small Coal and Chalk, and heated in a reverberatory furnace and stirred. "The Carbonaceous matter abstracts Oxygen both from the Sulphuric Acid and the Soda; Sulphuret of Sodium is formed, and decomposed by the Lime; Carbonate of Soda, insoluble Oxi-Sulphuret of Calcium, Caustic Soda, and Carbonaceous matter being the result. The insoluble parts are separated by lixiviation, and the Sulphur subsequently burnt away; during which the Soda is completely Carbonated. The mass now contains about 50 per cent. of Soda. Being lixiviated and evaporated, the Carbonate is obtained in large crystals. As Barilla is not sufficiently pure for medicinal purposes, the L. and D. Colleges give directions for its purification. The E. C. justly consider the Carbonate of Soda produced as above, pure enough."

Physical Properties.—Carbonate of Soda (Na O C O^2 + 10 Aq.=144,) prepared as above, is in large and clear color-

less crystals, without odor, but having a disagreeable subalkaline taste, and an alkaline reaction on Turmeric. The crystals are oblique rhombic prisms, or rhomboidal octohedrons, entire or broken. In the air they effloresce, but when exposed to heat melt in their water of crystallization; when this becomes dissipated the salt becomes a white porous anhydrous mass, commonly known as *dried carbonate of soda*. Water at 60° dissolves half, and at the boiling point, its own weight of it; but it is insoluble in alcohol.

Use.—Carbonate of soda is one of the most important of the alkalies. It is the article generally preferred as an antacid for internal use. It may also be used as a precipitant in pharmaceutic chemistry.

POTASSA.

Potash is obtained by the manufacturing chemist from the ashes of wood, by lixivation, or by percolation with water, and evaporation of the solution. As thus procured, it is a very impure, dark-colored substance, unfit for medical or chemical use. In a chemical sense, it is a protoxide of the metal potassium. When subjected to calcination it becomes more pure and white, and is then called *pearlash*. In this condition it is sometimes used as an escharotic, and occasionally for pharmaceutic purposes. It is still deliquescent, and has its caustic or burning taste. From this article all the different preparations of potash are, either directly or indirectly, made, the most important of which are the following:

POTASSA CARBONAS: *Carbonate of Potash*. ℞ Pearlash ℔iij; Water Oijss. Dissolve in the Water and filter. Evaporate gently in a clean iron vessel, till the solution thickens. Remove from the fire, and stir constantly with an iron spatula till the salt granulates.

By this process, the insoluble impurities, which are chiefly of an earthy nature, are removed, and the salt is obtained in a granular state, white, caustic, and deliquescent. It still contains water, some sulphate of potash, chlorides of potassium and of calcium, and silica.

Tests.—Almost entirely dissolved by water; deliquescent; renders turmeric brown. 100 parts lose 16 (20, E.) of water

by a strong heat, and 26·3 parts of carbonic acid on the addition of sulphuric acid. When super-saturated with nitric acid, neither carbonate of soda nor chloride of barium throw down any thing (nitrate of baryta only a haze, E.), and nitrate of silver but little.

Use.—In this state potash is considerably used in pharmacy, and sometimes in practice as an antacid, and in effervesing draughts. ℞ Carb. Pot. *gr.* xx = to Citric or Tartaric Acid *gr.* xviij ; Aq. q. s. ℞ Carb. Pot. *gr.* xx = Lemon Juice f℥iv; Aq. q. s.

POTASSÆ BICARBONAS: ℞ L. D. (U. S.) Dissolve Carb. Potash ℔vj. (℔iv, U. S.), (prepared from Pearlash 1 part, D.) in Aq. dest. Cong. j., (Ox. U. S.) (2 parts, D.) Pass Carbonic Acid (obtained by acting on white marble with diluted Muriatic Acid, D.) through the solution (till it becomes turbid ; filter, and again transmit the gas, D.) till saturation. Apply a gentle heat, to redissolve any crystals that may have formed, put the solution in a cool place to crystallize. Dry the crystals (without heat, and keep in a well stoppered bottle, D.)

It may also be prepared by simply exposing carbonate of potash to the air for some months, in order that it may absorb the additional equivalent of carbonic acid ; or a stream of carbonic acid may be passed through its solution as long as the acid is absorbed.

Physical Properties.—Bicarbonate of potash is a colorless and transparent crystalline salt ; its crystal is a modification of a right oblique-angled prism. Its taste is much milder than that of the carbonate, and it has so little alkalinity as to color turmeric paper only slightly. It is soluble in about four parts of water at 60°, and in five-sixths of hot water. Boiling water speedily decomposes it, by expelling a part of its carbonic acid, and it hence becomes a sesquicarbonate. It is insoluble in alcohol. Exposed to a red heat it loses one whole equivalent of carbonic acid, likewise any water which may be deposited within its crystals, and is converted into the carbonate of potash. Hence this method is adopted to procure the pure carbonate.

Use. Carbonate of potash is much used as an antacid, antilithic, and, sometimes, with other articles, as a diuretic and resolvent. It is also much employed in effervescing

draughts. ℞ Bicarb. Potash *gr.* xx = to crystals of Citric or Tartaric Acid *gr.* xv or f℥iijss. of Lemon Juice, with Aq. q. s.

MAGNESIA.

Magnesia occurs as a constituent of sea water, the water of some springs, and also in different earths, as noticed on p. 178, and is largely manufactured from the brine or bittern remaining after the crystallization of common salt

Common, or calcined magnesia, is prepared from the carbonate by burning it in a strong fire, for about two hours, or until the powder, when suspended in water, displays no effervesence on the addition of muriatic acid. It occurs in white cakes or powder, which are light, and have a slightly dry and alkaline taste. It is not very soluble in either water or alcohol.

Use. Magnesia is used as a precipitant in pharmaceutic chemistry, and in practice as an antacid and laxative; but it sometimes compacts the bowels, and thus proves mischievous. The dose, as a laxative, is from ℈j to ℥j.

MAGNESIÆ CARBONAS. ℞ L. E. D. Dissolve Sulphate of Magnesia ℔iv (25 parts, D.), Carbonate of Soda ℔iv, ℥iij (Carb. Pot. 14 parts, D.), each separately in Aq. dest. Cij (400 parts, D.), and strain. Then mix and boil the liquors, stirring constantly with a spatula for a quarter of an hour; lastly, the liquor being poured off, wash the precipitated powder (collected on a filter of linen or calico, E.) with boiling or distilled water, and dry it.

Here the Sulphate of Magnesia and the Carbonate of Soda (or of potash) mutually decompose each other; the Sul. uniting with the Soda, forms a sulphate of soda, which remains in solution, while the Carb. unites with the Magnesia. The salt formed, being insoluble, is precipitated as a hydrated carbonate of magnesia, but in consequence of a portion of the Carb. escaping, it is not strictly neutral.

Physical Properties.—"Pure Carbonate of Magnesia is sometimes found in nature in rhomboidal crystals; as usually seen, the officinal Carbonate is of a white color, light and soft to the touch, without smell, devoid of any other than an earthy taste when properly prepared." It is unalterable in the air, and nearly insoluble in water, but, like the Cal.

Mag., more soluble in cold than in boiling water. Its solubility is much increased if Carbonic Acid, be present, forty-eight parts of water being said to be then sufficient.

Action. Use. Antacid, laxative, very similar to Calcined Magnesia, but differs in its tendency to eliminate carbonic acid gas from the stomach, when coming in contact with acids. It is also sometimes given in effervescence like Carb. Soda.

Dose, gr. v to ℈j, as an antacid, and *gr.* xv to ʒj, as a Laxative.

CALX.

Lime occurs in nature in the greatest abundance; but it is never found pure, being combined with acids, as with Carbonic Acid, in Limestone, Chalk, Marble, Calcerous Spar, and Shells; with Sulphuric Acid, in the various kinds of Gypsum; and with Phosphoric Acid in the bones of animals. Quicklime (Oxide of Calcium) is prepared from any of the above materials by simple calcination. But this is not sufficiently pure for most medical and pharmaceutic purposes; the folowing is the officinal calx.

℞ Break Chalk (white marble, E.) into small pieces, and burn it in a strong fire for one hour L. (in a covered crucible, at a full red heat, for three hours, E.)

Lime must be kept well closed up to prevent it from absorbing moisture and carbonic acid. Its composition is Ca 71·42–|–O 28·58=100.

Use.—A highly important Pharmaceutic and Medical agent.

CALCIS HYDRAS: *Slaked Lime.* ℞ Sprinkle with Aq. q. s. to reduce into fine powder.

Milk of Lime is prepared by adding an excess of water so as to make a milky solution.

LIQUOR CALCIS: *Lime Water.*—℞ Lime, ʒiv; Distilled Water, Cj. Digest, shaking it up occasionally, and decant.

Action. Use.—Antacid, antilithic, resolvant in glandular affections. *Dose,* fʒss.—fʒviij, three or four times a day.

CRETA.

Chalk is well known as an extensive secondary formation, of a dull white earthy appearance; tasteless but adhering

to the tongue; usually friable, sometimes hard; sp. gr. 2·3; but either variety may be employed, though the softer is usually preferred for medical use. Its chemical characters are the same as those of marble. In the arts it is commonly known by the name of *Whiting*, which is Chalk ground in a mill, and the grosser impurities separated by sinking in water, while the pure Chalk being suspended, is allowed to settle, and made into small loaves. For medical use, it is similarly but more carefully prepared by the process of levigation, and in drying is made up into small conical masses.

Use.—Sometimes used in pharmacy, and also as an antacid and astringent in practice, but is unfit as a medicine, (owing to its gritty particles), until it is prepared as below.

CRETA PRÆPARATA, L., E., D., U. S: *Prepared Chalk.*—℞ Add to Chalk, ℔j, a little water, and rub to a fine powder. Throw this into a large vessel of water, then agitate, and after a short period pour off the supernatant water still turbid, into another vessel, and set it aside for the suspended chalk to subside. Lastly, the water being poured off, dry this powder and preserve for use. The direction of E. and D. are essentially the same. Oyster shells, first freed from impurities, and washed with boiling water, may be prepared in a similar manner, forming the TESTÆ PRÆPARATÆ, L.

MISTURA CRETÆ; *Chalk Mixture.*—℞ Prepared Chalk, ʒss.; Sugar, Gum Arabic, in powder, aa, ʒij; Cin. Water, Water, aa, fʒiv. U. S.

Action. Uses.—Antacid, demulcent. Much employed in Diarrhœas arising from acidity. *Dose*, fʒss.—fʒij every three or four hours.

PULVIS CRETÆ COMPOSITUS, L., E., D.: *Compound Powder of Chalk.*—℞ L., E., D., Reduce separately to fine powder, Prepared Chalk, ℔ss., (ʒiv, E.); Cinnamon, (bark, D.), ʒiv, (in fine powder, ʒjss., E.); Geranium Mac. and Gum Arabic, aa., ʒiij, L. D., (Nutmeg in fine powder, ʒj, E.), and Long Pepper, ʒss., L. D. Well mix.

Action. Uses.—Antacid, stimulant and astringent. In Diarrhœas of low states of the constitution. *Dose, gr.* v—ʒj.

TROCHISCI CRETÆ, E., (TROCHISCI CRETÆ, U. S.): *Chalk Lozenges.*—℞ Reduce to powder Prepared Chalk, ʒiv; Gum Arabic, ʒj; Nutmeg, ʒj; Pure Sugar, ʒvj. Beat with water into a proper mass for making Lozenges.

Action. Uses.—Antacid. Useful in acidity of the primæ viæ. Ammonia is also a valuable alkali, useful in pharmacy as well as in practice. (See page 387 *et seq.*)

Class III.—ANTIDOTES.

The term *antidote*, in its general acceptation, is very indefinite, as it might be made to embrace all remedies. But when we speak of chemical antidotes, the term is much more definite, meaning such substances as have the power or quality of neutralizing or destroying directly the various morbific agents against which they are exhibited. The articles in question, therefore, differ widely in the character or quality of their effects, from those of simple physo-dynamic remedies, which mostly evince their power against disease indirectly—that is, by exalting vital resistance against it, instead of acting in direct opposition.

Order I.—ANTI-POISONS.

The term anti-poisons, is too extensive, in meaning, to admit of a full consideration of all the articles that it comprises. Many of them as emetics, &c., are mechanical remedies; others are physo-dynamics. Such, therefore, cannot, according to the arrangement, be considered here. Chemical antidotes, alone, are intended to be noticed in this place. Nor is it necessary, to treat severally of these articles, or to point out the indications particularly.

The Alkaline, Acid, and Corrosive mineral poisons, are those kinds most under the control of chemical antidotes. In reference to these, the following hints may be in place:

Poisons.	Antidotes.
1. *Acid Poisons*—	
Muriatic, Sulphuric,* &c.:	Carbonates of Soda, Lime, Potash, Magnesia.
Nitric, Oxalic:	Carbonates of Magnesia and Lime.
Hydrocyanic, Bit. Alm.:	Chlorides of Lime and Soda, Chlorine, and the
2. *Alkalies*—	[cold *Douche*.
Potash, Ammonia, &c.:	Vegetable Acids.

*In poisoning by Sulphuric Acid, water must be carefully avoided, on account of the heat it occasions with this acid.

3. *Corrosive Minerals*—

Antimony:	Strong infusions of Vegetable Astringents.
Arsenic:	Hydrated Peroxide of Iron, in water, Rubigo
Mercury:	Albumen, as the White of Eggs, &c. [Ferri.
Bismuth:	Milk, Mucilaginous drinks.
Copper:	Albumen, as White of Eggs, Milk, &c.
Lead:	Sulphate of Magnesia, Phosphate of Soda.
Nitrate of Silver:	Muriate of Soda.
Muriate of Tin:	Milk, White of Egg.
Zinc:	Carbonate of Soda, Albumen.

Order II.—ANTILITHICS.

"Antilithics (from αντι, '*against*,' and λιθος, '*a stone*,') is a preferable name to *Lithontriptics*, and is applied to remedies which counteract the tendency to the deposition of Urinary Calculi. The Urine, compound in nature, and very variable, is, in a healthy state, a little acid, from the presence of Super-Lithate of Ammonia. But there may be an excess of this, as in the Lithic acid diathesis, from irregularities of the digestive organs, check to the functions of the skin, &c. A deposit takes place of a reddish powder, or rather crystals, consisting chiefly of the Super-Lithate of Ammonia, sometimes with some pure Lithic acid. But when there is a deficiency of acid in the Urine, a white sandy deposit takes place, consisting chiefly of an Ammonia-Magnesian Phosphate with some Phosphate of Lime. Sometimes there is a deposition of Oxalate of Lime, as in the *Mulberry* calculus."

In the use of antilithics, as in other cases, the remedies must be selected according to the diagnosis; thus, in the Lithic Acid diathesis, *Alkalies* are indicated: in the Phosphatic, *Acids*, &c. Attention to diet drinks, is of the greatest importance. It is always well to change the character of the ingesta as much as practicable, from that under which the prevailing diathesis was established.

It is unnecessary to treat separately on the different articles of this order, as they have been elsewhere described. All that is here required, is to place them in juxtaposition with the indications.

1. *Lithic Acid Diathesis.*—In this, the following are among the most prominent remedies:

α. Potassæ Liquor. Potassæ Carbonas et Bicarb. Liq. Potassæ Carb. and Liq. efferves.

β. Effervescing Saline Draughts produce an alkaline reaction in the Urine.

γ. Potash and its Carbonates are more eligible than Soda, because the Lithate of Potash is soluble, that of Soda insoluble.

δ. Soda and its carbonates. Soda siccata and Liq. Sodæ effervescens. Sapo durus. Waters or Vichy, and other alkaline mineral waters.

ε. Ammonia and its Carbonates, act as stimulants and as antacids in the stomach.

ζ. Calcis Aqua. Creta præparata.

η. Magnesia or its Carb. Magnesia-water, the Bicarb. with excess of Carbonic Acid gas.

2. *Phosphatic Diathesis.* In this the weight of authority is in favor of the following:

α. Muriatic, also Dil. Sulphuric and Phosphoric Acids. Ure has particularly recommended Benzoic Acid and soluble Benzoates. Carbonic Acid.

β. Vegetable acids, as of Vinegar, may sometimes be used as articles of diet.

γ. Vegetable Bitters are required, with generous diet, Wine, Capsicum, and the avoidance of every thing depressing.

3. In the *Oxalic Acid Diathesis*, mineral acids with tonics, the Muriatic or Nitro-Muriatic. Capsicum, Meat, and nourishing farinaceous diet.

Local Lithontripics, as injecting very weak Nitric Acid into the bladder, or weak alkaline solutions. Electro-Chemical action. Lithotrity. Dr. E. Hoskins (Phil. Trans. 1843) recommends the introduction of weak solutions of chemical decomponents (as the Nitro-Sacchorate of Lead) instead of solvents, into the living bladder.

Order III.—ANTISEPTICS.

The term *antiseptic* (from αντι, '*against*,' and σηπω, '*to putrefy*'), comprises that order of agents calculated to prevent or arrest the process of putrefaction, as the *stimulants* and tonics, as well as chemical agents. The two former prove antiseptic, by their power to exalt the vitality of the tissues

implicated, and, according to the present plan of arrangement, are not entitled to a special consideration here. The most powerful stimulants and tonics, as Capsicum, Zingiber, Myrrh, Brandy, the Essential Oils, and Cort. Cinchona, Cort. Cornus Florida, &c., are considered among the best antiseptics of these kinds.

The chemical antiseptics are intended more particularly to be here represented. These consist principally of two kinds, viz: *Astringents* and *Absorbents*—the first impart preservative principles *to*, and the other abstract septic agents *from*, the tissues. The first prove antiseptic by yielding their tannic acid to the tissues, and thus, by a chemical union with them, render their composition more permanent.

All the most active astringent barks and roots, as Geraneum, Myrica Cerifera, Geum, &c. (see astringents), are good antiseptics.

CALX CHLORINATA.

Chlorinated Lime is prepared by passing Chlorine through Lime until saturated. The Chlorine may be obtained by heating Hydrochloric Acid with Binoxide of Manganese, gently. The lime may be spread out in a proper vessel and the gas thus exposed to it.

Physical Properties.—When fresh and properly prepared, chlorinated lime, or chloride of lime, as it is sometimes called, is a dry grayish-white pulverulent substance possessing a bitterish, acrid, hot astringent taste, and a feeble odor of chlorine. It possesses powerful bleaching properties. When the lime is perfectly saturated with chlorine it dissolves almost entirely in water, but when long exposed to the air it absorbs carbonic acid, thus carbonate of lime and chloride of calcium are formed, and the powder becomes moist, more insoluble in water, has the chlorine smell less strongly, and is much less valuable.

Use.—An invaluable antiseptic, and disinfectant. It will arrest putrefaction in an astonishing manner. Thus not only gangrenous parts are restored, but even putrid meat, putrid water and vegetables are recovered by its use, to a

sweet and natural state. Although it cannot be supposed to restore to *vitality* any parts that have entirely *perished*, yet it will arrest at once the *progress* of mortification and and putrefaction, and, as just stated, will restore parts affected with gangrene or the incipient stage of mortification. Its power, in this way, seems to be dependant on the feeble attachment existing between the lime and chlorine; the latter being disengaged by very slight affinities, when the lime will be free to absorb the various septic gasses, as carbonic acid, carbureted and sulphureted hydrogen, azote, and other noxious matters.

Chlorinated lime may be taken internally in from *gr.* iij to *gr.* vj or more, according to the strength, dissolved in one or two fluid ounces of sweetened water. From 3j to 3iv of the powder may be dissolved in Oj of Aq., to form solutions for external application. But it is difficult to give any precise directions as to the strength of the solution that may be required in all cases. This solution is not only useful as an antiseptic, but is of incalculable utility as an application to putrid ulcers, cancers, mercurial sores, syphilitic ulcers, ulcerated sore throat, burns, chilblains, etc., in all of which cases it will not only correct any attendant fetor, but will dispose the parts to heal. It is also a very successful remedy in scabies, much better, cleaner, and more agreeable than sulphur; also good as a wash in tinea capitis, and many other cutaneous diseases. It is an excellent ingredient in enemas from dysentery, typhoid fever, cholera, cholera morbus, and all putrid diseases. It is the best remedy in poisoning by hydrocyanic and hydrosulphuric acid, hydrosulphuret of ammonia, sulphuret of potassium, etc. The solution is said, also, to prevent the pitting of small pox.

LIQUOR SODÆ CHLORINATÆ.

℞ Chlorinated Lime, ℔j; Carbonate, of Soda, ℔ij; Water, Cjss. Dissolve the Carbonate of Soda in Water, Oij, with heat. To the remainder of the Water add by degrees the Chlorinated Lime, previously well triturated, stirring the mixture after each addition. Let the dregs subside, decant, and mix with the solution of the Carbonate of Soda. De-

cant from the precipitated carbonate of Lime, filter through linen, and keep secluded from light.

Use.—Same as the solution of Chlorinated Lime, but more agreeable for internal use, and as a gargle, in sore throat, fœtid breath, ulcerated gums, etc. It is an excellent internal as well as external application in all putrid diseases, especially in all fœtic discharges from the the uterus, vagina, and bladder. The latter may be rinsed out with the solution by means of a syringe and double canula.

CARBO LIGNI.

Charcoal is commonly prepared by subjecting wood to a smothered combustion, by covering conical piles of it thinly with earth, and then igniting it through an aperture at the top communicating to some fine combustibles in the centre, which is to be closed up as soon as the fire is well started. The best way to prepare charcoal, however, is by charring wood in iron cylinders prepared for the purpose. For medical use it must be well prepared and kept from the air.

Use.—Charcoal is one of our best antiseptics. It should be prepared in fine powder, in which form it may be taken in molasses or milk in doses of from a tea-spoon-ful to a table-spoon-ful. Exernally it may be applied in the form of a cataplasm made with yeast. It is also of great advantage in many other cases besides gangrene. Thus it is sprinkled upon ulcers, cancers, etc., to correct their fœtor, absorb acrid humors, and dispose the parts to heal. Its antiseptic power is well proven by its property of restoring putrid meat, putrid water, etc. It is a valuable pharmaceutic agent, chiefly for its discolorizing properties.

CARBO ANIMALIS.

Animal Charcoal is obtained by subjecting bones, horns, muscles, &c., to a red heat in close vessels, until vapors cease to be emitted. The residue, after being powdered, is known by the name of *bone-black* and *ivory-black*. In this state it contains 88 per cent. of Phosphate of Lime, and Carbonate of Lime, also 2 per cent. of Carburet with Siliciu-

ret, and a trace of Sulphuret, it is bitterish in taste, and may readily be distinguished from Vegetable Charcoal, by burning a little of it on a red-hot iron. Animal Charcoal is officinal on account of its attraction for the coloring matter of organic substances, a property probably owing to its extreme subdivision, and to the extent of surface which it exposes to any liquid filtered through it. The decolorizing power of Vegetable Charcoal may be increased by mixing Chalk or pounded flint with the vegetable matter previous to its being carbonized. Animal Charcoal is extensively employed in the arts for removing the coloring matter of syrup, and also in the preparation of Citric and of Tartaric Acid, and of the vegetable Alkalies and their salts, as Quina, Lobelina, Populin, Sailcin, &c. The same quantity of Charcoal may be used several times, but it requires to have been first dried and subjected to a red heat. It is either mixed or boiled with the Liquid to be decolorized, or the latter is allowed to filter slowly through a thick layer of it. For some purposes it requires to be purified.

Purification.—Take of Animal Charcoal ℔j, and pour on it gradually a mixture of hydrochloric acid and Aq. of each f℥xij. Digest with a gentle heat for two days, frequently shaking. Set aside and then pour off the supernatant liquor; wash the charcoal with water till no acid is perceptible, and then dry it. The Edinburgh College, subsequent to the digestion, direct the mixture to be boiled and diluted with two pints of water. Collect the undissolved charcoal on a filter of linen or calico, and wash it with water till what passes through scarcely precipitates with solution of Carbonate of Soda. Heat to redness in a closely covered crucible.

Order IV.—DISINFECTANTS.

Disinfectants (from *dis*, which here signifies separation, and *infect*, to contaminate,) are substances calculated to free the air of buildings, and rooms, as well as infected bodies in general, of the invisible, usually imperceptible particles which constitute infection and propagate disease. Although some of the means employed are purely mechanical, most of them are chemical, in their action. *Fumigations* and *Pastiles*

in most cases, only conceal the smell, without removing the causes, and are, therefore, worse than useless, in some cases in which there is danger that may be at first detected only by the smell. They are of great utility in many cases where exposure to offensive effluvium is unavoidable, as in judicial exhuminations, dissections, &c., in which cases that disgusting and insupportable fetor generally eliminated, may be entirely obviated, simply by wrapping up the subject for an hour or such a matter, in a sheet dipped in a strong solution of Chloride of Lime or Soda, or by sprinkling with the solution, by means of a common watering pot. Hospitals, Alms-houses, Jails, Ships, Sick-rooms, Privies, Sewers, Docks, &c., may be conveniently disinfected, either by simply sprinkling the floors, walls, &c., with the solution of these preparations, or by setting a vessel or two containing a few ounces or a pound of the chloride, in proper parts of the apartment, or place of infection. Should the circumstances render the preparation thus disposed insufficient, a little Muriatic or Sulphuric Acid may be added to the chloride, and in places not occupied the chlorine itself may be used. This may be obtained by heating, gently together, the Binoxide of Manganese with Muriatic Acid.

As additional means of this kind, the following may be named: Ventilation; Caloric; Acid fumes, as Sulphurous acid Gas, Hydrochloric Acid Gas; Nitrous acid fumes and Acetic and Pyroligneous acids are less effectual.

Destruction of infected matter by application of heat, of Quicklime, of Charcoal, &c.

Fumigations, Pastiles, Balsamic Resins, and aromatic Vinegar only diffuse an agreeable odor, covering but not destroying the fœtor.

Order V.—COSMETICS.

The term cosmetics (*cosmetica*, from κοσμεω, 'I adorn,') is applied to such articles as are used for the purpose of preserving and restoring beauty; and although these articles do not in the strictest sense, belong to the Materia Medica, yet as physicians are often called upon for articles of this kind, and

as many defects in the appearance of the skin, which may be removed by these remedies, are indeed pathological in character, the author has thought proper to give a few brief and practical hints on this subject.

Cosmetics may be said to consist of three varieties, viz: 1. Those which relate to the *skin*. 2. Those which relate to the *hair*. 3. Those which relate to the *teeth*.

1. Cutaneous Cosmetics.—Cosmetics are applied to the skin to soften or toughen the cuticle, improve the color, and to remove spots or discolorations.

Oleaginous, and Saponaceous substances soften the skin; Almond and Spanish Soaps, Milk of Roses, and Cold Cream, are also favorite articles of this kind.

Rose-water containing a little extract of Geraneum Mac. or any other innocent vegetable astringent will toughen and harden the skin.

Armoracia infused in milk is considered by Dr. Withering as one of the safest and best cosmetics for the skin. Bitter Almonds, the juices of Chelidonium Majus, Asclepias Syrica, Lobelia Inflata, &c., are considered good to remove ephelides, (*freckles.*) Diluted Acids, Alkalies, and the Chlorides of Soda and Lime, Charcoal, decoction of Wheat Bran, &c., are serviceable in removing blotches and spots. The Bicloride of Mercury, which has been so much used, forming with bitter Almond emulsion, Gowland's lotion, should not be used, as it has often done much mischief.

Face paints are employed to give artificial colors to the skin: Carmine to communicate a red, and starch powder a white tint, may be employed without any injurious effects; but the white metallic compounds, as Trisnitrate of Bismuth, Carbonate of Lead, and White Precipitated Mercury, Dr. Pereira justly says, are dangerous, as they are liable to become absorbed.

2. Hair Cosmetics.—Cosmetics are applied to the hair to render it smooth, glossy, and disposed to curl—to color it—to promote its growth—and, sometimes, to destroy it.

A *pomatum* for the hair, of excellent character, may be made as follows: ℞ Olive Oil or Oil of Almonds ʒij; Spermaceti

℥iij; Oil of Roses *gtt.* xx. Or it may be scented with other pleasant scented oils.

Many substances have been employed to promote the growth of hair, most of which have proved very unsatisfactory. The Oleo-resinous Extract of Lobelia, Olive Oil, and Alcohol, in equal parts, constitute the best preparation of this kind the author has ever used. It may be scented with Oil of Roses, or any other scented oil, according to fancy.

Depilatories are employed to remove superfluous hairs. The articles commonly used for this purpose are Orpiment and Quicklime, which are mixed in the proportion of twelve parts Lime and one of Orpiment. If ten parts of starch be added to this, and the mass then made into a paste with water, it forms Plenck's celebrated *Pasta Epilatoria*. But Arsenic is unsafe, and should not be employed. The following is better: Lime ℥j; Carbonate of Potash ℥ij; Charcoal in powder ℥j. Mix. It is applied moist to the parts where the hair is to be removed, and washed off when the object of its use is accomplished.

Hair Dyes are also made of various substances, some of which, as the Nitrate of Silver, &c., are injurious to the hair. *Orfila's* hair dye, which colors the hair black, is composed of Litherage (*oxide of lead*) and Lime in equal parts, or a little the most of the first, made into paste with hot milk or water. It is to be applied for some five hours, keeping the hair close or shielded with oiled silk.

3. Teeth Cosmetics.—Cosmetics are applied to the teeth, to cleanse and whiten them, and to destroy their unpleasant odor.

Astringent dentrifices restore spongy gums: such are the extracts of Myrica Cerifera, Geraneum Maculatum, Cornus Florida, &c.

Pumice, Charcoal, and the bone of Cuttle-fish in powder, will polish and clean the teeth. Chloride of Lime, Chloride of Soda, and Charcoal, are used as disinfectants for the teeth.

Order. IV.—ESCHAROTICS.

Escharotics are agents employed to corrode, decompose, or

destroy, abnormal growths, excrecsences, or simi-vital parts, which cannot be restored, and which become a source of annoyance, and often serious obstruction. When it is fully determined, that these diseased parts cannot be restored, and they must, of necessity, be disposed of, they are either removed with the knife, or the use of escharotics. Formerly the *actual cautery* was a popular means of this kind. But it is now very justly, almost completely laid aside.

Nitrate of Silver is a very popular escharotic. The Mineral Acids, also—particularly Nitric Acid—but none are so good as Carbonate of Potash. This article produces as little pain, as any other article of this kind, and is, perhaps, followed with less inflammation, than any other. It has also the advantage of being arrested in its opperation, almost at an instant, and that without any pain, and by means that will, themselves, be a benefit to the sore produced. Thus any of the soft oils will soon arrest the operation of potash, by forming a mild soap with it, and by which means the air is excluded, and the sore anointed. Acids will still more promptly arrest this escharotic. Among other articles that have been used, and found useful, are the powders of Podophyllum Pettatum, Sanguinaria Canadensis Hydrastis Canadensis, &c. Brown Sugar, Scorched Alum, Scraped Horn, &c., have also been considered good, as articles of this kind. The most common applications of this class of remedies, are in Cancerous tumors, Polypus, Hemorrhoids, Unhealthy Granulations, Fungus Hæmatodes, &c.

DIVISION III.

MECHANICAL REMEDIES.

Mechanical remedies only act as ordinary physical agents, in virtue of their mechanical properties; and hence are rather of limited application, and of minor importance when compared to the physo-dynamic remedies. Still there are numerous cases in which we are required to protect an abraded surface, sheathe an irritated canal, or dilute an acrid state of the secretions, or increase the solvent power of an excretion. For such purposes the more powerful remedies are as unsuited as these milder agents would be unfitted for controlling the more urgent symptoms of disease.

Class I.—EMOLLIENTS.

Emollients, as their name indicates (from *Emollio*, to soften), are medicines calculated to soften the tissues to which they are applied, and may thus include some of the expressed oils, liniments, and embrocations, with many cerates and ointments, such as the cataplasms and fomentations, of which the effects must be ascribed "to the relaxing effects of warmth and moisture upon the extreme vessels of the surface, propagated by contiguous sympathy to the deeper-seated organs." (*Paris.*) It seems desirable to retain the term of Emollients for external applications, and that of Demulcents for those intended for internal exhibition.

Order I.—OLEAGINOUS EMOLLIENTS.

Among the simple agents of this order may be named Oleum Olivæa (*olive oil*), Oleum Amygdalæ (*oil of almonds*), Ceta-

ceum (*spermaceti*), Adeps (*lard*), and most other soft *animal oils*. The following are some of the most important preparations of this kind:

UNGENTUM CETACEI: *Spermaceti Ointment.*—℞ Spermaceti ʒvj; White Wax ʒij; Olive Oil fʒiij. Melt them together slowly, and stir constantly until cold.

Use. A common dressing for wounds, sores, excoriations, &c.

UNGENTUM SIMPLEX: *Simple Ointment.*—℞ White Wax ℔j; Lard ℔iv. Melt together, and stir till cold. ℞ Olive Oil fʒvss.; White Wax ʒij. Melt, and stir till cold. Ed.

Use. A base for other ointments; also applied as a dressing for wounds, sores, &c.

UNGENTUM STRAMONII: *Stramonium Ointment.* ℞ Fresh Stramonium (*gimson*) leaves, bruised, ℔ij; Lard ℔iij; Yellow Wax ʒviij. Simmer together until the leaves become crisp, and strain.

Use. A detergent and anodyne ointment, useful in cancer and other painful ulcers.

UNGENTUM SULPHURIS: *Sulphur Ointment.* ℞ Sulphur ʒxvi; Lard ℔ij; Oil of Bergamot fʒij. Mix.

Use. A remedy in itch.

Other formulæ of this kind are found on pp. 322, 323.

Order II.—AQEOUS EMOLLIENTS.

This order embraces the various cataplasms, or poultices.

CATAPLASMA SIMPLEX: *Simple Cataplasm.* The D. College direct Oat Meal two parts and Flaxseed Meal one part. But Flaxseed, simply pulverized, and without having its oil pressed out, will make a better poultice than that of the Dublin College. The cataplasm is mixed up with hot water, and overspread with lard or oil to prevent too much adhesion.

CATAPLASMA CARBONIS LIGNI: *Charcoal Cataplasm.* ℞ Charcoal red hot from the fire, pulverize, and incorporate with simple or linseed cataplasm in a tepid state.

Use.—Antiseptic and absorbent cataplasm, very useful in cancers, foul ulcers, &c.

CATAPLASMA DAUCI: *Carrot Cataplasm.* ℞ Boil the root of the common Carrot in water until soft. Form into a mass.

CATAPLASMA FERMENTI: *Yeast Cataplasm.* ℞ Wheat Flour ʒxvj; Yeast Oss. Mix and expose to gentle heat until it begins to rise.

Use.—An antiseptic poultice. It also promotes suppuration, and corrects the fœtor of old sores.

℞ Yeast q. s.; Charcoal prepared as above. Mix.

Class II.—DEMULCENTS.

Demulcents do not differ very materially from the Emollients in their therapeutic character, as both are calculated to soften the tissues and to shield unprotected surfaces. These mostly consist of mucilaginous, saccharine, and starchy substances, which are so frequently found useful in softening irritated surfaces, and diminishing sensibility to pain, either when applied externally, or taken internally, as in coughs, inflammation of the intestinal canal, or irritation of the urinary passages.

These are intended for internal use, the emollients for external application.

Order I.—MUCILLAGINOUS DEMULCENTS.

Acaciæ (*Gum Arabic*) Mucilago: ℞ Acaciæ, ʒss.; Boiling Water, Oss.—Ulmus (*Slippery Elm*) Mucilago: ℞ Pulv. Ulmus, Cort., ʒj; Aq., Oj.—Lini Semina (*Flax Seed*) Mucilago: ℞ Lini Semina, ʒij; Boiling Aq., Oj. Macerate and strain.—Althæa Officinalis, (*Marsh-Mallows*); Glycyrrhiza, (*Liquorice*); Tragacantha; Starch; Tapioca; Convalaria Multiflora, (*Solomon's Seal*); Symphytum Officinale, (*Comfrey*), etc., etc.

Order II.—SACCHARINE DEMULCENTS.

SYRUPUS SIMPLEX: *Simple Syrup.*—℞ Refined Sugar, ℔ijss.; Water, Oj. Dissolve the sugar in the water, by means of heat; remove any scum which may form, and strain the solution while hot.

SYRUPUS ALTHÆÆ: *Syrup of Marsh-Mallow.*—℞ Marsh-Mallow Root, ʒviij; Refined Sugar, ℔iijss.; Water, Oiv. Boil the root in the water till there remains one half the latter; express and let stand for twenty-four hours so that the dregs may subside; pour off and adding the sugar, boil down to the proper consistence.

Sugar may also be simply eaten, or Sugar Candy, Sugar Lozenges, etc., may be dissolved in the mouth and thus taken in view of their demulcent effects. The sweet syrups are all more or less demulcent.

Class III.—DILUENTS.

Diluents are very closely allied to demulcents. The only difference being that in this class the water or aqueous portion of the compound is the chief agent, and is taken in much larger quantities.

Diluents are calculated to supply the functions of secretion, to dilute acridity, and diminish viscidity. They are of great importance, especially in fever, and inflammation of the organs of the prima viæ, and the viscera.

Cold water is the most congenial diluant in fevers and inflammations, and should never be prohibited. No medicines should ever be given that will necessarily exclude the use of water.

Medical diluents are of compound advantage, for while the water in them will subserve the common purposes of diluents, the medical principles with which the liquid is impregnated will fulfil other indications. Thus diaphoretic properties are often imparted to water, in the preparation of drinks or "*teas*" for fever patients.

Class IV.—BATHS.

Baths, especially the common vapor-bath, are among our most important means of cure. But as it was designed, in the present edition of this work, only to treat of *medicines proper*, the various auxilliary means have been simply noticed in their place. Baths are variously denominated according to their forms of application. The common *Vapor Bath* is the most important. This is capable of fulfiling three prominent indications; thus it proves *stimulant*, *relaxant*, and *diaphoretic*. The *Medicated Vapor Bath* has the additional advantage of the medicine incorporated. The *Tepid Bath* is more slow but permanent in its effects. The *Cold* or *Shower Bath* proves refrigerant in its primary effects, and diaphoretic and tonic in its secondary.

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