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American Materia Medica, Therapeutics *and* Pharmacognosy

Developing the Latest Acquired Knowledge of Drugs, and Especially of the Direct Action of Single Drugs Upon Exact Conditions of Disease, *with* Especial Reference to the Therapeutics of the Plant Drugs of the Americas

By

FINLEY ELLINGWOOD, M. D.

Late Professor of Materia Medica and Therapeutics in Bennett Medical College, Chicago; Professor of Chemistry in Bennett Medical College 1884-1898; Author of Ellingwood's Practice of Medicine; Ellingwood's Pregnancy and Labor; Editor Ellingwood's Therapeutist; Member National Eclectic Medical Association; American Medical Editors' Association.

WITH A PRACTICAL CONSIDERATION OF THE PRINCIPLES OF PHARMACY AND PHARMACOGNOSY

By

Prof. JOHN URI LLOYD, Ph.M., Ph.D., LL.D.

Late President American Pharmaceutical Association; Emeritus Professor of Chemistry and Pharmacy in the Eclectic Medical College of Cincinnati; Author of Etidorhpa, Stringtown on the Pike, Warwick of the Knobs, Scroggins, Etc.

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TO THE

MEMBERS OF MY OWN HOUSEHOLD

THIS BOOK IS

AFFECTIONATELY INSCRIBED

BY

THE AUTHOR

PREFACE TO THE ELEVENTH EDITION.

No material changes have been made in the text of this work in this edition other than the correction of a few errors. An important addition, however, has been made in the introduction of a consideration of the Colloids in Chemistry, by the greatest of pharmacists, Professor John Uri Lloyd, Pharm. M., Ph. D., LL. D., of Cincinnati, Ohio.

This study of this important department of Pharmacy by Professor Lloyd, promises to lead to the development of theories not before touched upon, and to truths which will clear up much doubt, and elucidate much that has not been satisfactorily explained. It will also probably lead to an explanation of the definite therapeutic activities of a large and important group of plant drugs, which are not possessed of any single active principle, and yet possess therapeutic properties, definite and reliable, each with a characteristic dynamism which renders it of essential value in the cure of disease.

It is the author's wish that the knowledge brought up to this advanced period in this work, will help to lead the profession, as a whole, out of the present confusion of Pharmaceutical and Therapeutic doubt in one field at least, that because of its truth and stability, is proving satisfactory to the most exacting requirements of many thousands of unprejudiced thinkers, in the study of direct drug action.

FINLEY ELLINGWOOD.

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PREFACE.

In the twenty-one years that have elapsed since Ellingwood's Materia Medica, Therapeutics and Pharmacognosy in its original form was published, so great are the changes that have taken place in the practice of medicine; so many are the discoveries that have been made and the theories and new measures that have been advanced, and so many are the new remedies that have been brought forward, that I have thought best to rewrite that work almost entirely, and to put it out in a different form.

In the time specified, advancement has been made in every branch of therapy. In the two or three decades prior to that time a prejudice had slowly developed against the use of plant drugs, and this still influences many. However, the knowledge of the superior action of the alkaloids has rendered many of these indispensable. Furthermore, the securing of a definite, advanced, accurate, and reliable knowledge of the action of those agents which are made from the plant in whole or in part, and especially since the manufacturers of the Specific Medicines have so perfected this form of fluid medicines, that they can always be depended upon to secure accurate results; all this has given to the profession a confidence in these drugs that is irresistible, because based upon their rational, organic, and invariable character.

Again the foreign supply of drugs of every kind has been cut off so fully by the European war, that American physicians have their attention forced upon American products, and they are quickly learning that our drug products are amply sufficient, with a little readjustment in some cases, to meet every possible moderate demand of every branch of our profession. This is indeed gratifying to those who have long studied these drugs in their every possible character and influence, and have learned all their superior qualities and have witnessed the immediate and superior influences in innumerable cases. This leads to a more general use, and this use confirms the impression made upon the mind of the prescriber that organic remedies have constant, subtle, invariable properties that no other class of remedies can possibly possess. This brings us nearer than ever before to a general recognition of plant drugs—organic remedies—as the true medicines for human ailments, just as organic foods are the only foods for man in health. Artificial foods are only readjustments of chemical and physiological food principles in organic form.

All this has caused me to desire to produce a work on American Medicines that will fully supply the immediate demands of American physicians, to give the profession at large the results of the investigations, observations, experiences, and successful uses of the class of medicines above named, which have been secured during the past century, and to bring this up with every essential proven fact, to the beginning of the year 1919.

In this work every statement has been weighed. Every fact has been estimated fully in order that it shall be accurate. The best known author-

ities in these lines have been consulted, that the work shall be at once recognized as **highly authoritative** in every practical particular.

While this aspiration is plainly a worthy one, it is a presumption of the highest order to believe that one man alone could accomplish it. This is a one-man work only in very small part. This book contains the results of the observations of perhaps 25,000 practicing physicians. The statements are made from comparisons and from conclusions drawn from the bedside observations of all. With these, the author has endeavored to make severe and accurate adjustments of his own observations and experiences during forty years of family, office, hospital and out-consultation practice. Our earnest effort has been made to make the work widely cosmopolitan; as far as possible unprejudiced, scientific, strictly practical, and rational.

I have been encouraged to undertake this work; indeed I have felt a conscientious impulsion to undertake it, from the almost universal praise, commendation, and congratulations received from the thoughtful, successful, practical men of every school of medicine. It would be practically impossible to declare which school has been the most generous in their patronage.

With faith in the sincerity of these sentiments, with hope for their full continuance, and with the assurance of Divine assistance and guidance, I give this present work to the Profession and through them to humanity .

FINLEY ELLINGWOOD.

Evanston, Ill.

PREFACE TO THE FIRST EDITION

of Ellingwood's Materia Medica Therapeutics and Pharmacognosy.

In presenting this work to students and physicians, the author desires to state that although it covers the field considered by other writers, it presents in addition the more recent observations of the action of drugs, many of which have never before appeared in book form, and the author's personal observations. There has been a need for a revision of our literature on this subject for several years past, and for the addition thereto of the results of the more recent observations and experiences. Up to the present time our literature has contained the results of the application of the principles of direct therapeutics originally enunciated, but there has been an evolution—a development, a progressive knowledge—of these principles, which was anticipated and desired by Scudder, King and others, which should be embodied in our permanent literature. These advancements it has been the aim of the author to present in this book, and also to show the consistency as a whole, of our principles concerning the influence of drugs, as applied in the investigations made, and here recorded.

It is possible that the confident expressions made in some cases concerning drug action may be received by many with incredulity, and it is possible also that the idea may have been expressed more strongly than the author intended, but to those who have had experience in prescribing the remedies here considered according to their specific symptomatology, after a careful, exact diagnosis of all the conditions of the disease for which prescribed, the confidence acquired by their successes will in most cases confirm the sanguine expressions of the author.

The author is under the greatest of obligations to Prof. John Uri Lloyd, of Cincinnati, not only for his most valuable contribution on the subject of Pharmacy and Pharmacognosy, but for the deep personal interest he has taken in the work, and for the willingness with which he has given advice, and tendered most valuable suggestions and encouragement, and for the valuable monographs furnished by himself and by the firm of Lloyd Bros. The author also desires to express his obligations and sincere regard for the assistance and encouragement most generously given by Prof. Anson L. Clark, of Chicago, with whom the author has felt free to advise during the entire period of the formation of his plans for, and the publication of this work.

Recognition is due the firm of Parke, Davis & Co., of Detroit, for their generous contribution of a series of monographs, nearly sixty in number, upon the origin, history, botanical character, and therapeutic properties of new and valuable vegetable remedies, and the freedom they have granted in the use of the information there obtained.

The faithful character of those parts of this work, devoted to the Materia Medica of the Vegetable remedies, and to Electro-therapeutics, is almost

entirely due to the faithful and careful study, untiring research, and persistent effort of Dr. A. W. Smith, of Chicago, late professor of Materia Medica in Bennett Medical College, who has labored constantly with the author during the entire year just past in the preparation of those parts of the work.

The strongest expressions of gratitude are due to all physicians, with whom the author has consulted concerning the character and scope of this book, for the very generous confidence they have expressed in its ultimate character, and for the warm words of encouragement and assurances of support they have offered, the influence of which has been a source of much help in the many hours of discouragement and depression, which the character of a work of this kind naturally entails.

In the preparation of the material for this work, and in the collection of the facts, the author has drawn freely upon the entire literature of the Eclectic School, and in the capacity of editor of The Chicago Medical Times, has for many years preserved files, clippings and made memoranda of suggestions from the entire exchange list of the current medical literature of all schools. The following authors are among those who have been freely consulted: King's American, The United States, and the National Dispensatories, and Scudder, Locke, Watkins, Webster, Ringer, Shoemaker, Hale, J. Henri Leonard, Wood, Bartholow, and Butler on Therapeutics, Gray's Manual of Botany, Bentham & Hooker's British Flora, J. N. & C. G. Lloyd, Drugs and Medicines of North America, Parke, Davis & Co., Pharmacology of the Newer Materia Medica, Johnson & Johnson, Monographs on Belladonna.

The medical journals most frequently quoted are The Eclectic Medical Journal, The Gleaner, The American Medical Journal, The Chicago Medical Times, The California Medical Journal, The Western Druggist, The Therapeutic Gazette, The Medical Record, The London Lancet, The Medical Age, The New York Medical Times, The American Journal of Pharmacy, The Pharmaceutical Journal, The National Druggist.

If the facts here presented should give a renewed impulse to investigation into direct drug action, and should in the least assist the physician in the prompt relief of human suffering, the efforts of the author will not have been unavailing.

FINLEY ELLINGWOOD.

Evanston, Ill., 1898.

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COLLOIDS AND COLLOIDAL COMPOUNDS IN PHARMACY

JOHN URI LLOYD, PHAR.M., PH.D., LL.D.

With much hesitation does the writer accept the responsibility of presenting even an introductory article upon colloidal problems and the application of colloidal effort to pharmacy. Even this seems the more presumptuous because, although the colloid is all-important to both the physician and the pharmacist, not one chapter of any work on pharmacy in the English language has ever been devoted to the subject. Nor have colloidal compounds received even a title recognition, notwithstanding the fact that the vast majority of organic remedial agents are structural conglomerates, either in colloidal condition or possessed of colloidal qualities. The problem, however, is one that must surely be of increasing interest to all whose thought in pharmacy concerns either life phenomena or the utilization of life-made structures, and some one must very soon take the initiative. It should be borne in mind, however, that although the present paper is restricted to our field (vegetable), the term "colloidal" is of general importance, both theoretical and applied, and cannot be confined to "organic," or life-made structures. The *inorganic* is a partner, if indeed, at this date, it does not in literature dominate both theoretical and descriptive colloidal phenomena.

Colloidal Phenomena Not New—One must distinguish between seeing with the eye, and *comprehending* that which the eye sees. Colloidal substances, as well as colloidal phenomena, have for ages been observed by man. To assert that colloidal phenomena are new, would be as great an error as to argue that before the days of Newton no one had ever seen an object fall to earth. *Science is progressive.* The systematic work of the chemist today could not be accomplished were it not for the facts established by series of researches made by empirical observers. The chain linking us with medieval or alchemistic research of the ages past is yet lengthening.

As illustrative examples, we need but mention that, long before the chemist had given to it the systematic name *basic carbonate of lead,* that substance had been made, under the name "white lead," by exposing lead sheets to the action of acetic acid vapor, in a bed of spent tan-bark. Before "verdigris" was known to be *copper acetate,* it was produced empirically by exposing sheets of copper to the action of lees of wine. Under the name "oil of vitriol," sulphuric acid was distilled from "vitriol" (sulphate of iron), long before its chemistry was investigated. "Spirit of salt" long antedated *hydrochloric acid,* while "cream of tartar" and "salt of tartar" came before either substance was systematically defined by the chemist. The distinguishing qualities of chemical agents such as these, as well as the phenomena of their manipulative production, were known in very primitive times.

The same rule applies to colloidal substances. Traditions establishing domestic manipulations do not reach the beginnings of colloidal phenomena in applied plant and animal life manipulations.

Knows anyone who discovered the process of making jelly from fruit, or from so unlooked-for a source as pigs' feet or beef tendons? Can anyone tell who first discovered, or at what date, the method of making edible tapioca from the poisonous starchy tuber of the manihot? What fisherman first made isinglass from the bladder of fishes? Who first made starch by washing it from the gluten of wheat flour by means of cold water, a domestic art yet practiced in primitive homes?

Substances such as these are all "colloidal," according to the broad definition of Graham (which answers for our purpose), all being possessed of colloidal attributes. Nor are they now viewed as primitive "simples," to be

passed with indifference. In the innumerable products of vegetation and of animal life, colloids abound. To them and to phenomena connected therewith, men high in scientific esteem are now devoting their most careful, systematic research. To the biologist they appeal, as well as to the chemist. The animal yields a line of colloidal products,—liquid, gelatinous and solid,—the differentiating of which paralyzes one confronted with the task. The world of vegetation is likewise prolific, beyond computation, in colloidal structures, but of these, few are as yet recorded, even by name. Details under which life-made colloids are born, grow, have their being and are dispersed, are as yet for the most part unknown. Every newly-opened door brings to view another, still closed. To these confessions the writer will add that in his opinion the doors leading to a comprehension of the vegetable colloids are as yet nearly all latched.

Neglected, Not Unknown—As already indicated, neither in medicine, in pharmacy, nor in science generally, can we trace the beginnings of our knowledge of the familiar attributes of colloidal substances and phenomena. Nor has anyone in either field yet attempted a systematic classification of the colloidal substances used in therapy. They have long beckoned us for recognition, as being very promising, be they derived from plant or animal, but the phenomena presented in their behavior have been generally ignored. In the light of our present knowledge, the inadequacy of which is increasingly apparent, it is evident that no soothsayer is needed to foretell that in important directions colloidal research is destined to herald the "bursting of the (pharmacist's) dawn."

The Name "Colloid"—This was coined nearly one hundred years ago, by a Scotch scientist, Professor Thomas Graham, who announced the distinguishing features, as tersely presented by Professor Parrish, (Parrish's *Practical Pharmacy*, 1864), in the following words:

"Water does not filter through parchment paper, but passes gradually through it by endosmatic action. In this passage through the paper, it carries with it all dissolved compounds which are crystallizable, while those which appear in an amorphous condition do not penetrate. These latter have been called by Graham *colloids*, the former *crystalloids*, and the process, which is well adapted for separating minute quantities of the latter from the first group, *dialysis*. The crystalloids do not dialyze with the same rapidity, and the process may therefore be employed for approximately separating two or more crystallizable substances of different dialyzing power."

Thomas Graham (Father of the Name "Colloid")—The life service of Professor Graham, the first author to call attention to the colloids, has been concisely recorded by the writer's Secretary, Margaret Stewart, A. M., as follows:

Professor Thomas Graham, the originator of the term "colloid," was born in Glasgow, Scotland, December 21, 1805, and died in London, September 16, 1869. He received a thorough classical training in the High School and University of Glasgow, entering the university at the age of fourteen. It was the wish of his parents that he should enter the established church of Scotland, but he early evinced a strong taste for experimental science, which at that period seemingly offered little inducement to an ambitious young man. After gaining his A. M. he became for several years a teacher of mathematics, and opened a private laboratory in Glasgow, where he taught chemistry. His life at this time was one of great privation, and there is little doubt that his death, at the age of sixty-four, was the result, not of active disease, but of the wearing out of a constitution enfeebled by privations voluntarily encountered in order that he might devote his life to scientific study.

In 1829, Professor Graham received the appointment of lecturer on chemistry at the Mechanics' Institution, Glasgow, and the following year he became Professor of Chemistry at the Andersonian University, Glasgow, where he remained until, in 1837, he was appointed Professor of Chemistry at the London University (now called University College). This chair he occupied, with great distinction, till the year 1855, when, in recognition of his great scientific services and his high character, he was appointed Master of the Mint.

Professor Graham's first original paper appeared in the Annals of Philosophy, 1826. This paper, "On the Absorption of Gases by Liquids," is especially interesting by reason of the fact that it deals with the subject of spontaneous gas movements, to the study of which Professor Graham's life work was largely devoted. In a paper contributed to the Royal Society, forty years later, he speaks of the liquifiability of gases by chemical means, in language almost identical with that used by him in this, his initial contribution to scientific literature.

Simultaneously with his experiments on gases, Professor Graham for many years carried on a line of investigations on molecular motions in liquid bodies. From these investigations he was led to one of his most important generalizations—"the recognition of the crystalline and amorphous states, as fundamental distinctions in chemistry." He was thus a forerunner of the most recent investigations in structural chemistry, "Colloidal Chemistry," and to his writings may be traced many suggestive thought outreaches that in recent years have been developed with most brilliant results.

To Professor Graham was due the discovery of "*Dialysis*," a practical method of separating crystallizable from non-crystallizable salts. He also first showed how hard, insoluble bodies, such as flint, could be dissolved abundantly in water, and converted into a soft jelly.

While not a voluminonus writer, he was exceedingly clear in his language, and conquered for himself a high place as a scientific investigator and teacher. In 1849, he received the gold medal from the Royal Society, and the following year he became the first president of the newly founded Chemical Society. He was the author of "Elements of Chemistry," and many professional papers.—(Compiled from Annual Report of the Smithsonian Institution, 1871, Proceedings of the American Academy of Arts and Sciences, 1868-1873, and Nature, 1869. The last named volume carries a wood-cut portrait of Thomas Graham.)

Colloids by Dialysis—The many details that came in both the theoretical and the practical application of colloidal efforts, need be neglected in our present paper, but yet the application of the method may be recorded, taking "Dialyzed Iron" as an example:

Into a wetted bladder, introduce solution of ferric chloride saturated with ferric hydrate (not more than half filling the bladder). Then suspend the bladder in water. Soon a stream of solution of crystallizable salts begins to flow through the bottom of the bladder *(exosmosis)*, whilst fresh water begins to flow into it *(endosmosis)*. After a time, the crystalline matter, as well as the free acid, will be found in the water, the contents of the bladder being increased in bulk, sometimes to bursting.

Artificial dialyzers are made by tying parchment paper over a cylinder, the paper acting as does bladder. Colloidal separations from colloids can be practically accomplished by means of manipulations with various solvents, as explained later in this article.

Dispersion—We need now briefly consider a phase of colloidal manipulative phenomena of the utmost importance to both theoretical science and applied art. The fact (see *Marvelous Physiological Attributes Inherent in Colloids,* page 19), that *condition,* not *weight* of material, is a first consideration in governing therapeutic activity, parallels the fact that physical condition or state of material governs also much in the line of pharmaceutical possibilities.

For example, a solvent may lie in contact with a substance in lumps, without appreciably dissolving it. Powdering the material increases rapidity of solution, and in instances, the amount dissolved. Extreme fineness of powder accelerates solution to a remarkable degree. And yet, the finest powder produced by attrition, is coarse in contrast with colloidal *dispersions.* Colloidal substances in dispersion conditions are divided to such a degree as to remain suspended in a liquid in which a gross material such as mechanically-made powder settles as a precipitate. Another step in colloidal dispersion, and the suspended material dissolves, the milkiness disappears,—true colloidal solution results.

In some instances, the presence of another colloid is necessary to the solu-

tion (colloidal suspension as well) of a colloid. Thus, the presence of "colloidal" tin (possibly other materials will answer the same function) seems necessary to the very existence of colloidal gold.

In like manner, one of the problems in plant colloidal effort is that of establishing influences of different colloids on colloidal solution, as well as colloidal interferences. For example, some resins (insoluble in water under ordinary conditions) may, by dispersion, be made to dissolve in water. The influences of associated colloids can accomplish this object, or induce them to remain in colloidal suspension. An understanding of this phase of the subject has been of much service in manipulative directions applied to plant colloids.

Bare reference to these facts answers our present purpose, but to this we may add that a world of both theoretical and manipulative opportunity, alike of value to the theorist and the artisan, is opening in this direction. The person confronted with the labyrinth of plant colloids meets everywhere a maze of perplexities, much more recondite than seems possible to those engaged in colloidal research of established elements.*[1]

What Are Colloids?—For our present purpose, Graham's original classification answers. A colloid may be defined, broadly, as a substance of no definite form, that refuses to dialyze, or dialyzes very slowly, and that, at least under ordinary conditions, is destitute of crystalline structure.*[2] It may be liquid, it may be jelly, it may be solid. It may be either colorless or colored. But in it all we find *no definite formation,* such as governs crystalline bodies, which are bounded by systematic planes, edges and angles.

The utmost difficulty is experienced in the differentiation of vegetable (as well as animal) colloids. Their attributes as concerns solvent properties and physical behavior, render theoretical deductions in these directions as yet impossible. Here, *experimentation rules supreme.* Dr. Wolfgang Ostwald* expounded as follows the difficulties that lie in the way of him who attempts to list the colloids:

"It is impossible to make a list from which one might discover whether or not a given substance is a colloid; attempts at this were made years ago, but proved unsatisfactory from the start. Why is such the case? It is because we already know too many colloids to make such cataloguing possible. While the preparation of a single new colloid was formerly regarded as of great interest, we are today familiar with methods by which we can at will convert whole classes of substances into colloids. There is little doubt that we have often worked with colloids, and still do so, without being aware of it. This is true, for example, of many of the dyes and of other organic substances of complicated chemical structure. As we proceed we shall encounter additional reasons indicating why such a listing of colloids is impossible.

"We might make attempts on other grounds to get an answer to our fundamental questions, but they would all prove unsatisfactory. From mere consideration of the chemical or physical properties of a substance, we simply cannot decide whether or not it is a colloid. *To make such decision we need to study the properties exhibited by colloid substances under experimental conditions—we need to make a short, qualitative, colloid-chemical analysis.*"

Minutia of Exactness Not Here Essential—Fortunately, there is here no necessity for minutia of expression. Indeed, it is safer to ignore details altogether. To define such terms as adsorption, cohesion, hydrosol, devitrification,

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* 1. See *Trans. Am. Pharm. Assn.*, 1879-1885, "Precipitates in Fluid Extracts."

* 2. And yet, under certain artificial strains, a few alkaloidal colloids have by the writer been forced into micro-frost figures, and even into micro-acicular forms. When the strain is removed, they tend to fly back into the colloidal form. In some cases the colloidal form is destroyed. If *hydrastine* be dissolved in dilute hydrochloric acid, it precipitates, by ammonia, as a bulky white colloid. On standing, the colloid *abruptly* resolves itself into micro-crystals, shrinking to a fraction of its original bulk. The phenomenon is most interesting under the microscope. Possibly liberation of water of hydration may account for the physical change.

* *"Theoretical and Applied Chemistry,"* by Wolfang Ostwald, Privatdozent, University of Leipzig.

hydrogels, protective colloids, sols, etc., etc., would be, here, impossible. To attempt to consider, in the space of this paper, the theories of Graham, Hardy, Mullen, Zsigmondy, Ostwald and Jordis concerning colloidal phenomena, would be presumptuous. For exacting details, as well as for discursive theories, the specialist seeks special or original publications. This phase of our problem is also met elsewhere, being well stated by most excellent biological authority, as follows:

> In most cases, only the general facts of structure are needed for the study of functions, and detailed facts of anatomy which have no relation to general functions are useless. * * * To illustrate: The important physiological point concerning the heart is that it is a pump, and the essential facts of its structure can be demonstrated in five or ten minutes with a heart obtained from the market.*

Again, concerning such agents complex as are capable of being considered as a whole, we have from the same authority the argument that it is "absurd" to consider that a person—

> may understand better the action of pancreatic juice after being enlightened by the statement that "the fluid contains the ferments trypsin, amylopsin, and steapsin." Likewise there can be no definite meaning in elementary work for these statements: "Bile contains glycocholic and taurocholic acids;" "The chief fats are margarin, olein, palmatin, and stearin."

Life Tissues Colloidal—As this paper is designed for readers of the medical profession, it is but natural to ask that thought be centered on biological structures as a whole, on foods that nourish, and on agents that affect them. In this connection, as a stimulant to thought, let us ask, Is the active part of muscle, tendon, fat or other animal texture crystalline? Are not the normal juices and secretions (excepting some parts of a few excretions) of healthy organisms syrupy, and do they not dry much like glue? Even here the colloidal predominates, to the extreme. Do we not find that even the *bone* of healthy animals, which is composed chiefly of the phosphates of calcium and magnesium, is in an *amorphous* (laminated) condition, notwithstanding the fact that from these same phosphates of calcium and magnesium, artificial compounds are readily produced in crystalline form in our laboratories? May we not accept the term "amorphous," in this article, as being sufficient to parallel the term "colloidal?"*[1] Study a plant in the field, or a tree in the forest. Dissect them as one may, the fresh, undried tissues are ever found to be non-crystalline. In their normal settings, gums, resins, albuminates, tannates, acids, glucosides and coloring matters are, in like manner, non-crystalline.*[2] The study of these from the colloidal angle opens a viewpoint that, long plainly set before our eyes, has been inexcusably neglected.

Builders of Colloidal Structures*[3]—Foods build, and foods sustain all structures, be they vegetable or animal. Here, too, the *colloid* dominates. Begin with milk, the food of infants,—pass to eggs, structures beginning the life of birds and fish,—continue with food products consumed to old age,—colloidal are they, to the extreme. Fat, muscle, blood and tissue generally are thus to be

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* *"The Teaching of Biology,"* by Francis E. Lloyd, A.M., and Maurice A. Bigelow, Ph.D., Teachers College, Columbia University.

*1. No attempt is here made to draw a line between *amorphous* bodies, and those *colloidal*. Both are structureless, so far as crystals are concerned. Very courageous would be the man who should attempt to draw a distinguishing line between substances that lie between the fiber of a rope and the mucilage of sassafras or quince, and say, "Here colloids end."

*2. Even though some dried plants, as rhubarb root, contain large crystals (calcium oxalate), this does not indicate that these are present in the green tissue. Nor does a crystalline deposit in a plant texture prove its service in the plant's development. More likely it is an encysted, by-product enemy.

*3. The writer includes, now, liquids as well as tissues. The *serum* of blood seems not to be structureless in a colloidal sense, although fluid.

defined. Fruits, vegetables, grains, are likewise, if they are nourishing agents, prolific in colloids. In their natural settings, even minerals in vegetation become colloidal. They here possess nourishing qualities quite distinct from the same substances in crystalline form. Vainly did the famous Dr. Jackson, of Philadelphia, half a century ago endeavor to supply an artificial bone nutrient. "*Jackson's Bone Food,*" or *Compound Syrup of the Phosphates,* proved inadequate.

Life Depends on the Structures Colloidal*1—Were this writer to consider the subject of healthy life organisms, whether vegetable or animal, be it in the form of solids or juices, he would find it much more difficult to determine those that are not colloidal than those that may be classified as colloids.*2 It seems as though all that nourishes life structure as foods, as well as normal life structures thus served, are colloidal in their nature. Cast-off excretions (such as perspiration) carry crystalline salts, while the urine is a prolific field of crystalline research.*1 But the stepping onward of normal biological processes, the transferring of vitality from colloidal cell to colloidal cell, or from colloidal-created organisms to organisms concerned in the support of life, seems ever to lean upon the movements and actions of colloidal bodies, which in their formation, and transformation, produce derivatives that, if normal, are colloidal.

The Carbon Atom vs. the Water Molecule—About half a century ago, the theory was advanced that what is known as Organic Chemistry, rests upon the migrations of the "Carbon Atom." This writer presumes to accept that *metamorphoses of life structures are,* in like manner, dependent upon migrations of the *Water Molecule.**2 It may perhaps be added that the growth and nourishment of organized creatures, both animal and vegetable, are dependent upon the utilization of colloidal structures. Colloidal is the bulk of the flesh of living animals; colloidal are the principal nourishing structures of the most valued vegetable foods, water being an ever-present necessity. Based seemingly upon the activities of water-bearing colloids is the very vital current itself, that passes into and through the life courses of living organisms.

Not only rearrangements involved in the processes of physical nourishment, but the very seeds of life that dominate the propagation of the species, seem to depend upon biological development of colloidal forms of matter, *in which water is the dominating agent.* Such as these include the juices of plants and animals, whether bound in cells or carried loosely in a complexity of intermingled serums in the veins or arteries, or perchance as liquid drops, conveyed by capillarity and osmosis into needful parts, perhaps far separated from the colloidal cell organisms that gave them birth.

Crystals in Life Structures—Possibly one might go even further than this, and accept that a crystalline structure such as sometimes appears in diseased integuments, or abnormal deposits, as for example, calcareous, semi-crystalline deposits in the secretions of the bladder or kidneys,—brings trouble to the creature thus involved. Many who read these lines may recall this writer's lectures of three and more decades ago, when in earnest questioning,

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* 1. Possibly salt and sugar may be cited as "crystalline" forms of food. Possibly, too, both become *colloidal,* before assimilation. See Ostwald's lectures on Colloidal Salt. Note the nature of the syrup made by dissolving sugar in water.

* 2. Do not neglect that some abnormal structures are highly colloidal. Indeed, the abnormal growths known as tumors, are spongy to the extreme. Cancerous substance is abnormally colloidal. The study of *colloids* may open the door to the extermination of the cancer.

* 1. This writer has often been confronted with the seeming parallel in plant life. Are not the inorganic slivers of crystals such as are deposited in plant tissues, e.g., the Indian turnip bulb, waste? Likewise the silica in hickory bark, and the stems of oats, rye, etc.

* 2. *See Proc. Am. Pharm. Assn.,* Philadelphia, 1902, p. 447, *"Organized Water as a Food."*

he presented to his classes such problems as these. To the homely adage, "Nature abhors a vacuum," would he add, "Life structures detest a crystal."

To Summarize, Briefly—In their relationship to life, as this writer now views the problem, colloids may be classed as formless, vitalized structures (cellular, emulsion or serum), capable of creating, nourishing and even of *destroying* the very life of their host. Colloids that take our care as pharmacists may be in liquid form, as serums, clear as water; an emulsion like milk or egg yolk, glutinous as egg albumen, or plastic as the jelly fish; or they may be, on the contrary, tough, dry and hard, as horn.

Colloids Not Necessarily Organic.—Nor, as has been remarked, need we restrict colloidal thought to *organic bodies.* The *inorganic* is likewise prolific in colloidal substances and phenomena. Indeed, let us repeat; perhaps more attention has been given in printed page to the inorganic field than to substances that rest in the great natural home of vitalized colloids, namely, the vegetable and animal kingdoms. Turn to Ostwald's lectures, to Zsigmondy's treatises, to scientific colloidal literature as a whole. We find special chapters devoted to "Inorganic Colloids," "Colloidal Oxides," "Colloidal Salts," "Colloidal Sulphides," "Colloidal Gold," "Colloidal Silver," etc., etc. These, as remedial agents, are now being seriously considered as possessing peculiar characteristics, far more active than the same elements in grosser condition. And yet, little attention is being given to colloidal *life* structures, as exemplified in plants.

Marvelous Physiological Attributes Inherent in Colloids—The researches of Dr. S. P. Kramer*, ex-President Cincinnati Academy of Medicine, have enlightened us regarding the distinction between colloidal and crystalline silicic acid. His own words are all-sufficient:

"The reaction between lime and silica is very interesting and important. If one add a small quantity of lime water containing 1.4 per thousand of Calcium Hydroxide to a solution of colloidal silicic acid (containing .7 per cent), a jelly is immediately formed. This is probably an adsorption compound and not a true chemical compound. The amount of lime adsorbed varies very greatly and if one keeps on pouring water over such a jelly an increasing amount of lime is taken up.

"This calcium silicate or adsorption compound is exceedingly toxic. Thus an amount of this jelly solution containing 5 mg. (.077 grain) of calcium silicate when injected into the jugular vein will immediately kill a rabbit weighing 1,500 grammes (23,148 grains). When this jelly is examined under the ultra-microscope it is seen to be made up of amorphous clumps much larger than the minute particles that are found in the colloidal solution of silicic acid.

"If to a solution of sodium silicate there be added lime water, instead of a colloidal jelly there is formed a definite aggregate or precipitate of calcium silicate. *This form is not at all toxic.* One may inject 100 mg. (1.5 grains) of this form of calcium silicate into the jugular vein of an animal without producing any effect whatsoever.

"Another very interesting fact in regard to the toxicity of colloidal silicic acid was accidentally found. As these solutions get older they lose their toxicity, so that often after six months they are not at all toxic when injected intravenously. The same thing is true of their calcium compounds. That is, the jelly formed by adding lime water to one of these old solutions of silicic acid is also not toxic.

"Through the courtesy of Prof. John Uri Lloyd and his son, Mr. John Thomas Lloyd, I was able to examine these colloidal solutions of silicic acid through the ultra-microscope. The fresh solutions show a larger number of minute particles with Brownian movement. The older solution shows a lesser number of particles with Brownian movement, and an increasing number of minute crystals. In other words, the colloidal silicic acid gradually changes to a crystalline form and when crystalline is no longer toxic.'

Such examples could be amplified extensively. In like manner we find plant colloids increasingly serviceable as contrasted with grosser forms of the

* Read and illustrated with specimens, before the Cincinnati Research Society, February 1st, 1917.

same substances. None, however, that are normally non-poisonous have as yet proven toxic.

Pharmacy Cannot Neglect Colloids—Turn now to such phases of current, classified "organic colloids" as are generally considered important. We find extended treatises on soaps, rubber, emulsions, animal textures and dye stuffs, but with the exception of emulsions, little practically touches colloids in pharmacy. And yet, are we not ourselves to blame for this neglect? From the earliest date, decoctions and infusions of plant agents *(colloidal)* have been, and are yet, wholly in our field. Tinctures (mainly conglomerates of colloidal solution) in primitive form, were brought to medicine through their traditional use in domestic life, and came thence to us. Medieval pharmacy also gave the crude extract a place. Emulsions are ours by right of inheritance. In colloidal research, this writer believes, lies the great opportunity of the coming pharmacist; and in the coming pharmacist he has implicit faith. The crystal will hold its proper position, but it must cease, in our field, to dominate research thought. With this in mind, let us extract, as follows, from a series of articles by the writer, titled *"Strength vs. Quality":**

"An error common to a superficial, as well as to a one-sided or fragmentary conception of pharmacy, is that of considering *strength* and *quality* as synonymous terms. As we have said, it is a common error, but it is one established by very high authority. The truth is that, although more or less related, the constituent that gives the factor *strength*, is often less important than are the attributes that go to make up *quality*, which, perhaps more than does strength, tends to high excellence."—October, 1909.

"Chief among the factors of this liberation of good men from prejudice is the new chemistry known as 'Colloidal Chemistry.' In this 'New Chemistry,' the best minds of the world are now studying, although the foundation of the work laid by Graham in the beginning of the last century has been constantly augmented by others in the passing along.

"But, it may be asked, what has this to do with our subject? To such a question I would reply, '*Everything.*' Colloidal chemistry is based upon the fact that *quantity* is but one factor in many directions that involve both chemical and therapeutical action. The *condition* of a substance is a mighty factor as concerns its action as a *thing*. and necessarily in this case, becomes a dominating agent in its therapeutic application. But even this is not new. Did not the United States Dispensatory, fifty years ago, record that six ounces of mercury swallowed by a man with suicidal intent, produced no appreciable action of the mercury, whereas a few grains of mercury finely divided, formed the active agent, *blue mass?* The first recorded dose of resin of podophyllum was a lump of resin as large as the first joint of the thumb, and from this the patient recovered. Had the remedy been triturated to a fine division, it is safe to say that no human being could have withstood even a portion of that heroic dose. Physicians comprehend full well the increased activity of subdivided substances, such as mineral salts and resins. The works of clinical observers, such as Webster, Scudder, Ellingwood, Fyfe, Felter, Thomas, and others of our school, testify to this fact, whilst every page of any work devoted to Homeopathic therapy teems with living examples.

"And yet, such powders as these do not comprehend, other than in very minute traces, colloidal dispersion. In these triturates, physical division prevails. Colloidal ultimates are practically unreached. And yet, so marked is the energetic increase of a triturated drug, as to have established the fact of its intrinsic values in clinical therapy beyond the shadow of a doubt. The *quality* of a drug depends not alone on the weight of the materials; its *physical condition* is all-important. With this thought in mind, consider how physicians of all schools direct their prescription mixtures of dry drugs to be made into 'a fine powder.' Note how desirable are the triturates of milk sugar with a selected salt or resin.

"And yet, we have not as yet reached colloidal structures that stand in liquids without settling, that pass through a filter paper, that are so finely dispersed as to even receive the name, '*Colloidal solutions.*'

"Let me repeat that a consideration of such as this is not new to those who in times gone by have honored me by listening to my lectures. Although the experiments of Graham were used as texts for definitions, we together passed into outreaches that surely will make familiar to those who listened in those days, the principles of

* *Eclectic Medical Journal*, Cincinnati, 1909 to 1914.

'colloidal activity,' now looming up as a mighty factor in the evolution of medicine, and which is liberating from bondage the man who believes that *quality* is not necessarily dependent on *quantity*, that the factors that confront the pharmacist are not to be fully explained by symbols, formulæ and equations."—*March, 1914.*

"With such as this before us, the question may be asked, 'What is the connection between the title that heads this article, and that of the paper from which these quotations have been made?' Furthermore, 'What concern has the physician in the bringing before him of pharmaceutical problems that need, in the opinion of some persons, be the care only of the maker of medicines?' To these queries I will reply that I feel assured that the physicians who read this journal, and to whom my papers on pharmacy and connected subjects have, for over a generation, been successively presented, will fully comprehend the connection between that which is presented in this paper and my preceding paper in the March *Eclectic Medical Journal*, and that they are likewise in a position to link the two with the paper that will follow.

"We are now surely upon the threshold of a proper recognition of *structureless* pharmacy. We have reached the 'bursting dawn' of the pharmacist's opportunities,—contact action, mass action and colloidal qualities of both structureless structures and minute fragments *(not atoms)* of dispersed compounds. Molecular colonies of elements, must be a scientific and recognized part of the most advanced chemico-pharmacal field now looming before us under the name of *colloidal chemistry.*"—*April, 1914.*

"The preceding papers consider in a general way the problem of plant structures, the aim being to suggest that to ignore natural structures is to neglect an opportunity in pharmacy. That whilst the ultimates broken out of structures are of value in therapy, the structures yielding the ultimates are possessed of qualities that in many directions make them superior to the artificial products.

"It may be reasoned, also, and very consistently, that to dispossess a natural drug texture of its colloidal qualities is to alter its condition otherwise than physically. In this, we believe, and in this direction we accept that the art of pharmacy will yet evolve until its recognized importance in its coming field will be established to all concerned in both chemistry and therapy.

"Let us again repeat that in such as this, no reflection is placed on either the analytical or synthetical chemist. Upon the contrary, we believe that the time will come when chemistry will recognize the fact that the *beginning* of the study is the consideration of such problems as may be expressed by formulæ. In a time to come, will also follow a scientific comprehension of pharmacists' structures that now lie beyond the eye of the talented man engaged in the study of the products broken out of these, as yet, formless colloidal bodies."—*May, 1914.*

Nature's Organic Colloids—The study of *inorganic* colloids must be comparatively simple as contrasted with the colloids of vegetation. Iron oxide of exact purity can be easily produced, and its qualities, colloidal and otherwise, established without complication difficulties. Chromium, copper, gold, silver and other elements offer the same opportunity. A known, and pure standard, is accessible with such as these, and consequently, with these, the exactness of science is possible. But the *vegetable* colloids are bundles of perplexities, presenting even in their natural settings, exceptional resistances to comprehensive research. The products and by-products of some of these (a few only) occupy established position. Materials such as these are, in themselves, typical of adhesion attributes and physical affinities. Their inter-relationships are so delicately balanced as to make even adhesion contaminations recondite subjects of investigation.

Nor are "organic structures" altogether "organic," as the term organic was once defined. In the living organism, be it either plant or animal, earthy material is surely vitalized. In its various settings a molecule of presumably inert earth may exert a diversity of adhesions, or perhaps, one might say, *colloid affinities.* Witness, for instance, the "earthy" part of plant textures in which such substances as gum arabic, by reason of the influence of the natural calcium structure, becomes an example of a typical adhesive colloid. Attempted purification or elimination of the "inorganic," by chemical processes, results in unexpected rearrangements. The original colloidal body flies into fragments under the touch of the aggressive chemical,—new bodies spring into

being. A parent colloid, thus unbalanced, may supply definite crystalloids, such as the crystal alkaloids and their salts, yielded by some drugs (colloidal plant mothers),—under the touch of acids and alkalies, or the products may make a litter of new colloids. Turn now to the animal.

Glue is possibly as nearly a typical *animal colloid,* as can be cited. But when one seeks to purify glue, structural changes arise, that contaminate by reason of the side products abstracted from mother integuments, as well as by others that result from disintegration. A known mass of glue, freed from fats by appropriate solvents, may retain its integrity after being dried. But the changing attributes of its constituents, under simple manipulative processes such as re-solution and drying, make that mass of glue a chain of physically-different substances, that balk even the chemist's research. Ask the artificer if glue (Graham's typical colloid) remains uniform in quality, as redissolved day by day.

Turn Now to the Pharmacy of Colloidal Vegetation—Nearly half a century ago, this writer became enthusiastic in the study of attributes of plant structures lying in the borderland, or even outside the limits of what were then included in either legitimate chemistry or recognized pharmacy.* This field of investigation proved a wonderland of mysteries that became more entrancing as the years passed, and yet, increasingly perplexing. But within recent years, such contributions are more generously received, partly because of the clearer view that now prevails regarding the utility of evolved compounds, partly because advanced thought in pharmacy more fully comprehends its inherited scientific opportunity. Surely, the man engaged in vegetable colloidal research is entangled in a mighty labyrinth. The near is misty, the distance shades into dense fog.

First Recognition of Colloids in Pharmacy—Possibly the nearest approach to semi-official recognition of the colloid in pharmacy was *Dialyzed Iron* (see page 15), a preparation in which most of the crystallized chlorides or sulphates are, by means of bladder or parchment dialyzers, separated from the colloidal iron oxides. Even here the term "colloid" seems to have been generally, if not totally, ignored in pharmaceutical literature, the commercial as well as the descriptive title of the product, "Dialyzed Iron," being yet retained.

Decades ago, "blue mass," a triturate in which mercury was "extinguished" (as well as mercury with chalk), approached the colloidal in theory, although the resultant material was far from being reduced to colloidal ultimates. In like manner, scaled ammonio-citrate of iron and potassium, as well as scaled tartrate of iron and potassium, called then "amorphous," were, half a century ago, great favorites. All these lay within colloidal boundaries. To this it might be added that solution of ammonio-citrate of bismuth (Liquor Bismuth) might likewise be given a setting as the result of early colloidal pharmaceutical effort. Such as these answered in some respects the natures of Graham's colloids (although not made by dialysis), but as far as this writer is aware, no attempt was ever made to consider them in a colloidal light. Need one say that "treacle" of times gone by, that confections and electuaries of medieval pharmacy, partook of colloidal attributes? Surely the pharmacist need not go out of his home to find (very early) colloidal recognition.

Animal Biologicals—But pharmaceutical effort amid colloidal structures, though dormant in its old home, has been elsewhere active. Strange as it may seem, renewed colloidal research in pharmacy came recently in the direction of the pharmacy of animal juices and products, all of them structureless (so

* See contributions to the Amer. Pharm. Assn., 1879 to the present date, as well as numberless articles in Eclectic, and pharmaceutical prints, touching various phases of this subject.

far as this writer is aware), if molecular formulæ, capable of blackboard exposition, be taken as the standard. Here, too, we find the term *colloidal* neglected, although products such as these wedge into the society of Graham's first typical colloid, glue, which gave the very name "colloid." Let us quote from Zsigmondy:

"Substances, such as dextrin, rubber, caramel, *proteids*, *glue* (ital. mine) etc., exhibited the further peculiarity of not (or at least with extreme slowness) diffusing through gels*[1] plant or animal membranes. Because glue shows these and other properties common to colloids, in an especially noticeable manner, Graham called this class of substances "colloids," after glue (Greek *kolla*—glue, and *eidos*—appearance)."

In closely-allied lines, we find the term *vaccine* (following Jenner), which seems expressive of a *use of the product*, while the term *serum* more reminds one of "juice." And yet, does not the word *colloid* embrace animal juices and complicated non-crystalline structures? Do the makers of these products crystallize either *serums, or vaccines?*[*2]

"Biologicals" Not Restricted to Animal Products—The term "biologicals" is perhaps so firmly established by usage, as to divert thought to animal products only. But may not one ask, Are colloidal life organisms, or *substances biologically active*, derivatives of animals, only? Is the great world of vegetation, that encases the earth with its wealth of constituents, *dead?* Nor is it apparent why plant substances are excluded from "biologicals," if the term "biological" applies to "the science of living organisms." *(Dorland.)* The colloidal plant parents of strychnine, morphine and other alkaloids, have qualities even more pronounced than have many of the animal products and derivatives, and the same is true of the cathartic resins and the energetic glucosides, be they living structures or by-products of vital action. May we not, in the hope of giving vegetable pharmacy her deserved rights in the biological field of applied colloids, without taking a sliver of credit from anyone, ask, "Is a vegetable structure either less "biological" in its origin, or less life-influencing in its action, than an animal product that carries, second-hand, as modified by the creature from veegtable food, the transferred cell energy of the plant on which the animal feeds? May it not be justly accepted that pharmacy embraces two[*3] great biological divisions, the first vegetable, the second animal, both of which supply life-bred and life-affecting structures? Let us now consider, in vegetation's field, some of the problems confronting the pharmacist.

Colloidal Bundles[*4]—Accepting that interlaced, non-crystalline substances compose the major part of either fresh or dried plant textures, one may ask, Can these complicated structures be untangled, without integral alterations that involve even fundamental rearrangements, leading to the total destruction of the mother complexity?[*5] The writer is convinced that, if this is to be accomplished, *heroic chemicals must be excluded from such manipulative processes.* Even the touch of acid or alkali may be fatal to the equilibrium of structures as delicately balanced as are many plant colloids in their natural settings. Every fragment of natural vegetation carries in itself, interlaced or in juxtaposition, associated structures, some of which are prone to change into new

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* 1. A term used as an abbreviation for *jelly*.

* 2. Graham's definition of *colloid* has been elaborated to a great degree since his day. We consider, however, that Graham's classification is sufficiently comprehensive for our present purpose.

* 3. Possibly but one. Who can draw a clear-cut line between the animal and the vegetable kingdoms?

* 4. The writer has long used the term "bundle" in this sense, but so far as he is aware, it is not elsewhere thus employed.

* 5. Admit that in animal directions activities foreign to the natural juice may be induced by artificial cultivations. Alas, too well has this writer learned from distressing experience that this rule applies also to plant "biologicals."

bodies at the slightest opportunity. A breath of air, a touch of acid or alkali, even temperature variations, or the moisture of the atmosphere, is ofttimes all that is needed to set in motion a chain of reactions leading to tremendous alterations. Note how the sliced apple turns yellow before one's eye. Observe the effect of air on a freshly cut root of Macrotys (Cimicifuga). Who knows the life story of the inter-reactions by which, from the most intensely acrid vegetable, green Indian turnip, a white starch, insipid to the taste, remains on drying?* Have we not, for decades, learned by experience that many roots should be dried *whole*, not *broken*,—that many plants cannot even be dried without destruction of their inherent qualities, surely not explainable by mere water evaporation? Very kindly must be the touch that to delicately-balanced plant structures brings not textural reconstructions.

There are, however, characteristic divisions, in which parts of the affiliating constituents of a plant's texture are so firmly established physically, and so congenial in attributes, as to permit of group associations, under the application of the separating influences of artfully applied, neutral liquids. Space now permits no details,—special examples, even, are out of place. We need not seek afar for a text,—it can be taken from almost any vegetable substance, be it root, bark or leaf.

Primary Bundles—In the process of extraction, be it maceration or percolation, the most promising neutral liquids, in the writer's experimentation, are a set of fourteen that, several decades ago, were by him selected for solvent purposes.*2 The chief components of the groups to be considered as making up "bundles," of which the constituents have friendly solvent attributes, are:

1. *Materials soluble in water* (gums, albuminates, glucose, sugar, earthy salt compounds, many alkaloidal colloids, etc.).
2. *Materials soluble in alcohol* (resins, essential oils, flavone derivatives, some fixed oils and fats, chlorophyl, chlorophyl-wax, etc.)
3. *Materials soluble in ether* (fats, fixed oils, wax, etc.)
4. *Materials soluble in glycerin* (tannates and related bodies, especialiy the red tannates).

By means of the neutral solvents named (some substances are soluble in several of the liquids), successively applied, most plants, be they green or dry, may be practically abstracted of their soluble content. Each saturate*3 is not an ultimate, but in itself constitutes a "bundle" of associated constituents, which by further subdivision, is capable of yielding yet more closely-related sub-bundles. For example:

Sub-divided (Secondary) "Bundles"—Each primary "bundle," regardless of the solvent used, may carry contaminations (adhesions) of the others. For example, if water be first used as a manipulative solvent, the product may be contaminated by adhering fat and resin, although, when pure, fats, resins and fixed oils are (unless in dispersed condition) practically insoluble in

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* In the green bulb of the Indian turnip, micro-crystals of calcium oxalate of needle-like sharpness are observed to shoot, like arrows bombarded from a bundle. This record, made by Dr. H. W. Wiley and W. E. Safford, botanist in the Bureau of Plant Industry, is of extreme interest. See *Journ. Am. Med. Assn.*, Vol. 72, p. 61. Quite unlike this, the acridity of nettle when the leaf touches the skin is said to depend on injections of formic acid.

* 2 These are Glycerin, Water, Alcohol, (U.S.P. 1880), Methyl Alcohol, Acetone, Chloroform, Amylic Alcohol, Acetic Ether, Sulphuric Ether, (U.S.P. 1880), Benzol, Carbon Disulphide, Benzin, Turpentine Oil (rectified) and Liquid Petrolatum. (*See Proceedings Am. Pharm. Assn.*, 1879-1884-1918, *"Precipitates in Fluid Extracts,"* etc.)

* 3. This term is used *relatively*. Liquids appropriate to the solution of plant constituents may pass from solution of plant structures in liquid, to solution (absorption) of liquid in plant structures.

water.*[1] When undesirable in the final product, this fat must be separated.*[2] In like manner, primary "bundles" derived by means of other solvents, may carry adhering materials whose location as regards solvents, is elsewhere, and which may be transferred to their natural homes by subsequent manipulations with appropriate cleansing*[3] solvents. Transference of yet other slivers can be accomplished by means of yet other neutral liquids, having the power of making closer cleavages.*[4]

In some cases, the process of precipitation by means of a liquid affiliating with the original menstruum, but in which one or more of the constituents soluble in the original liquid is insoluble, may be employed to dissect a bundle of colloids. Thus, if the gum of a water-extracted group is desired,—free, we may say, of an alcohol-insoluble fragment,—the addition of alcohol to the water-extracted colloidal complexity makes a precipitate of the gummy part of the substance, practically free from alcohol-soluble materials. The precipitate may, however, carry a mixture of other substances, such as seeming*[5] inorganics, likewise insoluble in alcohol. A next step (after re-solution), by means of yet other liquids, may then precipitate other extractive slivers, some desirable in themselves, others undesirable, all being parts of the original percolate. Without the use of energetic chemicals, colloidal plant structures by such manipulative processes may be dissected and individualized to a degree of pharmaceutical satisfaction, even though not to absolute chemical perfection.*[6]

For special purposes, *dialysis* may be employed. (See *Colloids by Dialysis*, page 15). Spontaneous evaporation through an absorbent mass medium is often applicable, whereby capillarity differentiates colloidal mixtures closely connected so far as solvency is concerned. Purification by adhesion attractions, through a capillary medium such as blotting paper, may be absolutely necessary as a final separator of certain closely-locked structures. *This latter process enables one to make very complete cleavage separations of materials which bear nearly exact solubilities.*

Colloids in Pharmacy Essential in Therapy—Whoever enters this field, must needs liberate himself from some of the limitations concerning both thought and action embraced in past authoritative pharmaceutical processes, as applied to plant structures. Every root, bark, flower or herb is a separate creation, carrying group entities ("bundles") that need be studied in a new light as concerns applied pharmacy.

Does not the fact that colloidal substances constitute the bulk of the animal and vegetable kingdoms; that colloidal phenomena dominate life-building as well as life-destroying processes; that the most valuable and kindly of all natural plant remedial agents, as well as those most energetic (does not this apply also to animal vaccines and serums?) are colloidal, bid one absorbed in seemingly distant fields, be patient with a neighbor entangled in the intricacies of these

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* 1. Even then, the presence of other colloids is essential to solution of material amounts, as well as to the permanency of the solution. In our experience, great difficulty is met in preventing formation of progressively larger molecular aggregations that finally produce precipitates.

* 2. For example, benzol will clean the primary water package from its fat, often without disturbing the arrangement of other components of the water-soluble "bundle." This fat may be a composite that, if desirable, may be shattered into yet closer ultimates.

* 3. These adhering substances may be likened to *dirt* ("matter out of place"), which may be washed away, much as soap-water removes grease from an adhering fabric.

* 4. In some manipulative processes, these recovered adhesion films become, on a large scale, valuable by-products.

* 5. This term is ventured to cover materials in which earthy substances are present as part of the plant texture. In this writer's opinion, they are then *organic*, being naturally-constituted parts of vegetation. Their solubilities are often surprisingly the opposite of artificial salts of these same earthy substances.

* 6. Occasionally unexpected destruction of natural structures follows the use of liquids seemingly innocent. For example, the pronounced alkaloidal structure of Sanguinaria is utterly destroyed by contact with Acetone for a very limited period. Chloroform likewise reacts destructively in special cases.

stupendous outreaches? Do not numberless examples in which crystallization is necessary to purity perfection of the material that assumes the crystal form, bid him involved in the magnitude of the colloidal world, be very patient with the man content to argue that only structures that will crystallize are entitled to scientific recognition?

In the rivalries of theoretical or academic discussion, the pharmacist has little concern, unless it be as avocational diversion. His first aim is the utilization of materials serviceable to humanity,—in this object he both thankfully accepts and gladly utilizes the gifts that come from all directions. To him, a jelly or a crystal alike appeals, if it be adapted to the relief of mankind's ailments.

THERAPEUTIC ACTIVITIES OF NON-TOXIC PLANT DRUGS

There has been quite a tendency during the past four or five years toward the presentation of arguments that organic remedies cannot have any active medicinal properties, unless they contain active principles.

It is with great difficulty that any theory can be advanced that will sustain an argument in favor of a dynamic therapeutic influence, specific in character, definite and reliable, invariably present of an absolutely benign, non-toxic, unchangeable character. Such a theory, however, may more readily evolve itself from a perfected knowledge of the *Colloidal character of plant products,* so lucidly presented by Professor Lloyd in the above article, and for the first time incorporated within the pages of any book.

It is a matter of striking moment that notwithstanding much has been known concerning the Colloids for nearly a century, but little has been determined in vegetation. Very little has been written beyond the work done by Professor Lloyd himself, and the truths that are here evolved will well serve as a foundation of principles, which we believe will encourage and justify further study of this momentous subject. It is also a matter of surprise that in no periodical of Pharmacy or Materia Medica has an article yet appeared in the English language that throws much light upon this subject.

We believe that it is due to the cause of Eclectic Medicine evolved through the persistent, continued and laborious research of Professor Lloyd, that we be given credit, for the application of Colloidal principles, and Colloidal compounds to medicine and pharmacy, as our literature antedates that found elsewhere. The superior character of Colloidal Gelsemium, Colloidal Veratrum, Colloidal Sanguinaria, Colloidal Eupatorium, Colloidal Euphrasia, and others that we might name, well represents what will be done in the early future with many of our pharmaceutical preparations.

We are inclined to believe that the truth underlying the statements hereabove made will develop a broader knowledge of this inherent dynamism, in drugs possessing Colloidal properties, and will, in the future, serve as explanation for many influences not at present thoroughly understood. We are now in the early infancy of this subject, which is of the highest scientific importance, and most statements made at this time, will probably need early revision.

In an article read at the last meeting (June, 1918) of the National Eclectic Medical Association Dr. G. Strohbach, of Cincinnati, presented some plausible theories concerning the fact that these remedies taken by the mouth into the stomach sustain an influence through the action of the gastric and gastro-intestinal fluids that may change their character, preventing, sometimes, an anticipated influence, and causing results that would produce an entirely different result than that anticipated.

He presented the work of Horowitz, of New York, on this subject, in which there is brought out the fact that medicines administered by injection, intravenously, intramuscularly, or subcutaneously, if they do not possess toxic properties, would exhibit a profound but very sufficient medicinal character that was in every way superior to the influences anticipated through the mouth. The following are some of the essayist's statements: "That plant substances have therapeutic properties has been recognized for thousands of years. Their therapeutic application has been worked out along purely empiric lines. The chemical study made of them in the past has been limited to determining the amount of starches present, or of pectins and other so-called inert substances, on the one hand, and on the other hand of the alkaloids, glucosides, resins, oleoresins, and other so-called active principles. The pharmacologic studies have been purely of a physical character in their influence as excitants or depressants on various organs such as heart, kidneys, liver, intestines, stomach,

lungs, etc. *This concept of the effect of plant drugs has omitted what are now being recognized as the most essential influences of the plant.*"

"Plants are built up by ferment action and the energy of the sun's rays. Chlorophyll is the most important of these ferments, but in addition there are chromoplasts, lipoids and vitamines, which are essentially important. Furthermore, many plants have ferments that, so far as we know, have no special effect in the plant economy. Through the energizing properties of the sun's rays and the action of these ferments, these elements are built up into all the diversified forms of plant life. *They then develop a stored-up energy in the plant,* which is now coming to be recognized as the great factor in the therapeutic results produced by drug plants.

"This field is just opening up, and a beginning has been made in the use of certain non-toxic plants in the treatment of diseases which have hitherto been considered incurable or more or less intractable.

"It seems to be essential in the reproduction of these non-specific proteids, that only non-toxic or non-poisonous plants be employed. If the poisonous plants, or the poisonous group in the intramolecular chain of molecules of innocuous plants, be injected, it would seem to lay a heavy burden on the economy, in addition to that already produced by the disease from which the patient suffers."

"The plant ferments above referred to act biologically in splitting foreign proteins of high molecular weight, within the system. All invading micro-organisms are subject to attack by these ferments. In addition, there are present in all plants, vegetable acids, metalloids and metals, in *Colloid state.*

"Professor John Uri Lloyd, Ph. M., Ph. D., LL. D., has well pointed out the many new principles involved in Colloids. One can, therefore, readily understand that these metals and metalloids which are present in Colloid state, have peculiar activities. Reference here is made particularly to these substances in the dispersoid state. This may well be illustrated by the following example: Place in a glass container, two threads of platinum wire. Conduct through this water an electric current and the platinum wire will disappear. This water containing the platinum does not increase in specific gravity, tension, nor is the freezing point lowered. This water has the same properties after as before it is run through a Berkefeld filter. The platinum has been divided into extremely fine particles, and in this state has a tremendous amount of electric ferment; i. e., it has the property of cleaving or splitting high proteid molecules just as have the organic. However, there is this difference: the platinum in this state, after performing a certain amount of work, loses this electronic energy and gradually returns to its more stable and condensed form."

"It was thought at first, that this property of platinum in the Colloid state was due to the fact that this metal is in the radio-active group, such as is uranium, cadmium and thallium. But further experimentation determined that the same properties are obtained under similar conditions with copper, iron, manganese, and other heavy metals. These *metals and metalloids in colloidal state, therefore, act essentially as do the organized ferments.*"

"It is obvious, therefore, that there are present in plants, biochemic and biologic principles that act specifically in various diseases."

"It may be stated that the tendency in teaching circles of the dominant school of medicine today, is to use toxic plants only, as therapeutic agents. For a drug to be accepted at the present time, it must have a mean lethal dose to the guinea pig or rabbit. This may be in a measure justified if drugs are to be given entirely by the mouth, or if results are to be obtained only by rapid massive action."

"The best results, however, are found to be obtained by using non-toxic

plant products, by the parenteral route. They can be injected into muscles or into veins direct. When introduced in this manner, they are not subjected to the destructive action of the ferments of the alimentary canal. While it is true that pepsin, trypsin and other organic ferments are present in muscle and other tissue, they do not have the same properties as in the stomach or intestine, owing to the absence of activating substances."

"Horowitz early recognized the non-specificity of animal serums and the possibility of anaphylaxis causing more or less serious damage. He began the study of plant proteids to be employed parenterally. He soon realized that the *less toxic or poisonous the plants were to man, the more effective they were in therapy.* The toxic principles must always be counteracted by the defensive powers of the body, and to that extent but add to the difficulties of the patient. He soon perceived that a simple chemical reaction was not the proper means of obtaining results."

"By increasing the elimination of waste products, cell metabolism tends to resume the normal, and appetite, digestion and assimilation are improved. In addition these substances attack directly the invading micro-organisms, splitting or cleaving them, thereby leaving them no longer active in the production of disease symptoms.

"As micro-organisms are destroyed, the rapid destruction of blood in hemolysis ceases. With the less rapid destruction of blood and the more rapid production of all of the defensive powers, the economy is soon brought to a high point."

In the development of the above theory, how much of a deleterious effect is exercised by the destructive action of the ferments of the alimentary tract, upon the medicinal elements of those non-toxic plants which are used in medicine *per os*, cannot be as yet known. There is no doubt that certain of the drugs of this character will act more satisfactorily if used by a parenteral route. This we have proven in the case of Lobelia, but we have yet to learn that detrimental effects are always produced when these remedies are so taken. The many subtle influences, the characteristic dynamism so observed by all our careful observers of these drugs, prove quite conclusively the potent influence of many non-toxic drugs. They also prove the truth, in part at least, of these theories.

While we are rapidly learning that hypodermic injections, or intramuscular injections of very important remedies, are producing different results, and in some cases, more satisfactory results than when the remedy is used by the mouth, there is no doubt that with some of these agents, there were almost equally satisfactory results secured when these agents were given as infusions, or decoctions.

Another view, however, must be taken of the problem of therapeutic remedial agents taken into the stomach. As yet the chain of reactions that follows with the majority of plants, is absolutely unknown. A substance innocuous in character may possibly, by the action of digestive ferments, become energetic, when assimilation finally takes place. Very small amounts may, therefore, produce an influence by reason of the materials *created* by the digestive processes, from which the original material has practically disappeared.

In other words, the gastric juice may perform a very essential function in creating from a remedy a new substance of much service therapeutically. Probably many physicians are acquainted with the therapeutic action of innocuous remedial agents that, hypodermically injected, may have an opposite, or at least a very different influence, than when admisitered by the mouth. We must not be too hasty, then, in generalizing that because toxic drugs are very pronounced hypodermically, and many of them, as for example morphine, more

desirable in that way, all remedies are likewise hypodermically desirable as contrasted with the same remedies taken into the mouth.

In the development of their specific properties by superior vegetable pharmacy, their influence has been greatly broadened and has been made more accurate and invariable.

With all these we are hoping that before another issue of this work is sent out, Professor Lloyd will have further evolved other great truths concerning the Colloids, and that new fields of investigation will have developed elucidating the definite therapeutic influence of the Colloids.

In the meantime, we shall continue to use our medicines by the mouth in those cases in which the observation and experiences of the past have proven their superior influence by this method, and by parenteral methods also when evolved and confirmed, underlying truths in the therapeutic or physiologic action of drugs, which will be found to exist because of, or within the Colloidal character of both organic and inorganic remedies.

GENERAL THERAPEUTIC CONSIDERATIONS AND DEFINITION.

Materia Medica is the consideration of drugs, their origin and methods of preparation, their chemical construction and constituents, general physical characteristics, preparations used in medicines, dosage and general influence upon the animal economy.

Therapeutics is the intelligent application of agents and methods to the cure or alleviation of disease.

Specific Therapeutics is a term adopted to specify the adaptation of each remedy in the most direct manner, in accordance with its selective action upon any organ or part, for the restoration of that organ or part to health.

Pharmacy or Pharmacognosy is the science of drugs, and the science and art of the preparation and dispensing of the remedies which are to be administered by the physician for the cure of disease.

The great essential objective underlying American activities in all lines of their exercise, is *definite accomplishment*—achievement. This object has certainly had its fulfillment in our profession, during the last three or four decades. Probably in no other line of activity has more been attained. This advancement, however, has been largely confined to the surgical branches of the profession, and to the microscopic and biologic fields. To too large a degree altogether, has the clinical study of Materia Medicia and Therapeutics been neglected.

In making this statement in my first introduction, I was optimistic in believing that we were at the end of such a period, but now after seventeen years have passed it can be said that there has been but little if any advancement in therapeutics for more than the decade just passed, and this advancement has not been orderly and rational as such advancement should be.

HARMONY BETWEEN THE FUNCTIONAL ACTION OF ORGANS OF THE BODY AND THE THERAPEUTIC ACTION OF ORGANIC DRUGS.

There are lines of systematic, rational, and consistent study of the action of drugs upon disease, that seem to me to have been clearly established by physical law, in harmony with the natural operations—the normal functional activities—of the human body, and until we confine our estimate of medicinal action to these lines, and apply it consistently with the innate vital activites within the system, we cannot, I think, establish a *rational system* of medicine. This harmony must be studied and known.

In the study of this essentially basic and consequently vital and important branch of medical science, the entire trend of the profession at large seems to be towards the use of scientific measures and the adoption and establishment of laboratory facts, as basic facts, but highly essential as these are, the truth as to precisely how a drug acts upon a disease condition, or how the two act or react upon each other, is determined only at the bedside. It is only determined by watching its influence upon the individual patient when the remedy is given alone, uninfluenced by applied or induced conditions.

DISEASE ENTITY.

For a century or more, it has been the effort of the profession to make an entity of every disease. One of the best if not the best known therapeutic and

medical writer of the present day, once said that he lost irrecoverably the first years of his professional life in searching for entities—in endeavoring to cure diseases as a whole. Every disease is made up of so many factors, without regard, in full part, to the totality of the disease, or to the definite syndrome composing it, that even the best of these who have previously sought for the entity, have had it forced upon them that the conditions definitely diagnosed and specifically treated, yield results that can be secured in but very few cases, by treating the disease as a whole.

It would certainly be a desirable accomplishment if we could subscribe to the established method of pathologic nomenclature, and brand immediately and with certainty, the aggregate of the symptoms of each disease, but we have it forced upon us, that this knowledge is secondary. A quick and correct determination of the importance of each individual perversion apparent is the primary knowledge that we must have, and this, by careful training, becomes intuitive to a certain extent, and consequently reliable. When we have so trained ourselves that we can depend upon this intuitive determination of conditions, we find that accuracy in diagnosis is a simple thing, and that recognition of the aggregate group is an immediate and natural sequence. Such accuracy is artistic, and anything else is indefinite, unreliable, and inexcusable.

DETERMINATION OF THE REAL TRUTH.

As I shall say elsewhere, it then becomes obligatory upon us *to determine the truth* in direct specific drug action, to prove the truth, and then to teach others that which we have learned, in applying the truth for the cure of disease. To do this, we must accept the truth from any possible source, and we must be willing to impart this to all others, realizing that it belongs to every member of the profession at large. These truths are so essential—they are woven so completely into the web and woof of the physical life of all individuals that they become divine truths, essential to health and to the prolongation of human life.

THE PSYCHOLOGY OF DOUBT AND OF FAITH.

The most deplorable thing in the study and exercise of therapeutics of the past, is the *doubt* that seems to be a fashionable part of the expression of every writer on this subject. This is indeed deplorable. It is dangerous. It is harmful in the extreme, and it has done more towards preventing therapeutic advancement than any other one thing. Doubt has but little place in this important study. Doubt induces pessimism; paralyzes effort and energy; conduces to uncertainty; and thus often leads to results that could not be classed other than criminal. The unfavorable results in drug application from ignorance, or even a failure to cure disease because of lack of knowledge are inexcusable, and we may well say criminal.

While doubt is deplorable, faith is absolutely essential. It makes the prescriber strong, resolute, certain. It establishes confidence on the part of the patient, and materially promotes the results desired from the remedy. Its psychic influence is of the most vital importance. Faith brings hope, where doubt leads only to despondency and despair.

THE CORRECT METHOD OF STUDY.

The true method of study of the clinical action of any drug, is to study it alone. When once so learned, it can be applied in proper combination with others. We now all accept the fact that each drug acts directly and invariably upon one or more exact conditions of disease, and must be so studied and known.

Having once perfected such a knowledge, we find our powers materially increased. We find that we can immediately and successfully prescribe for many conditions of disease which previously we had thought incurable.

THE SOURCES OF TRUTH IN THERAPEUTICS.

All this has been practiced in the last three or four decades by physicians out in the field, quiet and unassuming in their outside influence, perhaps unknown outside of the limits of their own practice. The sum of our knowledge is made up of the best things not only from those who are called the best doctors, but splendid things from these quiet unassuming doctors, and successful measures of the individual practitioners of all schools. This has become common property. Some of the wisest have caught hints from eminently irregular sources, and these hints have proven good and have been put into scientific form and have been added to the sum of general knowledge. We have found gems of truth scattered throughout the methods of all practice wherever taught, of whatever creed. These gems have become common property; all of us feel that we have claims upon them. These have been placed by repeated experiences and correct observations into an exact place in therapeutics. All have become systematized and scientific, until now the Specific method of drug application has grown and developed, until it is accepted in part or in the whole by a large proportion of the total profession of whatever school and its adoption is destined to become general.

RESPONSIBILITY OF THE PHYSICIAN.

When a physician assumes the charge of a patient ill from any disorder, definite or indefinite, he assumes the greatest responsibility that a man can take upon himself. He takes into his own hands the life of that patient, and he is responsible to God for that life. If he feels any less responsibility than this, he should refuse to assume control of the case. If he feels that his knowledge is insufficient, he should forget every prejudice; every opposing sentiment, and enter at once with diligence into securing correct knowledge from whatever source.

LACK OF KNOWLEDGE INEXCUSABLE.

There was a time when lack of knowledge of drug application and drug action was, perhaps, excusable. It is so no more. It is now no less than criminal, and if human law does not punish it, divine law surely will.

A man now standing in a high position in medical circles in Chicago, once told the writer that there was no definite curative action of drugs that was not generally known; that if disease could not be cured with the knowledge that was then common knowledge, it was incurable. This is in line with statements made in the very latest works on Materia Medica from certain writers, that no physician is excusable for prescribing any medicine whatever, until he has formed a correct conclusion as to the exact diagnosis of the total condition. There is no greater fallacy known today, than this.

FIRST OBSERVATIONS IN DIAGNOSIS, AND THEIR TREATMENT.

The first glance of an observing physician determines that fever perhaps exists; or that the nervous system is irritated unduly; or that there is a shock to the vital forces; and that the heart's action is oppressed, and the circulation impeded, or that the respiration is interfered with. Anyone of these appeals immediately to the prescriber looking for indications, and a remedy is at once dispensed in accordance with these demands, meeting the most important

of the symptoms first. He can make no mistake in this if he prescribes carefully. He can then go on and determine, if he choose, the total syndrome and name the disease. If he has prescribed accurately for these leading conditions, though he may fail at that time in naming the disease, he may find on his return that the patient has recovered. A fire had been kindled but he promptly extinguished it. Consequently no subsequent harm was done. This course is a safe one to consider in any prescribing.

In the total study of disease invasion in any one patient, *the first essential* thing to know, is the cause, but as stated, the prescriber cannot wait always to determine this, before he prescribes. When determined it must be removed.

Another important thing which he must have in mind is to support the inherent vital powers of the patient—to conserve these. In many cases, as in the parturient woman, in severe traumatism and when surgical measures are necessary for therapeutic results, everything must be done to prevent shock. This was the first basic principle of the Eclectic school of medicine.

The second essential is perfect internal and external asepsis, the elimination of morbific products, and the thorough cleansing of the internal channels of the body.

Third. As we have stated, the conspicuous symptoms must have specific drug application at once. Often the first indication is pain. This produces a shock to the system and usually materially retards the action of drugs in the same proportion as it antagonizes the anodynes that are given for its relief. These symptoms may produce organic change rapidly, and must therefore be immediately relieved. Nothing that annoys, disturbs, or distresses the patient, must go without consideration. This demands the use of sedatives and soothing remedies in conjunction with curative agents.

Fourth. The adjustment of nourishment and the determination of the proper quantity, little or more, according to the ability of the patient to appropriate it.

Among the indications for first thought, temperature is very important. If there is shock, the temperature will be usually subnormal, and must be at once brought up to normal, by heat or stimulants. This absolutely must not be neglected. If immediate surgical operation is demanded, heat must be applied from the first, and for hours after the operation until the temperature is easily at the normal point.

If the temperature is elevated, no excuse that any writer has ever brought has been sufficient to prove that harm can be done by carefully reducing the temperature to normal. The harm that is attributed to this, is brought about by the too free use of antipyretics that are irrational, unnatural in their action, and are given in too large doses. We have rational antipyretics that should aways be selected and used with judgment and discretion at once, whenever the temperature is exalted.

In watching for the effect of the remedy prescribed upon the condition involved, the dosage of the remedy or the intervals between the doses may be changed according to the abatement or increase of the symptoms.

Closely watching any possible occurrence of some complicating condition, it must be recognized and met with the specific remedy the moment it occurs. These occur so insidiously sometimes, that they have a strong grasp upon the system when recognized. They may occur from continuing the previous specific remedy too long, after its indications have abated. This also must be considered.

AS THE REMEDIES ACT.

It has been found by investigating the action of drugs—by a close study of their influence upon the animal body, that no one remedy influences the entire

organism in a regular, certain and direct manner in disease, consistent with the normal action of each organ or part; but that each one, in accordance with some inherent law not well understood, influences in a definite manner some organ or part, and that this influence can be directed and controlled by the intelligent prescriber for the accomplishment of one of several important results.

First; it directly destroys or removes the causes of disease, and where perversion of the function is not permanent, or where structural change has not taken place to too great an extent, it permits the organ or part to resume its normal functional activity in accordance with inherent natural tendencies, in the performance of its normal functional operations.

Second; it may remove or cause the removal of obstructions to the performance of the health function of an organ. It may cause the absorption of plastic deposits or other results of inflammatory action.

Third; it may increase the inherent power of the organ to throw off the influences of disease action, and to reassume the normal function of health, otherwise unassisted.

Fourth; it may cause some other function or organ of the body to exercise a direct influence upon the disease processes at work upon that organ, in such a manner as to stay those processes and permit the normal conditions of the organ to reassert themselves. This power is inherent in, and is observed in the action of the hormones. It is exercised interchangeably by the endocrine glands in sustaining the fine hormone balance of perfect health.

Fifth; it may supply deficient chemical constituents—essential constructive material—protoplasmic pabulum—nutritive elements—directly to the part, and thus enable it to assume its normal condition.

ADMINISTRATION OF REMEDIES.

In the administration of therapeutic measures, the method suggested by experience as best adapted to securing the full effects of the measure is adopted:

First; they are given properly prepared, by the mouth in order that they shall be received in the stomach and shall be directly appropriated.

Second; they may be given beneath the skin by subcutaneous or hypodermatic introduction. These may be introduced into the skin, into the cellular tissues beneath the skin, into the deep muscular structures, or into immediate contact with the nerves, directly into an organ, or immediately into the blood stream.

Third; by the rectum. This course is forced upon the prescriber occasionally when the stomach passages are occluded, or when the condition of the stomach is such as to refuse the agent, or when objectionable conditions are induced by the presence of the agent in the stomach.

Fourth; by inhalation. While this method has been frequently resorted to in the past, the author believes that there is a future in this beyond our present accomplishment.

Fifth; by inunction. This is a simple method especially advised in the treatment of infants and the syphilitic.

Sixth; by fumigation. This method has a narrow field, but it is important in the field.

Seventh; by cataphoresis. This is accomplished through the action of electricity in conveying the active principles of the medicine into the system. It is not in general use.

Before hypodermics were in such common use, there was another method called the endermic method. By the use of a caustic, such as concentrated ammonia or by a blister, the skin was removed, and a medicine in the form of an absorbent powder was applied to the raw surface. This method is so seldom

used at the present time, that it may well be called obsolete. This method might be forced to include the absorption of the medicinal principles of plasters. This was once counted an important method of treatment, and in certain cases it has been very useful. It is not now widely adopted.

AUXILIARY THERAPEUTIC MEASURES.

In addition to the use of medicines, auxiliary therapeutic measures are now generally adopted, each in its own specific field, as all have their limitations. These are of greater or less importance and each must be studied and practiced with reference to its own definite action. Among the more common of these are the following:

HYDROTHERAPY.

The use of water and its adaptation in various forms externally and internally in the treatment of disease.

THERMOTHERAPY.

The application of heat by various means, either locally or generally in the treatment of disease.

PHOTOTHERAPY.

The application of light, either the direct sunlight, artificial light, various colored lights—chromo therapy—or electric light in the treatment of disease.

BALNEOTHERAPY.

The science of bathing and baths in all their forms and in all its applications to diseased conditions.

RADIOTHERAPY.

The application of the Röntgen rays or other forms of radio-activity in the treatment of disease. This measure would naturally include the use of radium as a therapeutic agent, but some writers class radium as an independent agent and its use as radium therapy.

ELECTROTHERAPY.

The application of electricity in its multiple forms and by the various methods of application in the cure of disease. This involves to a certain extent the use of water, the use of heat, and the influence of electric heat also in conjunction with electric light.

MECHANOTHERAPY.

The treatment of disease by mechanical apparatus or by systematic forced movements, which in limited part, may be made by an assistant without mechanical means.

MASSAGE OR MASSOTHERAPY.

The treatment of the superficial parts of the body by rubbing, stroking, kneading, or tapping either with hand or instrument, either for remedial or hygienic purposes.

PSYCHOTHERAPY.

The treatment of subjective conditions of disease by influences exercised by operation upon or through the mind of the patient, as by suggestion.

SERUM THERAPY.

The use of the various blood serums either from animals naturally immune to infectious disease, or from animals rendered immune by the introduction of toxins. This promises to become one of the important branches of therapeutics, if not already so.

SWEDISH MOVEMENT.

(Kinesiastrics); a system of exercises, both active and passive involving the different muscles, and joints of the body, probably included to an extent in massotherapy.

OSTEOTHERAPY OR OSTEOPATHY.

The treatment of disease which is based on the theory that many diseases are caused by a deranged mechanism of the various structures of the body, such as the bones, nerves, blood vessels, and tissues, which may be corrected by manipulations calculated to restore these parts to strictly normal relations and function.

SPONDYLOTHERAPY.

A treatment of disease based on the theory that disease of the vertebræ or mal-positions, or deflexions of these bones, exercise a pathologic influence upon the structure of the spinal cord or upon its nerves or ganglia in such a manner as to induce disease of remote organs or parts—reflex derangement—and that proper manipulation of the vertebra or proper treatment directed to overcoming the faults named, will result in a cure of the diseased conditions.

ORIFICIAL SURGERY.

The treatment of diseases caused reflexly by pathologic conditions involving the various orifices of the body. The restoration of nerve structures of the orifices to a normal condition—the removal of abnormal conditions—results so frequently in prompt and satisfactory relief of some prominent remote disease involving the nervous system, that the correctness of the theory in general is proven. The details need to be perfected.

SERUM THERAPY AND ANTITOXINS.

A natural antidote for any infectious disease is something to be greatly desired. For several years investigations have been carried out in order to secure such an antidote for a number of the well known infections. Theoretically, that should be readily obtained. Practically only one so far is sufficiently reliable to make its application general. This is the diphtheria antitoxin.

A horse is naturally immune to the infection of diphtheria. By a method which we have not room to explain which is accounted for in accordance with the hypothesis of Ehrlich, which is known as the **side chain theory,** the serum of the horse is charged with a toxin from cultures made from diphtheria germs. This makes it possible for the serum of the blood so charged, which is already normally able to resist the diphtheria poison, to exercise the same influence temporarily upon any other animal, if it be injected into the body of that animal.

The theory for the entire process is exceedingly interesting, and seems to be rational. Whether it will be found sufficiently practical to come into general use, time alone will determine. It is difficult for anyone uninformed to understand how a virulent toxin originally obtained from the highly infectious germs of diphtheria can be safely injected into the pure blood of a little child, and preserve that child from further infection by the original germ. For this reason there has been much hesitation in the general adoption of such a method. There is no doubt, whatever, that the mortality from diphtheria has been materially reduced since the general adoption of this antitoxin, and this fact stands against all argument.

Notwithstanding this, we are confident that with our own methods we have equally successful measures, especially since we have learned that lobelia hypodermically acts clinically, almost precisely as the antitoxin of diphtheria does upon the infection. But entirely unlike that of diphtheria, it supports every vital force within the system, encourages the normal process of the body in a most natural and rational manner, and does not introduce anything foreign, abnormal, or in any way detrimental to the vital processes within the system.

The diphtheria antitoxin, as is well known, produces a condition in the system of many individuals known as anaphylaxis, which makes the individual susceptible at a future time if it becomes necessary to use the antitoxin, to the antitoxin itself; a fatal result having occurred in many cases, not from the diphtheria which was present, but from the untoward influence of the remedy.

With lobelia exactly the opposite takes place. The agent renders the system stronger to resist future infections. At the same time if administered in a full dose during this anaphylactic period, it quickly restores the patient and destroys the infective constituents to blame for the existing condition. It is to be hoped that the entire profession will make a thorough investigation of this remedy as a natural successor in all of its influence to the diphtheria antitoxin. We believe after ten years of careful observation, that it will be found to meet the requirements in a very simple and natural manner.

VACCINES AND VACCINE THERAPY.

Vaccination, as has been understood for nearly a hundred years, consists in the introduction into the circulation of a patient, of the virus of cow-pox, in order to render that patient, exposed to small-pox, immune to that disease. The virus so introduced contains the living germs.

Vaccine therapy as now understood is almost diametrically the opposite of this process. It introduces those germs dead, which if alive, active, and virulent, induce the identical disease which they are expected under these circumstances, to prevent or cure. The theory is that in this we supply to the system by the questionable method of introducing these dead toxic germs, a stimulus by which the body may assist in its own protection or defense. It at once, then, becomes plain that there is a wide difference between antitoxin or serum therapy and vaccine therapy. In the former, a preventive agent is introduced into the system, which has been made so by the inherent immunizing power of another healthy animal. In the latter case, the immunizing agent must be developed within the system which it is expected to protect.

Serum therapy is thus more rational than the present vaccine therapy. It is infinitely more practical also because in the latter, so many conditions are likely to be present, that will prevent the system from developing its own immunity; or there may be many different kinds of germs present in addition to the one which is used to produce this immunity; or it is such a simple thing for the prescriber to make a mistake in determining whether he shall use a **univalent,** or a **mixed vaccine;** whether he is able to secure an **autogenous vaccine** or whether he is obliged to depend upon a **stock vaccine.** For these and other very important reasons none of the vaccines have as yet come into general use.

The typhoid vaccine therapy is most commonly used, but the evidences do not show that it shortens the period of the disease. It seems in many cases however to modify the severity of the disease processes. It promises well as a prophylactic.

It would seem natural to believe that in a course of a long period of careful investigation and accurate estimation of all the conditions involved, and the avoidance of the shot-gun method of the use of stock vaccines, there will yet be much improvement in this method of therapy, and practical results should be obtained without danger to the patient.

The pronounced success of vaccination for **small-pox** should encourage us to hope for such a result. At the same time the failures or disappointments in the present investigation of vaccine therapy, as now applied, should not in any way lessen our perfect confidence in the use of the virus of the cow-pox properly prepared, in the prevention of small-pox.

THE ENDOCRINE THEORY.

The Hormones are a class of remedies extracted from the various ductless glands of the animal body At the Italian Congress of Medicine in October, 1912, there was an official report as to the secretions of and the influence of these glands upon the system in health and disease. All glands having an internal secretion were called Endocrinic glands, and the system of glands was called the Endocrinic system. Starling in 1907 states that the secretions from these glands are discharged directly into the blood stream, and carried onward by these to the organ on which they exercise their specific effect. They cannot therefore belong to the complex bodies which include the toxins of animal and vegetable origin. He believes that they are produced in the normal metabolism of cell structure and are of definite chemical composition, and are comparable in their nature and mode of action to drugs of specific influence, such as the alkaloids. In consequence of the distinctive features of this class of bodies and the important functions played by them in the higher organisms, he gave them the name of Hormones from "I arouse or excite."

These secretions seem to have the power to correlate and coordinate the various body functions, in a subtle, peculiar and exceedingly important manner. At the same time they destroy toxins within the system, and sustain each other in the exercise each of its individual influence. The balance resulting from this interaction is called the **hormone balance,** and when properly sustained, the functions of the body are found cooperating with each other in a normal manner, which results in perfect health.

The active principle which is thought to represent the influence of the gland has been separated with the larger number of them. **Secretin** is obtained from the walls of the duodenum. This agent seems to stimulate the pancreatic glands, increasing their activity. An increase of the **pancreatic secretion** causes an increase in the combustion of the carbo-hydrates, and when this result is deficient, sugar is eliminated through the kidneys, and we have the disease known as Diabetes Mellitus.

A number of investigators, a few years ago following the suggestions of Brown-Sequard and others prepared extracts from the thyroids, parathyroids, ovaries, testicles, pituitaries, and from actual brain and nerve structure, and have given them, somewhat indiscriminately, to regulate the functional operations in general conditions of disease, especially where the cells were degenerate, inactive, or totally destroyed.

An assistance to investigation was the fact that it has been observed in several cases where abnormal development of the external genital organs and early maturity, have occurred in children, there have been tumors or abnormal growths of the **supra-renal gland.**

Experimenting with an **extract** of these glands, a very wide range of influence has has been observed. It is used in the treatment of **asthma, whooping cough,** and cardiac **dyspnea;** also in the **vomiting of pregnancy** and in the treatment of **exophthalmic goiter,** the latter with excellent results in certain bad cases; in toxemias, Addison's disease, and capillary hemorrhage.

The **Thyroid Extract** seems to be the most important one, exercising a general regulating influence, especially over the mechanism of the organs of nutrition, growth, and development. Its influence has produced in Graves' disease emaciation, hunger, thirst, polyuria, diarrhœa, vomiting, profuse sweating, nervous symptoms, tachycardia, increased blood pressure. On the other hand, it has materially benefited those conditions depending upon

insufficiency of the thyroid glands. **Obesity, mental insufficiency,** and **myxedema** have been cured with it.

It is thought that this agent antagonizes the **Pancreatic Glands** in their influence as glycosuria has occurred from overdoses. It certainly increases blood pressure notwithstanding other theories to the contrary if the heart is intact. It must not be given where with feeble heart there is high blood pressure. This agent should not be used in **tubercular patients.** There is a consensus of opinion in favor of this statement.

Where there is deficient secretion of these glands there is a tendency to forgetfulness, sleeplessness, restlessness, sluggishness, neglect of routine duties, general dullness. These conditions in children lead to cretinism, slow growth, eczema, infantile obesity, chlorosis, amenorrhea, epilepsy, hysteria, and melancholia.

The field of action of the **Pituitary Gland** is a wide one. It controls the various functions of the body, and exercises a superior control over the growth and development of the sexual organs, being intimately related to the function of the other endocrinic glands. The symptom complex of hypopituitarism is very similar to that of deficient action of the thyroid or thymus glands.

It is thought that over secretion of this gland contributes as a cause to diabetes mellitus. There is one extract secreted by the pituitary gland that causes diuresis, strengthens the contractions of the bladder, uterus, intestines, stomach, gall-bladder, and bronchial muscles, dilates the pupils, causes prompt bowel movements by stimulating the muscular activity. It overcomes uterine inertia.

The interrelation between this gland and the **Thyroid Gland** has been shown by post mortum appearances where the thyroid gland had been removed some time before death. There was enlargement of the pituitary body, a deposit of colloid substance, and increase of hyaline bodies.

An **extract** of the **pituitary gland** is now in general use. Many claim excellent results from it as an oxytocic. On the other hand, very many disclaim beneficial influences and declare it to be a dangerous agent. Unlike ergot, macrotys, and other vegetable stimulants to uterine contraction, it can not be continuously given, as it acts upon the structures of the arteries. Its influence in inducing labor pains is antagonized by chloroform and morphine. It has been used in overcoming shock.

A number of writers advocate the theory that the pancreatic secretion, that of the adrenals, thyroid, parathyroid, and pituitary bodies have a marked influence on carbo-hydrate metabolism. This was proven to an extent by a post mortum on a patient who had died of **diabetes,** showing that the pancreas was reduced in weight; there was edema of the thyroid; the pineal gland was loaded with colloid drops; the supra-renal glands were spongiocytotic, and the ovaries greatly atrophied.

In addition to these influences are those of the ovarian secretion, of the corpus luteum, and of the thymus gland, as well as those of the prostate gland, the mesentery gland, and the carotid gland. Some very interesting facts are being brought out with each of these. The entire study of this whole system is now at such an early stage, that no prophesy can be made as to what the future will develop concerning them. That it is a fertile field seems plainly evident.

THE LLOYD REAGENT.

Early in the year 1911, Professor John Uri Lloyd, at work in his laboratory in Cincinnati, made the highly important discovery that a form of the hydrated aluminum silicate, obtainable from clay and certain earths, especially from Fuller's earth, possessed a most marked affinity for the alkaloids, when it is in combination with water. This reagent when brought into a colloidal condition has its affinity for alkaloids and alkaloidal salts intensified, being almost instantaneous in its action in the separation of any alkaloid so far investigated.

After so separating the alkaloid, this can be liberated from its affinity to the reagent by treatment with a base, and an alkaloid solvent. Another important fact concerning this separation is that with bitter alkaloids the bitterness disappears without in any way interfering with the properties of the alkaloid, as at present observed. The purity of the alkaloids obtained by this method is remarkable. The fact that their activity is in no way decreased and that the bitterness is removed puts this discovery in line with other great discoveries made by Professor Lloyd, as probably the most important made in Pharmacy in many years.

The method of separating the alkaloids has in the past been a roundabout and tedious method, laborious and often uncertain. Prof. Lloyd told me years ago, that the processes must be simplified, as he feared that some of the so-called alkaloids were the product of the reactions that took place in their chemical separation.

He has been experimenting for a long period to find a substance which would act as a more satisfactory reagent, from which there would be no change in the true alkaloid. Such a substance he has succeeded in finding. He has named this substance Alcresta.

This reagent acting as above described serves an excellent purpose as an antidote to alkaloids taken into the system. Dr. Fantus has showed that the reagent alone imperfectly antidotes strychnine, but the addition of tartaric acid makes it markedly effective.

Its antidotal value on morphine is distinctly marked. It antidotes cocaine fully, if morphine be given hypodermically to retard the passage from the stomach to the intestine. Nicotine acts too quickly to be antidoted unless the reagent is swallowed immediately, when it is a partial antidote. Ipecac is powerfully antidoted. Aconite imperfectly so.

So short a time is it, since this reagent was given to the public, that but very little of its full value has been determined. If it does no more than to give the profession a tasteless quinine with full properties, it will serve a most useful purpose. A suggestion of its usefulness is made by the very sudden popularity of Alcresta Ipecac (page 243) which is found to carry the therapeutic properties of emetine with few if any objectionable features.

THE BIOCHEMIC SYSTEM OF SCHUESSLER.

Synonyms—Tissue Remedies. Schuessler's Remedies.

Among the theories that have been advanced for the action of remedies in the cure of disease, for a complete system of medicine, probably the simplest and the one that theoretically would seem to be rational, is that of Schuessler of Oldensburg, Germany. He made investigation into the action of the chemical principles of the human body and decided that twelve earthy compounds were involved in the structure of the body, and that disease was caused by an unbalance in the quantity of these compounds. A deficiency in any one would cause a train of symptoms of disease which would be relieved by supplying that substance medicinally prepared and administered. These twelve inorganic remedies are called the tissue remedies of Schuessler, or the **biochemic remedies.**

While but very few, if any, physicians accept Schuessler's dictum that all diseases can be cured by the proper adjustment of these remedies, very many believe that certain of these remedies are very effective, each in the field that Schuessler assigned to it, broadened perhaps by subsequent investigation. As Schuessler belonged to the Homeopathic school, his remedies have the Homeopathic nomenclature. They are as follows:

Phosphate of Iron—Ferrum Phos.
Phosphate of Calcium—Calcaria Phos.
Phosphate of Sodium—Natrium Phos.
Phosphate of Potassium—Kali Phos.
Chloride of Potassium—Kali Mur.
Chloride of Sodium—Natrium Mur.
Fluoride of Calcium—Calcaria Fluor.
Silicea—Siliceæ.
Sulphate of Calcium—Calcaria Sulph.
Sulphate of Sodium—Natrium Sulph.
Sulphate of Potassium—Kali Sulph.
Phosphate of Magnesium—Magnesium Phos.

The following is a condensed statement of the theory concerning those structures in the body that are supplied by each remedy; the conditions to which they seem applicable and the method of their administration. All of these preperations are supplied in the form of Homeopathic triturates. Various attenuations have been tried, but the third and sixth decimal are those that seem to yield the best results. The trituration is made in order that the remedy may be supplied in the best possible form for immediate appropriation, and that the best results shall be secured from the smallest possible quantity.

FERRUM PHOSPHORICUM.

Phosphate of Iron—Ferrum Phos. Iron is found in the hemoglobin. The quantity in the blood is supposed to be about forty grains for 150 pounds of the body weight. Albumin contains iron, and the iron of the blood contributes to the oxygen carrying power of the blood. Schuessler's theories do not explain the influence of the phosphorus in union with the iron.

They claim the field of action of the remedy to be those conditions which accompany local inflammation with increased temperature. It is given

for all febrile disturbances, and the more abrupt and violent, the more marked the influence of the agent. It is given at the onset of the inflammation before exudation begins. It is also given in anemia and the marasmus of children. It is useful in neurasthenia, but must be persisted in.

Boericke and Dewey's 1914 edition of the tissue remedies gives the indications as follows: With inflammations, pains that are worse from motion and better from cold; hemorrhages caused by hyperemia; fresh wounds from mechanical injuries. I have used this remedy a great deal and have been satisfied that it has a place in the control of acute fevers, and in certain inflammations, especially those of the lungs. These agents are all perfectly safe and can be given freely.

POTASSIUM CHLORIDUM.

Chloride of Potassium, Kali Mur., should be prescribed early in inflammations to prevent plastic exudations. It is indicated where there is a white or gray coat on the tongue or on the mucous membranes of the mouth or throat, a thick white slime; where the skin is scaly, mucous membranes pale; and where there are vesicles, ulcers, and erosions.

It prevents exudates in pneumonia and other inflammations of the respiratory tract. It is advisable in diphtheria, croup, and in cellulitis, hepatitis, and appendicitis.

This salt is found in the blood corpuscles, muscles, and nerve cells; also in the intercellular fluids.

POTASSIUM PHOSPHORICUM.

Phosphate of Potassium, Kali Phos., is an element of the tissue forming substances. All nutritious fluids contain it. It represents the correct formation of tissues and fluids, especially those of the brain, nerve, muscle, and blood cells. When this substance is deficient, the condition is similar to that induced by low fevers and nervous exhaustion.

The direct indication for its use is brain fag, irritability, nervousness, depression of spirits, hysteria, melancholia. The symptoms for the remedy represent those for pulsatilla, including a tendency towards insanity or paralysis. When the tongue is coated brown, the breath offensive, it is especially indicated. Neurasthenia furnishes a wide field for its influence.

POTASSIUM SULPHURICUM.

Sulphate of Potassium—Kali Sulph.—supplies the epidermis and epithelium. This includes the skin and mucous membranes and their diseases, especially those characterized by yellowish discharges. The tongue indications for the remedy are that it is coated with a slimy yellow coating; that there are thin, yellow or yellowish-green discharges from the mucous membranes; that there are scaly desquamations from these membranes or from the skin. It is supposed to be one of the oxygen carriers of the system. It is indicated when the patient feels better in the open air, worse in a closed room, or

where the patient is restless and cannot get his breath fully, where there is a suffocating feeling and a desire for fresh air.

MAGNESIUM PHOSPHORICUM.

Phosphate of Magnesium—Magnesium Phos.—an important remedy, one that I myself have found satisfactory, is found in the muscles, in the brain and bone, in the nerves and teeth, and in the blood corpuscles. It acts more directly on the white nerve fibers. It is especially curative in its influence upon irritation of the nerve filaments in those conditions which result in spasm. It is a typical antispasmodic; at the same time it has an active control over the nerve filaments in neuritis and other conditions where there is intense pain from nerve irritation. I have just now quickly relieved a long standing case of pruritis vulvæ of a most aggravated type which was instituted many years before by rhus poisoning. This condition was shortly cured, but the pruritis was so great as to resemble a neuritis.

The influence of this agent with a nerve sedative was immediate and seems to be permanent. It served an admirable purpose for me in one case of acute neuritis from cold that had baffled specialists of reputation. It is indicated in all sharp, cutting, lancinating pains, convulsions, and in neuralgias, especially those that are relieved by heat and increased by cold.

NATRIUM CHLORIDUM.

Sodium Chloride or Natrium Mur., as is well known, is responsible for the osmotic processes within the system. It has to do with the appropriation and elimination of water.

The first indication is watery discharges. These are found in choleraic conditions in certain forms of fevers. It is usually accompanied with a frothy, slimy coat on the tongue. It does not have a wide field of action, and is probably one of the least important of the remedies. Where there is an inclination to vesicles, to watery contents, or where there is watery vomiting, it is useful.

NATRIUM PHOSPHORICUM.

Sodium Phosphate or Natrium Phos. is found in the blood, muscles, nerve, and brain cells, and in the intercellular tissues. It is thought to absorb carbonic acid, supplying oxygen from this molecule which is carried into the blood stream. This is used as a remedy for certain enlarged glands if accompanied with sour stomach, or prevailing acid condition within the system, especially if there be a water brash. It is useful in eczema where there is an acid condition within the system with yellow secretion. I have found this substance useful in chronic disease of the liver, and it will probably be more serviceable where abnormal action of this organ has to do with the disease, as a cause.

NATRIUM SULPHURICUM.

Sulphate of Sodium or Natrium Sulph. is found in the intercellular tissues, but not in the cells. It influences the elimination of the water which results from retrograde metamorphosis. It excites the secretion of the intes-

tines, stimulates the activity of the intestinal glands, liver and pancreas, and is a valuable remedy in combating the uric acid diathesis.

It is indicated if there is greenish-gray coat at the base of the tongue, with a bitter taste in the mouth, cutting pains in the liver with enlargement, diarrhœa with dark green stools, biliousness, diabetes, the urine with high specific gravity from urates and uric acid. From this condition there is a long train of symptoms that nearly all experienced physicians are familiar with: skin disorders, deficient general secretion, local irritations, and general rheumatic tendencies.

SILICEA.

Silicea is found in the hair, nails, skin, and in the connective tissues of the bones as well as in the periosteum; also in neurolemmia. The remedy acts upon the organic substances of the body, involving the bones, joints, glands, skin, mucous membranes. It is especially indicated if with disease of these structures, there is pus formation within the connective tissue. Where there is a tendency for a part inflamed to suppurate, it promotes suppuration and hastens the process, encouraging the healing of wounds by normal granulation.

Induration is overcome by it. It is especially advisable in chronic conditions, fistulas, or otherwise where this character is present. In chronic inflammations of the joints, especially where the pain and disturbance is out of proportion to the apparent inflammatory action, such as injuries of the knees, elbows, or wrists, which remain sore and painful for a long time, in this it is said we have a potent remedy. It also seems to act favorably on tendons, cartilage, and bones in these conditions. It is important in chronic gouty conditions with deposits, but it must be persisted in.

CALCIUM FLUORIDE.

Fluoride of Calcium or Calcaria Fluor. is found in the enamel of teeth, and in the outer surface of all the bones. Also in the skin, and in elastic fiber. It may also be found in the connective tissues and in the walls of blood vessels.

It is indicated in any disease in which there is a general relaxed condition of the elastic fibers—general relaxation. This is conspicuous in piles, certain tumors (hematoma), and in the varicoses whether local or general. It should be prescribed where there is mal-nutrition of the bones, rapid decay of the teeth; where with general relaxation there are indurations or exostoses. Given during pregnancy, it is said to favor easy confinement. I have used it for that purpose with other remedies, but which of the remedies I should credit for the very favorable condition obtained, I could not determine; probably all had some influence.

CALCIUM PHOSPHATUM.

The Phosphate of Calcium—Calcaria Phos.—is an essential constituent in the growth, development, and nutrition of the body. This is well known to all observers. At the present time, it is receiving more attention perhaps, than at any other time. It gives permanency and firmness to the joints. It is found in the teeth, in connective tissue, and in the fluids of the body, in the blood, plasma, and corpuscles, in the saliva, gastric juice and milk. It is espe-

cially required whenever there is a waste of albumin. It contributes to the reconstruction of blood cells, promoting cell growth and encouraging the formation of new tissue. In many of these structures, it is the real nutritive principle upon which these structures depend for their nourishment, growth, and development.

It is indicated in all disease of the bones, especially where these diseases depend upon blood faults or where the dermoid tissues are involved with the osseous tissues. Given during dentition in infants it seems to do away with the nerve irritation, overcoming convulsions. It restores patients after acute disease, and promotes the oxygen carrying power of the blood indirectly by causing a proper development of the white corpuscles. In anemia, chronic wasting disease, and in the senile conditions of old age, it will be found especially valuable. It is of great benefit in anemia, especially if given in conjunction with Ferrum Phos.

CALCIUM SULPHATUM.

The sulphate of lime—Calcium Sulph.—or plaster of Paris is probably of but little influence in medicine in any form. It is found in the bile, but is not constant there. It is supposed to destroy worn out red corpuscles, thus influencing the condition of the liver. Schussler at first claimed that it stood in close relation to suppurations, curing purulent discharges from the mucous membranes and purulent exudates from serous membranes as well as promoting the cure of tubercular ulcers, or intestinal abscesses, or ulcers of the cornea.

It is especially indicated, present authorities claim, where after full evacuation of pus from pus sacs, there is continuous discharge which affects the epithelial structures. Discharging abscesses anywhere, indicate it. Schussler ultimately discarded this remedy but recent authorities claim that it is efficacious for the conditions named.

PHARMACY AND PHARMACOGNOSY.

JOHN URI LLOYD, Ph. M., Ph. D. LL. D.

Need I say that my lifetime experience in pharmacy, devoted mainly to the study of preparations of plants, as well as to plant chemistry, which includes alkaloids, glucosides and other plant products, leads me to comprehend more fully than otherwise I might, the honor shown me by Professor Ellingwood, who has asked me to make a contribution in these lines for his forthcoming publication? Nor can I neglect to express the satisfaction I feel, in that the whole American medical profession, as well as the section of thoughtful pharmacists concerned in this direction, is becoming more and more impressed with the usefulness of remedial agents, prepared from the vegetable kingdom. To this is added a growing comprehension of the fact that the study of the pharmacy of plant organizations is a problem that needs take the utmost thought of the scientific man, and the utmost care of the manipulative pharmacist. The pharmacy of plant preparations has passed from the hands of the superficial experimenter, into the field of the closest scientific student, the evolution of satisfactory plant preparations being now fully comprehended by those experienced, as among the most difficult of all problems connected with the satisfactory preparation of therapeutic agents.

I will further preface my remarks by saying that my lengthened experience has led me to hesitate to express myself concerning many problems in pharmacy that, at one time, would have presented to me no cause for hesitation. To speak more plainly, expanding views, influenced and guided by thoughtful work in pharmacy, have both widened my horizon and illuminated the space about, until I now see defects in my past work, and errors in judgment, formerly unperceived. I believe that this condition must be true of all men who approach the end of a life that has been devoted to any calling. Only those who do not comprehend the subject of pharmacy, can view it otherwise than as a mighty work, beyond the power of any one man to grasp in its entirety. Only those who by reason of ignorance bred by inexperience are led to underrate this great art, will presume to encroach on the field, other than as questioners of voices from the past, or as listeners to whispers of the present.

With these candidly expressed views, I shall proceed to speak to my physician friends in the utmost freedom, concerning the subject before me, assuming that they comprehend that pharmacy is not a subject any man can hope to master by book study alone. I shall therefore endeavor to convey, as has been requested, in as condensed a way as possible, a brief description of the prominent classes of pharmaceutical preparations, and their relationships, confining myself practically to medicinal preparations made of plants.

In arranging these classes I shall not follow the alphabetical method, but will group similar classes together, and thus refer to their relationships. For example, plant preparations will be briefly followed in natural groups, the complete lot embracing extracts, solid and fluid, tinctures, etc., etc. In like manner, liniments, ointments, cerates and plasters are grouped, and so are gelatine and sugar-coated pills, tablets and troches. Naturally, a few classes, like emulsions and suppositories, are outside of any system of classification.

Crude Drugs—But in it all, I beg the reader to accept that I must be very brief with each subject. The greatest care must be used by the pharmacist in

the direction of drug selection. A crude drug is the foundation of a pharmaceutical preparation. Poor crude material is productive of inferior medicine, regardless of the care of the operator. The study of applied pharmacy consequently begins with a study of drugs, and carelessness or ignorance concerning this oft neglected section in pharmacy is to be held accountable for much poor medicine—more indeed, than is generally known.

The qualified pharmacist must not only be conversant with manipulative methods, but also experienced in the study of drugs. In this direction it is not alone sufficient to be able to distinguish between different drugs (this is useful to guard against sophistication), but he must be able to judge of the intrinsic qualities of drugs. This last is the most important part of the art of pharmacognosy, for while it is easy to learn to identify different drugs it is difficult to obtain the experience necessary to judge of quality shades.

Thus, as an example, a pharmaceutical student can easily qualify himself so as to be able to distinguish between Vanilla and Tonga beans, and even to close his eyes and identify each by the odor alone, but much experience is necessary for him to be able to differentiate between shades of quality of Tonga and in Vanilla. The same is true of other drugs. There are many different qualities of drugs of every description, and, in my opinion, the knowledge necessary to their successful differentiation is only to be gained by patient study and great experience in practical pharmacy.

For example: The aroma of a fine ripe peach can only be learned by personal experience with peaches. The same is true of other fruits, such as the pineapple. Between the fully ripe and delicious peach and those inferior and worthless, lie a chain of peaches all peaches, but yet of many qualities.

True it is that in some instances chemical tests may be employed for drug valuations, but these cases (for example Cinchona and Opium) are so few as to scarcely bear any comparison with the great number of drugs in which we have absolutely no recorded method of detecting values. Hence it is that the educations of many conscientious pharmacists are necessarily deficient in this very important direction by reason of the fact—that in many cases they are situated where there is so little demand for pharmaceutical preparations as to have limited their opportunity to qualify themselves. Indeed, in my opinion, this much to be deplored lack of facility to become personally expert, rather than intentional disregard of duty, accounts for much defective medicine in the line of plant preparations.

That ignorance of manipulative methods in connection with inexperience in pharmacognosy may be productive of great harm, is evident to all thoughtful pharmacists. Those best versed in the art understand best the responsibility resting on the man who audaciously ventures to step into this field without the knowledge that comes from long drilling in practical work under the watchful care of an experienced instructor.

And in this direction I cannot but criticise the opinion some very close friends hold concerning the pharmacist's calling. Neither books nor lectures can teach pharmacy in its broadest sense. The foundation that is gained by the fortunate possessor of a systematic college of pharmacy or university education, is not to be undervalued, but it is only a foundation for the recipient to build upon in the future. In my opinion, no man should at this day be permitted to engage in pharmacy manipulation without a preliminary college course of instruction in pharmacy; neither should he be allowed to practice pharmacy by reason of college instruction alone.

Pharmacognosy—In all colleges of pharmacy, in all institutions where men devote their lives to teaching pharmacy, this section of the art comes first, and is considered the most difficult to master. Indeed, it is never mastered. And, strangely enough, it may be said that by inexperienced persons, novices, this

very section is neglected or is passed as unimportant. Pharmacognosy, in the ordinary sense of the word, is that part of pharmacy devoted to the consideration of the physical and structural qualities of drugs, but when the term is applied to plants, I must carry the conception higher and further than a microscopic examination of tissues or the simple identification of drugs. While much embraced in this section of pharmacy may be learned by lecture lessons and in book study, a great and important part of the study of pharmacognosy can not be obtained other than by close attention in practical pharmacy manipulation.

Taste, odor, physical condition, all that experience in qualities adds to knowledge through our senses, is a part of the work of the pharmacognosist. It is not enough that by means of the microscope the fact be demonstrated that the drug is true to name, the qualified pharmacist must be able to establish whether that drug is suitable to make a reliable preparation. It may be correctly named and yet worthless.

For example, the microscope may enable the operator to assert positively that a certain bark is wild cherry bark, but the man who decides whether the same specimen of bark is fitted to make a reliable fluid extract of wild cherry must be beyond the simple fact of its identity. This latter point can only be established with certain drugs by a complete knowledge of chemical methods, with others by the experience that comes with years, yes, a lifetime of scientific work in drugs, and in other cases still by the expertness of experience in which no words and no diagrams are able to convey the knowledge gained by the experienced student. Such knowledge, typical of empiricism lies outside scientific formulæ. To sum up, the true pharmacist must be a faithful pharmacognosist, and must have not only the knowledge that comes from books and instructors, from college courses with their object lessons, but, in addition to all these, must devote years, even a lifetime, patiently to every phase of the subject in its practical application.

Qualities of Drugs—From what has been said it will be perceived that I can only touch in a general way on this mighty problem. When it is considered that volumes have been written in many languages, by men who have devoted series of years to the subject of structural pharmacognosy alone, it will be seen that I can in this space simply make an abridged statement of facts.

The quality of drugs is all important, but no general rule can be established to determine quality; neither can any man be taught this section of pharmacy by printed lessons. The application of chemical tests is useful in a few instances—a very few—chief among which may be cited opium, cinchona, belladonna, ipecac, and a few other alkaloidal drugs. Then, asafetida, jalap and a few resinous drugs may be approximately valued by their resinous constituents.

Extend the list to a limited number of glucoside yielding drugs and a few essential oil bearers, and the list capable of chemical determination is about exhausted. Structure, as shown by the microscope, determines authenticity of name, not quality, as already explained. The quality of drugs must be determined through the personality of the pharmacist, the acuteness and perception of his senses, the experience gained in his labors, the drilling he receives from his methods and the self-instruction that comes from a love of art. But in many cases, even these are not enough, for attention must be devoted to a study of climatic conditions, the influences which localities sometimes exert on drug values, the season of the year in which the drug is gathered and the time that elapses before the drug is manipulated after it is gathered. In this direction little information is to be found in print.

My experience teaches me that some drugs must be worked green, others partly dry, others are best when thoroughly dried, while others yet even be-

come most useful after being aged to a certain extent. Thus, as examples, only green cactus, in my opinion, is of value. Freshly dried iris versicolor is superior to the green, and rhamnus purshiana improves by age. In some cases, preparations of the same plant, before and after drying, have distinctly different qualities, as with tobacco. These differences in condition dependent on environment, age, season, species, it is the duty of the pharmacist to master so far as opportunity permits. It is the duty of physicians to uphold the conscientious pharmacist who devotes his care in this direction.

In no sense of thoughtless criticism do I say that the indifference of some members of the medical profession to the magnitude and importance of the subject of pharmacology has been to me a source of pain, knowing as I do the importance to the medical profession of this feature of our art. He who claims to be a pharmacist and yet slights the subject of quality of drugs does no credit to pharmacy, and the physician who belittles this great study is surely ignorant of its intricacies and magnitude.

Crude Drugs as Remedies—The difficulty of administering crude drugs is too well understood to require comment. Naturally the first step in an attempt to facilitate their employment is that of comminution, or powdering them. At the best, powdered drugs, with their great burden of inert matters, are impractical remedies. This fact necessitated the application of manipulative methods, the object being to exclude the objectionable parts of the crude drug and to obtain forms of medicaments capable either of representing in small compass large bulks of crude drugs, or of presenting the active parts in more elegant form.

The first step in this direction, naturally, was the extracting of drugs with hot water, **infusions** and **decoctions** being the result. But these preparations were subject to grave objections. In the first place water is capable of abstracting but a limited part of the constituents of many active drugs, such as fixed oils and resins. Second, it dissolves most of the gums, mucilages, inert and objectionable constituents of plants, thus making bulky, disagreeable, often very weak remedies. In the third place, it forms solutions that ferment readily, becoming unreliable in a very few hours. There are other objections to **infusions** and **decoctions**, such as the fact that volatile constituents are lost by boiling, but these considerations need not now be mentioned.

As a sequence, the employment of alcohol menstruums soon crept into use, thus evolving the class known as tinctures, and, at a very early day. The separation of volatile constituents by boiling drugs with water and condensing the steam produced a class of medicated waters. Owing to the unpleasant taste of decoctions and infusions sugar was finally added to them, and thus the class of **syrups** arose.

But these preparations are, as a rule, of little strength, or else of uncertain quality, the average dose necessarily being great, even with energetic drugs. From a tablespoonful to a tumbler often was not unusual with such as were destitute of toxicity.

About the beginning of this century, the necessity for more concentrated preparations became apparent; naturally the evaporation of tinctures, decoctions and infusions resulted. The residues were usually reduced to the consistence of a stiff magma capable of being rolled into pills with or without the addition of an excipient, and to these substances the term **extract** was applied. When alcoholic tinctures were used, the term **alcoholic extract** was affixed. Decoctions and infusions gave **aqueous extracts**, and mixtures of alcohol and water gave **hydro-alcoholic extracts.** When these extracts were fully dried and powdered, they produced the class known as **powdered solid extracts.**

But it became apparent to thoughtful persons that extracts often did not, as might naturally be supposed, represent the tincture employed, and

then it was discovered that the heat applied and accompanying atmospheric influence affected the remedial part of the remedy deleteriously, indeed even in some cases to its utter destruction. About this time percolation was introduced into pharmacy and with this process of extraction came efforts to concentrate liquid representatives of drugs without evaporation, and to these products the terms **concentrated tinctures, saturated tinctures** and **fluid extracts** were severally affixed. These preparations were all made with alcoholic menstruums, and thus either of the foregoing names could be rationally applied to this class. With their advent arose the class known as manufacturing pharmacists, who accepted the term that struck their several fancies. Indeed, in some cases a manufacturer even used all of them, as in the absence of authority he could do. But gradually the terms **concentrated tinctures** and **essential tinctures** gave way to the term **fluid extract,** which becoming the official title in the Pharmacopœia, has now practically displaced the others. Thus may be seen the natural relationships of these classes of pharmaceutical preparations and, also, briefly traced, we have the record that beginning with crude drugs led up to their several existences.

Inasmuch as **Galen** first prominently introduced plants into medicine, or at least, because he has been given great credit in this direction, **plant preparations** are often known as **galenical preparations or galenicals,** under which term we may include all of them. Having thus introduced plant preparations in a general way, let us give as much special attention to these several classes as our space permits.

Infusions—These preparations are made of coarsely ground or bruised roots, barks, herbs and seeds. They are, as a rule, prepared by pouring boiling water over the drug, stirring the mixture occasionally, and finally straining it. Sometimes special directions are employed as in the official infusion of Cinchona, in which cold water, aromatic sulphuric acid and percolation are used; or infusion of wild cherry, in which cold water and percolation are employed. However, the exceptions are limited. The following general directions of the Pharmacopœia may be applied to the preparation of infusions generally.

An ordinary infusion, the strength of which is not directed by the physician or specified by the Pharmacopœia should be prepared by the following formula:—

"Take of

The substance, coarsely comminuted, *fifty grammes,*	50 Gm.
Boiling water, one thousand cubic centimeters	1,000 Cc.
Water, a sufficient quantity to make one thousand cubic centimeters	1,000 Cc.

Put the substance into a suitable vessel provided with a cover, pour upon it the boiling water, cover the vessel tightly, and let it stand for half an hour. Then strain and pass enough water through the strainer to make the infusion measure **one thousand** (1,000) **cubic centimeters.**

Caution—The strength of infusions of energetic or powerful substances should be specially prescribed by the physician."—U. S. P.

Bear in mind that infusions are prone to ferment, and must be repeatedly replaced by fresh ones. In my opinion, infusions of fresh plants that contain delicate constituents are to be preferred to any preparation made from the dry plant, and in cases where the medicinal constituent is a gum or mucilage, insoluble in alcohol, the infusion of the dried plant is preferable to any alcoholic preparation..

Decoctions—As a rule decoctions are made by pouring cold water over a coarsely ground or bruised drug, the mixture being boiled for fifteen minutes, cooled and strained. Very few exceptions are recorded, the Pharmacopœia making but two, viz: **Decoction of Cetraria** and **Compound decoction of Sar-**

saparilla. The following general formula of the Pharmacopœia of the United States may be applied wherever a decoction may be desired.

Decoctions—An ordinary decoction, the strength of which is not directed by the physicians, nor specified by the Pharmacopœia, shall be prepared by the following formula:

"Take of

The substance, coarsely comminuted, **fifty grammes,**	50 Gm.
Water, **a sufficient quantity**	
To make **one thousand cubic centimeters**	1,000 Cc.

Put the substance into a suitable vessel provided with a cover, pour upon it **one thousand** (1,000) **cubic centimeters** of cold water, cover it well, and boil fifteen minutes. Then let it cool to about 40 deg. C. (104 deg. F.), express, strain the expressed liquid, and pass enough cold water through the strainer to make the product measure one thousand (1,000) cubic centimeters.

CAUTION—The strength of decoctions of energetic or powerful substances should be specially prescribed by the physician."—U. S. P.

Like the infusion, decoctions ferment quickly and must be often made. It must be remembered that while the usual strength of both decoctions and infusions is one part of drug to twenty of the finished preparation, the proportion of all energetic (poisonous) drugs must be established by the prescribing physician, who alone has the privilege of increasing or decreasing the proportions. At the best, however, both infusions and decoctions are deficient in drug valuation or reliability. If the aim of the physician be to administer much *hot water* and little drug, or large doses of liquids of uncertain strength, they are well fitted to their purpose. Such are the natures of *teas,* which in reality, as catnip, pennyroyal, etc., etc., are infusions and decoctions in which it is immaterial as to whether or not the drug proportions be uniform.

Syrups—As has been said, syrups were originally infusions or decoctions thickened with sugar. Such syrups were common in early eclectic medication, and when derived from several drugs mixed together, were called Compound Syrups. But about thirty years ago the fact began to be apparent that the sugar not only diluted the liquid but weighted the remedy with useless extraneous material, often disturbing the stomach of the afflicted person. Then it was that many far-sighted eclectics made a crusade against the *syrup craze,* and as a result practically swept these cumbersome substances out of eclectic practice. While it is true that many syrups made by expert pharmacists are improvements over decoctions and infusions in elegance, the fact remains that as a rule, sugar is worse than useless in medicinal preparations, and is to be viewed as an impurity. Few sick persons relish sweets.

In a very few cases where sugar is a preservative, a syrup, is, however, for certain reasons, preferable to any other form of the remedy, and among these may be named *Syrup of Iodide of Iron,* in which sugar is useful as a preventor of chemical change. No general formula can be given for making syrups, but individual directions may be obtained from the Dispensatories and the Pharmacopœia.

Tinctures—This class of preparations derived its name from the fact that they were usually of a dark color, or, at least, possessed of a characteristic color. They are made by means of alcoholic menstruums and as a rule are of deficient strength as compared with extracts and fluid extracts. Formerly tinctures derived from single drugs, if unofficial, were by common consent made to practically represent two ounces of drug to the pint. At present the custom seems to warrant the proportion of one part of drug to ten parts of finished tincture. The Pharmacopœia and Dispensatories give special direction for making each

tincture named therein, and yet most of them are prepared by one general method, of which the following is typical:

"*Tincture of Hyoscyamus:*—

Hyoscyamus in No. 60 powder, *one hundred and fifty* grammes, 150 Gm.
Diluted Alcohol, *a sufficient quantity,* to make one thousand cubic centimeters 1,000 Cc.

Moisten the powder with *one hundred and fifty* (150) *cubic centimeters* of Diluted Alcohol, and macerate for twenty-four hours; then pack it firmly in a cylindrical percolator, and gradually pour Diluted Alcohol upon it, until *one thousand* (1,000) *cubic centimeters* of tincture are obtained."—U. S. P.

Tinctures carry all the substances, both inert and active, soluble in the menstruum used to exhaust the drug, and are consequently prone to precipitate. Excepting with energetic drugs, a large amount of alcohol must be administered in order to get the full therapeutical drug effect of a tincture. Tinctures (with few exceptions) are rapidly falling into disuse and are practically discarded in eclecticism, where very concentrated, exact preparations of plants are now generally employed.

Fluid Extracts—These, as has been shown, are in reality *concentrated* tinctures, and had the Pharmacopœia selected that term it would have been as appropriate to the class as the term fluid extract. In some directions it would have been preferable. They are made by percolation, and carry all the constituents, good and bad, found in tinctures. Consequently, while they are to be preferred to tinctures, as a rule, because of their greater drug strength, they are burdened with inert materials and valueless drug constituents. The proportion of active constituents to those useless is surprisingly small in all fluid extracts. In my opinion, this burden of inert extractive matter constitutes one of the great objections to fluid extracts. As is well known by eclectic physicians, this feature of the subject has been a special study with me for many years, and papers from my pen for decades have criticised them because of this imperfection. I foresaw that unless undesirable quality could be overcome, fluid extracts would not maintain their position.

Fluid extracts are with few exceptions made by percolation according to one general formula, the distinction being the menstruum selected. Still it must not be inferred that carelessness or ignorance can be pardoned in one who attempts to prepare fluid extracts. Upon the contrary, in my opinion, too much care and too great experience have not as yet become a subject of criticism concerning those engaged in this branch of pharmacy. The art of percolation, the nature of drugs, the valuation of product, the study of changes, is, each of them, capable of consuming a devoted life. And yet while the fluid extract at the best is imperfect, it is a useful remedy when fresh and conscientiously made, although thoughtful, experienced pharmacists perceive fully the imperfections, to which I will now briefly allude.

They are prone to precipitate; they are usually thick with inert matters, both colored and colorless. They are of variable strength, owing both to variation in the quality of crude drugs and the care of the manufacturer.

I have said that these preparations must be carefully made, and I shall not hesitate to further express myself on this point. Physicians should not accept that a novice in pharmacy can successfully make these remedies. This view will be upheld by all manufacturers of pharmaceutical preparations and by all experienced pharmacists, and will be attacked only by persons destitute of practical experience sufficient to give themselves a fair knowledge of the subject.

Fluid extracts are intended by the Pharmacopœial committee to represent practically one grain of drug to one minim of the finished preparation. The present revision of that book makes it one gramme to one cubic centimeter. Still

this comes so close to the foregoing as to be unimportant when the variation of the drug is concerned, not to speak of the difference in manipulation by different pharmacists.

I shall close the subject by saying that the following formulæ, one from the United States Pharmacopœia, and the other from King's Dispensatory, are typical of the usual process for making fluid extracts, but that unless a person has been well drilled in pharmacy it is worse than folly for him to attempt to follow either of them:

"*Fluid Extract of Podophyllum:—*

Podophyllum, in No. 60 powder, *one thousand grammes* 1,000 Gm.
Alcohol,
Water, of each, *a sufficient quantity*
To make *one thousand cubic centimeters* 1,000 Cc.

Mix *eight hundred* (800) *cubic centimeters* of Alcohol with *two hundred* (200) *cubic centimeters* of Water, and, having moistened the powder with *three hundred* (300) *cubic centimeters* of the mixture, pack it firmly in a cylindrical percolator; then add enough menstruum to saturate the powder and leave a stratum above it. When the liquid begins to drop from the percolator, close the lower orifice, and, having closely covered the percolator, macerate for forty-eight hours. Then allow the percolation to proceed, gradually adding menstruum, using the same proportions of Alcohol and Water as before, until the Podophyllum is exhausted. Reserve the first *eight hundred and fifty* (850) *centimeters of the percolate.* Distil off the Alcohol from the remainder by means of a water-bath, and evaporate the residue to a soft extract; dissolve this in the reserved portion, and add enough menstruum to make Fluid Extract measure *one thousand* (1,000) *cubic centimeters.*"—U. S. P.

"*Fluid Extract of Polymnia:—*

Synonyms—Fluid Extract of uvedalia; Fluid extract of bear's foot.

Preparation—Take of the root of Polymnia Uvedalia, in moderately fine powder, 16 troy ounces; Alcohol, a sufficient quantity. Moisten the powder with 6 fluid ounces of Alcohol. Cork tightly in a wide mouth bottle, and permit the mixture to stand an hour in a warm situation. Then introduce it into a cylindrical percolator, three inches in diameter, previously prepared for percolation, according to directions given on page 756, and press very firmly. Cover the surface of the powder with a circular piece of filtering paper, held in position with a few fragments of glass or marble, and add alcohol until the percolate appears at the exit. Then cork the exit tightly, cover the percolator and place in a warm situation.

After twenty-four hours, loosen the cork and permit the percolate to pass as fast as it will drop, without running in a stream, until four fluid ounces are obtained. Again close the exit, macerate twenty-four hours, and in a manner like unto the preceding draw four fluid ounces of percolate. Repeat the maceration, and in like manner draw a third portion of four fluid ounces. Reserve and mix the three percolates; then continue the percolation until eight fluid ounces are obtained. Evaporate this latter portion until reduced to the measure of two fluid ounces, and mix with the reserved twelve fluid ounces. The surface of the powder must be constantly covered with alcohol from the commencement and until the end of the process of percolation."—King's American Dispensatory.

Extracts (*Solid Extracts*)—When a fluid extract is evaporated until the residue reaches a masslike consistence, a prime solid extract results. Such fluid extracts, however, as contain glycerin cannot be reduced to this consistence. Solid extracts, therefore, do not contain any therapeutic qualities in addition to those possessed by the tincture, and as has been already said may be much injured by heat and atmospheric influence during evaporation.

For some purposes, however, as in making pills, ointments and plasters, where liquids cannot be employed, these preparations answer a good purpose, although the physician should administer liquid plant remedies if he desires to obtain the full effect of the drug. The bulk of each solid extract is composed of inert extractive matters, such as gum, glucose, earthy salts, coloring matters, chlorophyl and other bodies possessed of little if any medicinal value. This is especially the case with aqueous extracts, and hydro-alcoholic extracts, some of which are nearly valueless.

At the best, commercial solid extracts are less reliable than either tinctures or fluid extracts, although when care and skill are employed in their preparation active drugs may yield very energetic remedies. Among the most creditable and definite solid extracts is to be found the official solid extract of physostigma, formula for which is herein introduced:

"*Extract of Physostigma:*—

Physostigma, in No. 80 powder, *one thousand grammes,* 1,000 Gm.
Alcohol, *a sufficient quantity.*

Moisten the powder with *four hundred* (400) *cubic centimeters* of Alcohol and pack it firmly in a cylindrical percolator; then add enough Alcohol to saturate the powder and leave a stratum above it. When the liquid begins to drop from the percolator, close the lower orifice, and, having closely covered the percolator, macerate for forty-eight hours. Then allow the percolation to proceed, gradually adding Alcohol, until *three thousand* (3,000) *cubic centimeters* of tincture are obtained, or the Physostigma is exhausted. Reserve the first *nine hundred* (900) *cubic centimeters* of the percolate, and evaporate the remainder, at a temperature not exceeding 50 deg. C. (122 deg. F.) to *one hundred* (100) *cubic centimeters;* mix this with the reserved portion, and evaporate at or below the before-mentioned temperature, in a water-bath, to a pilular consistence."—U. S. P.

The Pharmacopœia and Dispensatories give special directions for making a large list of solid extracts, but these are only of general interest to physicians.

Solid extracts that are used in making pills, ointments and plasters seem to hold their own in commerce, but for internal administration (excepting, perhaps, with a few energetic drugs) they are fast being discarded.

Powdered Solid Extracts are as has been said, dried fluid extracts. They are even less acceptable than mass extracts. They seem, as a rule, excepting such as contain fixed therapeutical constituents, to possess little reliability. The final act of drying an extract is exceptionally disastrous to the delicate extractives. Much harm to pharmacy and to medicine has been done, in my opinion, by thoughtlessly believing that the drug values of tinctures and fluid preparations of many drugs can be carried into a dry condition. Among the most creditable powdered solid extracts is that of opium when made by the official process, which, like the method of making all good pharmaceutical preparations, cannot be followed by incompetent persons. This formula may be cited as a specimen of this class as follows:

"*Extract of Opium:*—

Powdered Opium, *one hundred grammes* 100 Gm.
Sugar of Milk, recently dried and in fine powder,
Water, each *a sufficient quantity.*

Triturate the Powdered Opium in a mortar thoroughly with *one thousand* (1,000) *cubic centimeters* of water; repeat the trituration occasionally, in the course of twelve hours; then filter through a rapidly-acting double filter, and wash the filter and residue with water until the filtrate is nearly colorless. Concentrate the filtrate and washings in a tarred capsule, on a water bath, until

the residue weighs about *two hundred* (200) *grammes,* and allow it to become cold.

Determine the weight exactly; transfer twelve grammes of it to an Erlemeyer flask, a capacity of about *one hundred* (100) *cubic centimeters,* and determine in this portion the amount of morphine by the process of assay given below, using the quantities of liquids there directed for *four* (4) *grammes* of the dry extract. In another portion of *five* (5) *grammes* determine the amount of water by drying it in a flat bottomed capsule, at 100 deg. C. (212 Deg. F.) until it ceases to lose weight. From the results thus obtained ascertain, by calculation, the amount of morphine and of water contained in the remainder of the extract, and to this enough well-dried Sugar of Milk to bring the quantity of Morphine in the final dry extract to *eighteen* (18) *per cent.,* then evaporate the whole to dryness, reduce it to powder, and transfer it to small, well-stoppered vials."—U. S. P.

Medicated Wines are solutions of medicinal substances in which wine is the menstruum. In a few cases, as with *Bitter Wine of Iron,* both organic and inorganic substances are employed. In others, as with *Wine of Ferric Citrate,* an inorganic compound is dissolved in white wine. Others, as *Wine of Ipecac,* are made of a single plant, while others still, as *Wine of Opium,* are made of mixtures of plant products. The medicated wines are nearly obsolete, being at best, seldom used in eclecticism.

Vinegars—These not very uniform preparations are similar to tinctures, excepting that in making them either diluted acetic acid or vinegar is used as a menstruum instead of alcohol. The early eclectic physicians considered several medicinal vinegars with some degree of favor, for example, *Vinegar of Lobelia, Vinegar of Sanguinaria,* etc., and, even to this day, King's Expectorant, a compound Vinegar, is valued by many eclectics.

In carrying the subject to *unofficial* plant products, I shall conclude by a few general remarks that must necessarily be brief. From time to time manufacturing pharmacists and apothecaries have introduced special new preparations, either of single drugs or of mixtures of drugs. Out of these grew many compounds, now found in the foregoing classes; because of a demand arising with physicians, their recognition became necessary. In the early days of eclecticism a class of preparations was evolved concerning which I must say a word. These, known as the "eclectic resinoids or concentrations," as a rule were made by private processes.

Resinoids and Concentrations—At that early day, the natures of drugs were very poorly understood. Indeed, they are not as yet too fully comprehended. American pharmacy was an untrodden field, and it is not to be wondered that blunders and errors concerning some products crept into existence. Consequently, while many of the "resinoids" proved to be useful remedies, others were valueless. Gradually the enthusiastic parties concerned in "resinoids" were led to appreciate the fact that it was impossible to carry the full, or even the partial, therapeutic values of most plants into a dry condition, and at last the majority of the class of resinoids was abandoned by its advocates. Still the labor of these most zealous men was not altogether lost, for a few of the so-called resinoids stand yet as creditable remedies and a few as definite chemicals such as these are used the world over by all classes of physicians.

But the bright anticipations of the earnest men concerned in the evolution of these preparations were shattered by ill advised commercialism, and as a result much that had been hastily accepted concerning their qualities had to be relinquished. This fact is patent to whoever will take the pains to read the remarks of Prof. King on this subject in the American Dispensatory. The fact is, the "resinoids" became typical of the results of deplorable pharmaceutical

processes. They were products that had no rational home. Neither alkaloids, extracts, nor ultimates, they found themselves discredited pharmaceutical incongruities.

For a long period after these exasperating experiences, eclectic physicians contented themselves with the classes of preparations such as syrups, tinctures, fluid extracts, etc., many of the members being of eclectic origin. But about this date all physicians were prone to prescribe mixtures—compound syrups, compound powders, compound tinctures, compound extracts, etc., and, indeed, the tendency of eclecticism was towards medication by means of *complex mixtures.*

Then came Prof. John M. Scudder, who united with several eclectic physicians and rebelled against polypharmacy medication. They asserted that physicians should study the action of single drugs, and if mixtures were to be prescribed, should, when possible, make the mixtures when prescribing for the patient. These authorities viewed commercial fluid extracts with disfavor. In their opinion they were open to serious objections. They were also for rational reasons strongly averse to such blanket pharmaceutical preparations as syrups and elixirs; but as the course of these men in this direction is a matter of history, comments in detail are unnecessary.

This innovation, the use of selected remedies for direct medication, was strongly opposed at first by many talented physicians who disliked to change their methods. But gradually it was seen that the opponents to dosage by complex mixtures and polypharmacy (shotgun medication) aimed to further a pleasant and advanced therapy. Conspicuous dissenters from the principles enunciated by these advocates of a more direct practice of medicine, came gradually to be stanch supporters of the principles advocated. That they were correct in their views is shown by the trend of medical science today.

Specific Medicines—In the beginning of this crusade against mixtures and compounds, these classes of shotgun preparations were aggressively attacked, no words being spared in doing so. It was demanded that physicians who proposed to practice rational or specific methods should use simple representatives of plants that had been gathered in their prime and when in their best condition worked by careful methods. Dr. Scudder gave superficial formulæ in the first edition of his work, *Specific Medication,* for office manipulation of fresh drugs, but in this he made a serious mistake, for he was not a pharmacist and his pharmaceutical methods were not productive of the products he desired. Consequently this defect in his book tended to discourage those who attempted to follow the formulæ he gave, which, however, he stated were intended only for country physicians who could not conveniently purchase the more concentrated remedies but who could procure fresh drugs from the fields and woods. The eclectic medicines known as *Specific Medicines* were thus introduced as a line of remedies, each being labeled true to drug name, each depending for its position on legitimate pharmaceutical skill and care, and, as now prepared, all of them have been developed by years of study and the expenditure of much money in scientific experimentation.

Unquestionably the high standing they now occupy results from these many years of close application, not a little of which is comprised in the knowledge gained by the study of crude materials, the proper season for collecting drugs, and the conditions best fitted for their manipulation.

The vegetable specific medicines may be defined as preparations of plants, each labeled under the full name of the drug yielding it. Each drug is worked in accordance with the process that experience has demonstrated is applicable to the abstraction, purification and retention of the medicinal constituents of that particular drug. The aim has been to exclude coloring matters as much as possible and inert extractive substances also from these preparations, conse-

quently, with a few exceptions, they are light in color and yet they are very characteristic of the drug. They differ from class fluids, such as tinctures and fluid extracts, in that they are not prepared by rule of thumb methods as concerns menstruum and process. With them, the word *quality* is preferred to *strength*. The energetic (strength) part of a drug may dominate a preparation to the destruction of *quality*.

In some cases Prof. Scudder used special chemical compounds little known then in medicine, and included them in his first list of specific remedies.

Homeopathic Mother Tinctures—These alcoholic preparations are admirable remedies in many respects, but lack the concentration to which eclectic physicians employing specific medicines are accustomed. They may not always be exactly uniform, different manufacturers and authorities, perhaps, varying their methods somewhat, and yet resultant differences are probably not sufficient to disturb dilutions made of them. The exceeding care directed by homeopathic pharmacopoeias concerning the selection and gathering of crude material cannot but excite admiration, and although as a rule the mother tinctures represent much less than the drug used in making them (dry drug taken as a standard), still, aside from their deficient strength, they are excellent preparations. Eclectic physicians desirous of studying the materia medica of the homeopathic profession more explicitly will find an excellent treatise in the "Pharmacopoeia of the American Institute of Homeopathy."

Briefly stated, each homeopathic mother tincture made of a plant represents nearly one-tenth the plant ("drug strength 1-10"), and is so recognized by those making and using them. But, as has been said, owing to the care in collecting the drug, the fact that in many cases the plant is not dried, and the explicit details of pharmaceutical manipulation, the resultant preparations are very clean and useful remedies. As a rule, they are light in color.

Remedies for External Use—Passing now from plant preparations to other classes of pharmaceutical preparations, brief mention should be made of a series of preparations designed as external remedies. These begin with liniments which are liquids, and pass by successive steps of gradation to plasters which are so hard as to be brittle when cold. The first to be considered, therefore, is the class known as the

Liniments—These are liquid at ordinary temperature, are usually oily mixtures, and often contain energetic drugs designed to be used by inunction. A number of formulæ for liniments are given in the Pharmacopœia, of which that for Ammonia or Volatile Liniment is a familiar specimen. In some cases, however, no oil is used, a typical example being Belladonna Liniment. In this connection I will say that the late Prof. John King used liniments extensively that were *free from oils*, the liquid employed as the medicine carrier being saturated solution of ammonium chloride. He claimed that better effects could be obtained by associating such substances as spirit of camphor, tincture of opium and aconite with this liquid as a carrier than by means of any fat or oil, to all of which he objected on account of their uncleanliness.

Ointments—These preparations are made of fats, such as lard and tallow, medicated, and are employed in a manner similar to liniments. They are, as a rule, of a stiff consistence in cold weather, but should melt at the temperature of the body. Hence, like liniments, they can be used to apply drugs by inunction. An excellent base is the official Simple Ointment (Ointment) made as follows:

"Ointment:—

Lard, *eight hundred grammes,*	800 Gm.
Yellow Wax, *two hundred grammes*	200 Gm.
To make *one thousand grammes*	1,000 Gm.

Melt the Yellow Wax, and gradually add it to the Lard; then stir the mixture constantly until it is cool."—U. S. P.

As an example of a medicated ointment made by means of simple ointment, the Ointment of Carbolic Acid may be taken as an example:

"Ointment of Carbolic Acid:—

Carbolic Acid, *five grammes*	5 Gm.
Ointment, *ninety-five grammes*	95 Gm.
To make *one hundred grammes:*	100 Gm.

Mix them thoroughly."
—U. S. P.

By employing Simple Ointment as a base, physicians can in like manner use any desired medicine therewith. In some cases aqueous liquids or aqueous extracts are to be incorporated with fats. This is often difficult; but if the physician will prescribe equal parts of hydrous wool fat and simple ointment, large amounts of water or watery liquid will be taken up.

Glycerole of Starch has an ointment consistence and is not greasy. It can be used as an excipient to carry medicines by inunction and is not subject to the uncleanliness of greasy bodies.

Cerates—Are made of fats and wax and are of such consistence that, at the temperature of the body, they remain plastic and do not melt. Thus they are designed to hold a remedy in contact with the skin, by excluding the air. As an example the official Simple Cerate (Cerate) may be cited as follows:—

"Cerate:—

White Wax, *three hundred grammes,*	300 Gm.
Lard, *seven hundred grammes,*	700 Gm.
To make *one thousand grammes,*	1,000 Gm.

Melt them together, and stir the mixture constantly until it is cool."—U. S. P.

Typical of familiar cerates of the olden time is the well known Cantharides Cerate or blistering cerate, a barbarous remedy often used inhumanly and without judgment. Happily, it is fast becoming obsolete, in the evolution that is rapidly retiring the abusive methods and medicines of medieval days.

Plasters—These preparations are so stiff, that at the temperature of the body they are elastic and adhesive, but not soft. Hence when heated and spread on sheepskin or on muslin, and then applied to the skin, they adhere, maintaining their position. By this means remedies incorporated into a plaster may be held firmly in contact with the skin. The usual plaster base is known as Lead Plaster and is made according to the pharmacopoeia as follows:

"Lead Plaster (Diachylon Plaster):—

Lead Oxide, *three thousand two hundred grammes,*	3,200 Gm.
Olive Oil, *six thousand grammes,*	6,000 Gm.
Water, *a sufficient quantity.*	

Mix the lead oxide, previously passed through a No. 80 sieve, intimately with about one-half of the Olive Oil, by trituration, and add the mixture to the remainder of the Oil contained in a bright copper boiler of a capacity equal to at least four times the bulk of the ingredients. Then add *one thousand* (1,000) *cubic centimeters* of boiling Water, and boil the whole together, over a fire, constantly stirring with a wooden spatula, until a small portion when dropped into cold water is found to be pliable and tenacious. From time to time add a little water to replace that lost by evaporation. When the contents of the boiler have acquired a whitish color and are perfectly homogeneous, transfer them to

a vessel containing warm water, and as soon as the mass has sufficiently cooled, knead it well with the water so as to remove the glycerin, renewing the water from time to time, as long as it may be necessary. Finally divide the mass into rolls of suitable size.

A yellowish-white, pliable and tenacious, but not greasy mass gradually acquiring a brownish tint on the outside.

On treating 5 Gm. of Lead Plaster with 25 Cc. of benzol, a somewhat viscid and slightly turbid solution will result, which will separate into a clear and gelatinous layer after some time, but which should not deposit any sediment (absence of *uncombined lead oxide*)."—U. S. P.

Liquors or Solutions—These compounds are aqueous solutions of chemical substances. They are designed both for internal and external use and among them are to be found many energetic remedies. Thus, Fowler's Solution of Arsenic and Donovan's Solution of Iodide of Arsenic and of Iodide of Mercury are samples of active remedies designed for internal use, while Solution of Subacetate of Lead is for use externally. Among the official solutions is to be found lime water (Liquor Calcis), Spirit of Mindererus (Liquor Ammonii Acetatis) and many other similar specimens of old-time pharmaceutical preparations, few of which, however, are employed by eclectic physicians.

Spiritus or Spirits—This class of preparations embraces the alcoholic solutions of such substances as oils, camphor, glonoin, etc. Among them are to be found Sweet Spirit of Nitre, Hoffman's Anodyne (Compound Spirit of Ether), Spirit of Ammonia (not ammonia water), Whisky, Brandy, Bay Rum, and similar alcoholic liquids. This class is quite voluminous and many of its members are extensively employed in medicine.

Medicated Waters—Under the term aquae are to be found such substances as ammonia water, camphor water, chlorine water, distilled water, etc. The medicated waters embrace the popular aqueous solutions of oils and in these cases are made by first triturating the oil with calcium phosphate to effect its distribution over much surface, after which the mixture is abstracted with water. The following formula from the U. S. Pharmacopoeia is typical of this class:

"*Peppermint Water:*—

Oil of Peppermint, *two cubic centimeters*.....2 Cc.
Precipitated Calcium Phosphate, *four grammes*.....4 Gm.

Distilled Water, a sufficient quantity
To make *one thousand cubic centimeters*.....1,000 Cc.

Triturate the Oil of Peppermint with the Precipiated Calcium Phosphate; add the Distilled Water, gradually, under constant trituration, and filter."—U. S. P.

Among the medicated waters may also be found rose water and orange flower water, both of which are made by distillation of fresh flowers.

Medicated Wines—Among the earliest pharmaceutical preparations were to be found solutions of drugs in wine. The alcohol therein tended both to help exhaust plants and to preserve the product from putrefaction. Thus wine of ipecac is typical of wines made from a vegetable remedy. But all medicated wines are not made of vegetable drugs; for example, wine of antimony is a solution of tartar emetic in wine. Among the wines are to be found the common beverages, white wine made by fermenting the juice of fresh grapes freed from seeds, stems and skins; and red wine made of colored grapes, including their skins. These are used in preparing the medicated wines. Eclectic physicians use medicated wines very sparingly, with the exception of the old eclectic *wine bitters*, which is still a favorite with many.

Vinegars—This class of liquids contains acetic acid or vinegar. They were once used freely, but have fallen largely into disuse. The vinegars (aceta) are peculiarly adapted to alkaloidal drugs, and in early eclectic pharmacy such substances as vinegar of lobelia and vinegar of sanguinaria were popular. In the regular school of medicine vinegar of opium or *black drop* was once a favorite. The chief vinegar in use at present is vinegar of squill, which is employed in making syrup of squill. In this class may also be placed the *acetous emetic* compound of early eclecticism.

Emulsions are mechanical mixtures of oils and water, the admixture being facilitated by the influence of some body capable of affiliating them without chemically altering the oil. Yolk of egg, powdered acacia or powdered tragacanth are usually employed for this purpose. The Pharmacopœia recognizes emulsions made of gum resins, such as ammonia and asafetida in which no foreign emulsifier is necessary. At present manufacturers have supplied emulsions that are made by means of machinery and are very thoroughly emulsified.

Elixirs—Originally the term elixir in pharmacy was applied to compound tinctures, and they were destitute of sugar. Thus Compound Tincture of Senna (Elixir Salutis) is an example of an original elixir. As a rule elixirs were nasty mixtures and harsh remedies, of which Compound Tincture of Aloes is a good specimen.

But about half a century ago the compound, "Simms' Cordial Elixir of Calisaya," a sweetened and flavored cordial, was introduced. It was followed by other palatable *cordials* and soon the term "elixir" was used in America in direct opposition to the original meaning. A great list of sweet alcoholic compounds followed, as trade elixirs, and a few are employed yet, but as a rule the elixir is now neglected. Physicians have learned that it is not advisable to give a tablespoonful of flavored syrup and a teaspoonful of alcohol in order to get a trifling amount of medicine.

Triturations—These mixtures are made of drugs and milk sugar, and are great favorites with homeopathic physicians. According to their methods two systems of trituration are employed, one in which one part of the drug is to be triturated with nine parts of milk sugar, the other in which one part of the drug is to be triturated with ninety-nine parts of milk sugar. The first method is known as the decimal system, the second as the centesimal system. For explicit details concerning these and other similar preparations the reader is referred to the Homeopathic Pharmacopœia. The U. S. Pharmacopœia directs as follows:

"*Triturations:*—

Unless otherwise directed, Triturations are to be prepared by the following formula:

"Take of

The Substance, *ten grammes* ..... 10 Gm.
Sugar of Milk, in moderately fine powder, *ninety grammes* ..... 90 Gm.

To make *one hundred grammes,* 100 Gm.

"Weigh the substance and the sugar of milk separately; then place the substance, previously reduced, if necessary, to a moderately fine powder, in a mortar; add about an equal measure of sugar of milk, mix well by means of spatula, and triturate them thoroughly together. Then add fresh portions of the sugar of milk, from time to time, until the whole is added, and continue the trituration until the substance is intimately mixed with the sugar of milk and reduced to a fine powder."—U. S. P.

In eclectic medicine, trituration of resin of podophyllum, both 1 in 10 and 1 in 100, and trituration of carbo vegetabilis, are much prized.

Confections are mixtures of syrup, honey, sugar and drugs. They have a pasty consistence, often being quite stiff. Confections are relics of medieval pharmacy, having once been very popular as well as numerous. At present but two representatives are to be found in the U. S. P., one being Confection of Rose, the other Confection of Senna. Confections are not used at all in eclectic medicine.

Troches are related to confections, in that they are sugar compounds. They are, in fact, medicated sugar candy lozenges, many formulas for them being found in the pages of the U. S. Pharmacopœia. But they have only a limited use in eclectic practice, and, indeed, this may also apply to the majority of physicians in other sections of the profession. *Sugar Coated Pills* should be classified with troches. They came into use about fifty years ago, the first sugar coated pills I knew being large oval pellets imported from France under the term **dragees.**

Sugar Coated Pills are excellent forms in which to administer many organic drugs, and also solid extracts, resins, etc. Of late years they have been somewhat neglected by physicians, but, in my opinion, such neglect, in many cases, is without due consideration of the relative claims of the respective remedies. Many vegetable substances that can be reduced to a plastic condition without serious injury, cannot be dried completely without rendering them valueless, or nearly so. These plastic substances can, however, be made into sugar coated pills, but in order to make tablets of any drug it must be dry as powder. Sugar coated pills are made by the simple process of first cutting out the pill mass, rolling it and then coating the pills with a sugar in a candy machine such as confectioners use to coat nuts. The risk that users of sugar coated pills have to guard against is the effect of the heat that is applied to the pill if it be reduced to perfect dryness after being cut and before it is coated.

Gelatine Coated Pills—These, in my opinion, are superior to any and all forms of candy or similar medicines. They have the advantage of being easily made out of very moist pill masses, and of being easily coated when still soft and moist, a feat that is impossible to accomplish with some drugs in the heated sugar coating machine. The gelatine excludes the air, preserves the contents of the pill, and is tasteless and harmless.

Tablets—These are related to the troches in that they are divided discs, but they are very different from troches in that no troche is illogical in its composition, while many tablets are masqueraders. Tablets are cheap machine stamped out discs, and became popular very rapidly because of their neat appearance and convenient form. But the tablet craze was soon carried to extremes, much (as I believe) to the discredit of a line of preparations, that, had they been handled conservatively, would have been exceptionally useful remedies. Many tablets are fine remedies; others are unworthy of confidence. The fact is though, either in over-zeal or from listening to indiscreet advisers, makers of tablets have been very injudicious, and have injured their interest in selecting tablet compounds that on their face are shown to be at once destroyed or much injured in the drying process. It seems as if the old eclectic resinoid blunder is being repeated by tablet enthusiasts. It therefore behooves physicians to closely scrutinize the natures of the substances that appear under the tablet label. In my opinion certain physicians have been very thoughtless when they have displaced gelatine coated pills by means of tablets; but in this connection it is evident that thoughtful pharmacists and physicians are now looking seriously at the tablet subject, and it is probable that discriminative study concerning the possibilities of remedies will ultimately exclude impractical formulæ. No tablet can be made to represent evanescent plant preparations or those in which alcohol is necessary as a preservative.

Suppositories—These are made of a concrete fat into which various remedial agents are incorporated. They are designed for orificial medication, and are of various sizes and shapes. Oil of Theobroma (butter of cacao) is the usual fatty base, although about 10 per cent. of Japan Wax may be added to advantage in very warm weather. Several descriptions of suppository moulds are sold by druggists' supply houses. According to the U. S. Pharmacopœia, suppositories should conform to the following conditions:

"Unless otherwise specified, Suppositories should have the following weights and shapes, corresponding to their several uses:

Rectal Suppositories should be cone shaped, and of a weight of about **one (1) gramme.**

Urethral Suppositories should be pencil shaped, and of a weight of about **one (1) gramme.**

Vaginal Suppositories should be globular, and of a weight of about **three (3) grammes.**"—U. S. P.

In prescribing Suppositories it should be expected that the physician will designate the medicinal ingredients and their proportion, as well as designate the size of the suppository, and will leave the making of the suppository **mass to the pharmacist who prepares them.**

GENERAL CLASSIFICATION OF REMEDIES.

AGENTS ACTING ON THE NERVOUS SYSTEM.

I. SEDATIVES—Agents which soothe and relieve nervous irritation and decrease nervous activity.

1. **General Sedatives**—Agents which soothe the entire nervous system.
2. **Local Sedatives**—Agents which affect the nerves of a certain area only.
3. **Special Sedatives**—Agents which influence special nerves.

II. DEPRESSANTS—Agents which entirely or partially inhibit or suppress nervous action.

1. **Analgesics or Anodynes**—Agents which relieve pain by their depressing effect upon the nerve centers.
2. **Motor Depressants or Antispasmodics**—Agents which by their depressing effects on the different nerves allay or control muscular spasms or convulsions.
3. **Hypnotics**—Agents which induce sleep.
4. **Narcotics**—Agents which by their depressing effect on the brain center suppress the mental faculties, produce stupor, relieve pain and cause sleep.
5. **Anæsthetics**—Agents which are capable of producing a temporary condition of insensibility or loss of feeling.

(a) General Anæsthetics—Agents which affect the cerebro-spinal centers and produce a general loss of sensation and consciousness.

(b) Local Anæsthetics—Agents which produce a circumscribed loss of sensation in the organ or tissue to which applied.

III. EXCITANTS—Agents which excite the nerves to action beyond normal physiological limits.

1. **Deliriants**—Agents which derange the mental faculties and confuse the will power.
2. **Motor Excitants**—Agents which excite the motor nerves, causing irritation and muscular spasms.

IV. STIMULANTS—Agents which excite or urge on the nerves to renewed or increased action within physiological limits.

1. **General Stimulants**—Agents which influence the whole system.
2. **Local Stimulants**—Agents which affect the nerves of a certain circumscribed locality only.
3. **Special Stimulants**—Agents which affect special nerves.

V. ANALEPTICS—CORROBORANTS.

1. **Tonics**—Agents which by permanently strengthening the nervous system, increase the ability of one or all the organs to perform their normal functions.
2. **Trophics**—Agents which not only strengthen the nerves, but supply nourishment—actual nutrition, and restore waste material.

AGENTS ACTING UPON THE HEART AND CIRCULATORY SYSTEM.

I. CARDIACS—Agents which exert a definite action on the heart.

1. **Cardiac Stimulants**—Agents which urge on or incite the heart to increased action by their effect on the sympathetic nervous system.
2. **Cardiac Tonics**—Agents which strengthen the heart.
3. **Cardiac Sedatives**—Agents which decrease the action of the heart by their action on the cardio-inhibitory centers of the vagus.

II. VASOMOTORS—Agents which exert a definite influence on the vascular system.

1. **Vasomotor Stimulants**—Agents which increase the blood pressure by stimulating the vaso-constrictor nerves.
2. **Vasomotor Tonics**—Agents which strengthen, nourish and tone the walls of the blood vessels.
3. **Vasomotor Sedatives**—Agents which decrease the blood pressure by their action on the vaso-dilator nerves.

III. ANTIPYRETICS—Agents which reduce the morbid temperature of the body either (a) by an inhibitory influence on the heat centers of the brain, or (b) by decreasing the oxygenation processes, thus inhibiting the production of heat, or (c) by increasing the radiation of heat.

1. **Antiphlogistics**—Agents which counteract and reduce inflammation.
2. **Antiperiodics**—Agents which counteract periodic tendencies in disease; which antagonize periodicity.

AGENTS ACTING UPON THE RESPIRATORY SYSTEM.

I. ON THE RESPIRATORY MUSCLES.
1. **Stimulants**—Agents which increase respiratory action.
2. **Depressants**—Agents which restrain respiratory action.

II. ON THE LUNG TISSUE.
1. **Pulmonary Sedatives**—Agents which soothe lung structure.

III. ON THE MUCOUS MEMBRANES OF THE AIR PASSAGES.
1. **Expectorants.**
(a) **Stimulants**—Agents which increase the action of the mucous glands, increasing the function of the heart and circulation of the blood.
(b) **Depressants**—Agents which decrease the function of the heart and nerve centers, and increase the action of the mucous glands. This includes Nauseants.
2. **Errhines or Sternutatories**—Agents which increase the action of the Schneiderian membrane.

AGENTS ACTING UPON THE STOMACH, LIVER, AND DIGESTIVE PROCESSES.

I. EMETICS—Agents that produce nausea or emesis.
1. **Specific Emetics**—Agents which act through the nerves. Their action may be either direct or indirect.
2. **Mechanical**—Agents which act by irritating the mucous membranes of the stomach, or by their bulk.

II. ANTI-EMETICS—Agents that soothe local gastric, or nerve irritation which induces emesis, or agents that antagonize or antidote the influence of emetics.

III. DIGESTIVES—Agents which chiefly influence the process of digestion.
1. **Digestive Ferments**—Agents whose actions resemble the natural ferments of digestion, reinforcing the physiological process.
2. **Acids**—Agents which neutralize alkalies and aid the acids of the stomach.
3. **Antacids or Alkalies**—Agents which neutralize acids or prevent their hypersecretion.
4. **Stomachics or Gastric Tonics**—Agents which strengthen and increase the normal functional activity of the stomach.
5. **Hepatic Stimulants**—Agents which stimulate the functional activity of the liver.
6. **Pancreatic Stimulants**—Agents which stimulate the functional activity of the pancreas.
7. **Intestinal Stimulants**—Agents which stimulate the functional activity of the intestines.

IV. HEPATICS—Agents which directly influence the functional activity of the liver.
1. **Hepatic Stimulants**—Agents which incite the liver to increased activity. (See above.)
2. **Hepatic Depressants**—Agents which decrease the activity of the liver.

V. ASTRINGENTS—Agents which when brought in contact with organic tissues cause these structures to contract and check secretions.

VI. CARMINATIVES—Agents which counteract and expel flatus from the stomach and intestines and relieve pain caused by it.

VII. SIALAGOGUES—Agents which stimulate the action of the salivary glands and increase the flow of saliva.

VIII. ANTISIALAGOGUES OR ANTISIALICS—Agents which suppress the action of the salivary glands and decrease the flow of saliva.

IX. APOSITICS—Agents which allay hunger and destroy appetite.

X. DENTIFRICES—Agents used in cleansing the teeth.

AGENTS ACTING DIRECTLY UPON EXCRETION.

I. CATHARTICS—Agents which produce evacuations from the bowels by their action on the ailmentary canal. They are:
1. **Laxatives or Aperients**—Agents which are mild or feeble in their action upon the intestinal canal.
2. **Purgatives**—Agents which act freely upon the bowels, inducing frequent semi-solid stools.
3. **Hydragogue Cathartics**—Agents which produce watery stools by augmenting the secretions from the intestinal glands.

4. **Cholagogue Cathartics**—Agents which act upon the liver, increasing hepatic secretions, and producing bilious discharges.
5. **Refrigerant Cathartics**—Cathartics which have a tendency to reduce bodily heat.
6. **Drastic Cathartics**—Agents which are the most powerful and quick in action, generally very irritating and violent.

II. DIURETICS—Agents which by their action on the kidneys increase the secretion of urine.
1. **Hydragogue Diuretics**—Agents which increase the watery element of the urine.
2. **Depurant Diuretics**—Agents which increase the secretion of solids in the urine.

III. RENAL SEDATIVES OR DEPRESSANTS—Agents that decrease the secretion of urine.

IV. DILUENTS—Agents that increase the watery elements of secretions.

V. ANTILITHICS—Agents that counteract the formation of calculi.

VI. DIAPHORETICS—Agents that increase the secretion from the skin, producing perspiration.
1. **Sudorifics**—Agents which cause copious perspiration.
2. **Simple Diaphoretics**—Agents that cause only a mild transudation from the skin.

VII. ANHIDROTICS—Agents that suppress or decrease perspiration.

VIII. VESICAL TONICS—Agents that restore the tone and function of the bladder.

IX. VESICAL SEDATIVES—Agents which relieve irritations of the bladder.

AGENTS ACTING UPON NUTRITION AND THE BLOOD.

I. RESTORATIVES—Agents which supply some deficiency in the normal constituents of the body, either direct or by chemical reaction.
1. **Hematics**—Agents that supply some deficiency in the blood.
2. **Foods**—Agents that supply nutriment which replaces waste matter in any part of the body.
3. **Trophics**—Agents which supply nutrition or which stimulate the tissues to partake of or absorb required nutriment.

II. ALTERATIVES—Agents which increase metabolism or tissue change and encourage the removal of waste products.

AGENTS ACTING UPON THE GENERATIVE APPARATUS.

I. APHRODISIACS—Agents that increase or stimulate the sexual power.

II. ANAPHRODISIACS—Agents that reduce sexual desire or excitement.

III. EMMENAGOGUES—Agents that stimulate the menstrual flow.

IV. UTERINE TONICS—Agents that add tone and strength to the uterus to perform its natural functions.

V. UTERINE SEDATIVES—Agents that lessen or decrease uterine contractions.

VI. OXYTOCICS OR PARTURIFACIENTS—Agents that increase uterine contractions and aid and hasten parturition.

VII. ECBOLICS OR ABORTIFACIENTS—Agents that produce uterine contractions, causing abortion.

VIII. ANTI ABORTIFACIENTS—Agents that counteract abnormal influences and morbid uterine contractions, thus preventing abortion.

IX. GALACTAGOGUES—Agents that stimulate the lacteal glands and increase the secretion of milk.

X. ANTI GALACTAGOGUES—Agents that decrease the secretion of milk.

AGENTS ACTING UPON THE CUTANEOUS SURFACE.

I. IRRITANTS—Agents which when locally applied cause irritation, inflammation and pain.
1. **Rubefacients**—Agents which produce redness of the skin.
2. **Vesicants**—Agents which produce blisters.
3. **Epispastics**—Agents which produce serous exudation from the skin.
4. **Pustulants**—Agents which produce pustules on the skin.

II. ESCHAROTICS (caustics)—Agents which when applied to the skin produce eschars.

III. EMOLLIENTS—Agents which are used as external applications to soften and relax tissues.

IV. DEMULCENTS—Agents either oily or mucilaginous that are used to protect and soothe irritated mucous surfaces and other tissues.

V. PROTECTIVES—Agents that are used to shield, cover, or protect cutaneous surfaces.

AGENTS ACTING UPON MICRO-ORGANISMS AND PARASITES.

I. ANTIZYMOTICS—Agents which counteract and prevent fermentation.
   1. Antiseptics—Agents which prevent or destroy putrefaction or sepsis.
   2. Disinfectants—Agents which destroy bacteria or disease germs.

II. DEODORANTS—Agents which destroy or remove offensive odors.

III. PARASITICIDES—Agents which destroy parasites.

IV. ANTHELMINTICS—Agents which destroy and expel intestinal parasites.
   1. Vermicides—Agents which destroy worms.
   2. Vermifuges—Agents which expel worms.

MISCELLANEOUS.

I. ANTIDOTES—Agents which counteract or neutralize the action of poisons.

II. ANTAGONISTS—Agents which oppose and counteract the action of other agents.

III. HÆMOSTATICS—Agents which by internal, external, local, or mechanical use arrest hemorrhage.

IV. ASTRINGENTS—Agents which cause a contraction of tissue.
   1. Remote—By absorption into the blood.
   2. Local—By acting directly on the part to which they are applied.

V. STYPTICS—Agents which check bleeding by contracting the blood vessels or by coagulating the blood.

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GROUP I.

Agents Acting on the Nervous System.

DIVISION I.

Sedatives and Depressants.

CHAPTER I.

Sedatives Commonly Used in the Control of Fevers—Antipyretics.

GELSEMIUM.	VERATRUM.	RHUS TOXICODENDRON.
ACONITE.	BRYONIA.	SYNTHETIC DEPRESSANTS.

Note—During the entire history of the evolution of the present method of direct prescribing, the search of every investigator has been after a single remedy which may be applied to each of the common conditions which are found among both premonitory symptoms, and among those subsequently developing. The investigator, in the course of his work, develops an inate ability to quickly determine which of these indications are basic, and which are secondary. He endeavors at once from these, to determine what the disease is, and what is its cause.

Failing in this in the first examination, he does not under any circumstances wait until the entire condition can be determined without doubt, and the disease named, before he prescribes, but he at once prescribes for that most conspicuous condition, or for two or even more, if they seem to be sufficiently plain.

By this course, he is convinced that conditions are at once controlled which would have led to very important, serious, or, perhaps, fatal disorders. Prescribing for the total disease by name has led many a physician into error. It is important that he know what the group of symptoms is called, as soon as possible, but he must never lose sight of the specific indications present in that individual which require immediate attention.

With those of us who are trained in this method of practice, the first condition in acute disorders to which our attention is directed is the circulation. We endeavor to keep this always as near as possible to the normal point. The severity of any acute disease we are convinced, is in proportion to the variation of these conditions from a normal standard. In proportion then as we are able to bring the temperature to, and keep it near to the normal, are we able to restrain disease processes, or to remove the results of these processes in which the circulation and temperature are influenced.

Excessive action of any character in any of the body processes must be restrained. A violent impression will produce a correspondingly violent reaction. The persistent, steady effects of small, frequently repeated doses of medicine, with no reaction, are in every way superior to the violent effects of large doses. The violence of the disease is to be fully considered, however, and the dose prescribed accordingly.

The first four of the above named remedies are *Motor Depressants,* and are of first importance in the treatment of **fevers.** They may well be called *Special Sedatives.*

The progress of fever, its unarrested violence, is often the cause of localized inflammation—not always the result of it. Suppressed secretion is the cause of the fever in many cases, and the fever in time determines which is the susceptible organ, for there inflammation becomes seated.

Again, the severity of any acute inflammatory disorder depends upon the severity of the fever, and the control the physician is able to exercise over the fever determines the amount of control he exercises over the processes of the inflammation. No fever, however mild, notwithstanding frequent arguments to the contrary, should come to the knowledge of the physician, especially in children, without its being at once antagonized by the properly indicated remedy.

Masius and Stockweiss, Semmola and others, confidently assert that fever is not an essential process to natural elimination and must be restrained.

In continued fevers the reaction which will follow the powerful depressing effects of large doses of active coal tar antipyretics is more injurious than the fever processes, if such reaction occurs. If not, the depression is apt to be fatal.

In continued fevers the steady impression induced by small but frequent doses of those agents which restrain heart action and heat production by their tonic effect upon the nerve centers and vital processes, is in every way superior to the large doses of the commoner synthetic antipyretics. The depressing action of the latter, without compensation, is entirely too great.

GELSEMIUM, GELSEMIUM SEMPERVIRENS.

Synonym—Yellow jasmine.

CONSTITUENTS—Gelsemine, Gelsemic Acid, Gelseminine, Volatile Oil, Gum, Starch, Resin.

PREPARATIONS—Extractum Gelsemii Fluidum, Fluid Extract of Gelsemium. Dose, from one-half to ten minims.

Tinctura Gelsemii, Tincture of Gelsimium. Macerate and percolate with dilute alcohol. Dose, from five to thirty minims.

Specific Medicine Gelsemium. Dose, from one-third to ten minims, prescribed, ten minims to five drachms in four ounces of water. Teaspoonful every half hour to two hours.

Administration—Gelsemium is a prompt remedy if given in sufficiently active dosage. The excellent results obtained by the older physicians were obtained from full doses. Children are more susceptible to its action than adults, and with them the smaller dosage is applicable. In spasms the maximum dose is needed. If toxic effects are obtained, they can be readily observed and antagonized with no harm to the patient.

Gelsemium is quickly eliminated from the system, largely through the kidneys, consequently the effects of single doses are quickly dissipated, and medicinal doses must thus be given frequently, especially in childhood, to insure good results. Single full doses should be given only to adults.

The remedy can be given in single doses of from fifteen to twenty minims, but any dose of three drops or more must be watched for physiological effects, and diminished when these appear.

Physiological Action—Usually upon the administration of an overdose of this agent there is at first some excitement, followed by depression of the nervous system, with dizziness, amblyopia, double vision, dilated pupils, exophthalmos, complete prostration, with drooping of the upper eyelids from paralysis of the levator palpebræ superioris and inability to keep the jaw

closed. The temperature is reduced, the force and frequency of the pulse is lowered, with dyspnœa, the breathing being accomplished with much effort, and death usually results from paralysis of the respiratory muscles, including the diaphragm. The influence appears to be exercised upon the base of the brain, on the brain, on the splanchnic nerves and on the spinal cord. It inhibits the nerve force of all the visceral organs and relaxes the sphincters. Convulsions are one of the results of poisonous doses in animals. In man, while there is loss of sensation and motion, the patient is conscious of what is going on around him, unless the symptoms are prolonged, when deficient oxygenation of the blood, with accumulation of carbonic acid, will produce coma.

In experiments made upon pigeons the effects are very similar to those resulting from destruction of a portion of the cerebellum. There are irregular backward movements, tremblings, flutterings of the wings, preceding complete paralysis.

Gelsemium in lethal doses paralyzes the nerves, both sensory and motor. The motor nerves are first influenced, the paralysis of sensation more slowly following. The writer observed a case of poisoning where the patient had taken sixty minims of the fluid extract within forty-five minutes. A sensation of general oppression occurred rather suddenly. The patient rose to her feet, noticed that vision had failed almost completely, walked two or three steps, then fell in a mass upon the floor in a state of complete muscular relaxation. There was no alarm or fear, a rather tranquil feeling mentally, and in this case there was no great difficulty of breathing, although we have observed dyspnœa from single doses of two or three minims of the fluid extract. The recovery of this patient was rapid, although muscular weakness was present for several days.

The primary influence of gelsemium—that which probably always underlies its remedial influence upon any condition—should be borne steadily in mind in its administration. Its direct action is upon the central nervous system. It diminishes the blood supply of the brain and spinal cord by lessening nerve power, inhibiting the nerve control, slowing, retarding or staying the functional action of the nerve centers over the nerves themselves, influencing them steadily in the line of their physiological activities. It thus subdues all forms of nerve excitation of whatever character, or wherever located. It inhibits excessive nerve action. Nerve irritation, whether direct or reflex, comes uniformly under its influence.

There must be, then, increased nerve tension, with its consequent irritation, and usually, local hyperæmia or increased and undue blood supply in sthenic conditions. It is not the remedy when asthenia prevails.

It may be well to introduce a caution which is most important, if good results be secured from the action of this remedy. Gelsemium, more than perhaps any other of our agents, suffers from the fact that the market may be supplied by worthless preparations of the remedy. Any fluid extract or tincture made from the dried drug does not contain the full virtues of the plant, and if the drug has been long gathered will be almost inert. The *green root* should be gathered in the early spring, and its medicinal virtues should be *immediately* extracted. The *green root* fluid extracts, normal tinctures, and the specific medicine gelsemium represents the fullest possible virtues of the drug. Furthermore, fluid preparations alone, of gelsemium, are prescribed by our physicians, as clinical experience has conclusively demonstrated to us that the alkaloid gelsemin does not contain the full virtues of the drug.

Specific Symptomatology—The characteristic syndrome which demands the administration of gelsemium is found in acute determination of blood to the brain— **acute cerebral hyperæmia**—manifested by a bright flush upon

the face, bright eyes with contracted pupils, with a busy restlessness and excitability. With these there is a high degree of nerve tension and consequent irritation, with increased heat of the head and face. There is present in acute cases, elevated temperature, hot skin, usually dry, a sharp and quick pulse, but not always hard. Given in sufficient doses it slows the heart's action, reduces the temperature and quiets the respiration, speedily producing a restful sense of tranquility.

Increased arterial and **nervous tension** and local or general irritation present in many cases of local inflammation, especially of the kidneys, are specifically met by this agent.

Therapy—In the **acute fevers** of **childhood,** some evidences of nerve irritation are seldom absent. Here the agent exercises its happiest influence. **Muscular twitchings** with the above specific symptoms demand this remedy. If **spasms** supervene, the dose is increased in size and frequency until they are controlled. Often no other agent need be given.

The direct **contra-indication** is congestion, either of the nerve centers alone, or of any organ. The phenomena of dullness, hebetude, obstructed circulation, whether local or general, with normal or lowering temperature, with increasing weakness—asthenia—must be treated with the antitheses of gelsemium.

In **acute inflammation** of whatever organ or part, there is likely to be a time during its early course when gelsemium is the positively indicated remedy. Its administration should cease when its indications are no longer apparent.

In acute inflammations, especially those of childhood, or in persistent fevers, where reflex irritation threatens to induce convulsions, other fever remedies should usually be suspended for this until all irritation has abated, or until its beneficial action is no longer conspicuously apparent. If its physiological effects appear at any time during prolonged or protracted fever or inflammation, it should be suspended temporarily, or permanently, within the judgment of the prescriber, as its full physiological influence persisted in may impair nerve tonicity, and general tonicity of the muscular system, or of the heart, to such a degree as to retard recovery, or at least to prolong convalescence.

Fevers of nearly all kinds in adults, in the early and sthenic stage, are influenced by gelsemium, because the above conditions to some degree may be a part of the pathology of increased temperature.

The late Mr. Adolphus claimed that gelsemium exercised its first influence upon the heat centers in the cord and medulla. He always gave gelsemium for its influence here, in cerebro-spinal meningitis. Its indications were the bright eyes, contracted pupils, the patient inclined to crowd the back of the head in the pillow. His results were highly pleasing. Recent reports in the treatment of **cerebro-spinal meningitis** in children are proving that gelsemium given in conjunction with echinacea is proving to be the very best treatment. The results from a large number of observers is very convincing. Where the opisthotonos is extreme, they give both this and lobelia, in some cases, hypodermically. The relaxation is definitely induced by this method, and the spasms controlled. The use of these remedies in this disease is very rational.

In acute **cerebral, spinal, cerebro-spinal,** or **meningeal inflammations,** its symptomatology is usually strongly marked at first. If in adults, it may be given at first in pronounced doses, lessened as the symptoms abate or as its physiological action appears. In later stages of these disorders the dosage should be much smaller, or some remedy more directly indicated should be substituted. It should not usually be continued beyond the sthenic stage.

There are some forms of **nervous wakefulness** in which no better soporific can be given than this agent. Begun early in the evening, a few full doses will produce tranquillity and restful repose. If there be busy excitability and extreme restlessness, its influence will be greatly enhanced by combination with hyoscyamus. Nervous headache, which drives away sleep, can often be removed and sleep satisfactorily induced with this remedy. The nervous system is in part restored during sleep so induced, and the patient is rested.

In nervous excitation of women consequent upon **acute peritonitis, ovaritis, salpingitis, metritis, puerperal fever,** or **mastitis,** this agent has no peer. It is especially commended in the early stages, and if hysterical phenomena develop. Given in the early stages in pronounced, but carefully watched dosage, it will occasionally abort the entire condition, especially if the cause has been removed by proper methods. Extreme full doses are sometimes admissible at first.

In **puerperal convulsions** this agent has a conspicuous place. If given in accord with its exact symptomatology, in sufficiently large, often heroic doses, but it must be exactly given. The symptomatology of veratrum is more often present than that of this agent in eclampsia or the two may be combined.

In **intestinal inflammation** it has not seemed to me to be often indicated for the actual fever, and yet the reflex nerve phenomena, especially of children, often quickly demand it. It controls nervous or spasmodic pain in these conditions, and I have found it of great service in **appendicitis.** It seems to retard the inflammatory processes. It is of great advantage in the **tenesmus** of **dysentery,** sometimes allaying this troublesome symptom in a single full dose. Usually several frequent, pronounced doses are demanded.

In inflammation within the chest I have not used the agent as often as bryonia and aconite. Others speak highly of it, and there are conditions when the demands for them are too plain to be ignored. Certain forms of **asthma** are relieved by it quite promptly. Others have had good results from its influence in **whooping cough** and in **laryngismus stridulus.** It controls certain forms of **spasmodic cough** and cough from reflex irritation.

Dr. Bugg, of Georgia, reported a case of **hiccough** which developed with a severe bronchial cough from a cold. It had continued without cessation for forty-eight hours until the patient was in a condition of exhaustion. The doctor gave him—a previously strong negro—fifteen drops of gelsemium, because his eyes were "very bright and the pupils contracted to pin heads." This medicine was repeated until the spasm was relieved.

In **acute cold,** the whole system is influenced by it, the coryza being marked and all the usual symptoms pronounced. Gelsemium given in two or three drop doses, every half hour for a few doses, will often give relief most promptly and satisfactorily. In **epidemic influenza** it has been generally used with signal results in nearly all cases.

In **acute nephritis** it is certainly a sovereign remedy. It at first meets a wide range of the symptoms in a pronounced manner. It reduces the arterial tension, often at once, and consequently the quantity of albumin. It exercises a permanent, soothing influence upon nerves of the entire urinary apparatus in a most satisfactory manner. The quantity of urine is increased, the general nervous phenomena are delayed, the fever abates, and any pain or spasms are controlled. My practice has been to give macrotys with the gelsemium in acute nephritis from cold, but I am positive the beneficial influence could not be obtained without gelsemium.

In **post diphtheritic** or **post scarlatinal** nephritis it controls any undue irritation, but belladonna acts upon the actual condition more satisfactorily

than gelsemium. In **post puerperal nephritis,** I should certainly fail of a cure without this agent. In three very bad cases I gave gelsemium in full, large doses with the best results. It anticipates the uremic symptoms, preserves tranquility of the nervous system, and wards off the otherwise almost inevitable convulsions. It is of especial service in the spasmodic retention of urine of hysterical women, or in acute urinary irritation.

Spasmodic pain in the urinary organs has no more reliable antidote than gelsemium. Spasmodic pain in the bladder, or in the cystic sphincter, is controlled quickly, and **acute cystitis** should be treated with gelsemium from the first. The soothing influence of the agent upon the entire nerve distribution of these organs is soon evident. In **spasmodic urethral stricture,** where pain is excruciating and nothing but a catheter will apparently do any good, gelsemium in full doses is often all sufficient. I have had two marked cases where the catheter could not be passed, in one case, even under chloroform, where full repeated doses of gelsemium relieved the irritation and retention within two hours. I give from two to five drops of the Specific Medicine every twenty or thirty minutes, even if mild physiological symptoms appear. In the **tenesmus** of **chronic catarrhal cystitis,** it is excellent.

In **Gonorrhoea,** in the acute stages, it is a very prompt remedy, especially if used in conjunction with irrigation of the urethra. This remedy alone will often produce much relief in twenty-four hours. Where there is much excitement with **chordee** no remedy is more prompt.

Spasmodic types of **ovarian neuralgia** and **neuralgic dysmenorrhœa** are controlled with gelsemium. It relieves uterine colic and exercises a satisfactory influence in many cases as an emmenagogue, where nervous excitability is present.

In **vomiting** of **pregnancy,** Dr. Henderson has given ten drops of gelsemium hypodermically in extreme cases, controlling the vomiting when the physiological influence appeared. Caution is necessary, especially in asthenic cases.

In **confinement** it dilates a rigid os uteri, especially when the parts are dry and hot, and the edges of the os are hard, thin and unyielding, where nervous excitability is present. It soothes the general nervous system at this time, overcomes erratic, sharp, cutting, nagging pains, that seem to be of no benefit, preserves the integrity of the nerve force, and if the pains are exaggerated, and the labor does not advance, the labor is sometimes satisfactorily suspended or retarded until all parts are ready for the expulsive effort.

It is a most soothing remedy after labor, relieving nervous excitability and preventing or controlling **after pains,** but I do not consider it a proper or safe remedy with which to control these pains, as I am confident that its influence upon the normal muscular contractility of the uterine fibre, causes relaxation, permits uterine hemorrhage, and retards normal involution. Dr. Broadnax made this observation also.

It is a valuable remedy for **hysteria.** It is combined with pulsatilla to advantage in young girls. In pregnant women with frequently recurring paroxysms, macrotys, in small doses, will facilitate its action, as will viburnum or aletris.

Bloyer says "if the use of gelsemium be extended to those parts of the organism involving unstriped muscular fiber, we will find that it acts directly upon this class of muscles. These occur in the liver and its ducts; in the kidneys and the ureter, the bladder and the urethra, as we find also, on the womb and ovaries and in the heart. Upon the pelvic organs, especially if used with pulsatilla, viburnum, helonias, or macrotys, its influence is satisfactory. It certainly conduces to the relief of high tension."

In diseases of the nervous system of a chronic character, the influence of gelsemium is beneficial, but not so pronounced. In **excitable mania** it exercises a controlling influence, and if sleeplessness be present its influence is enhanced by combination with hyoscyamus. It has exercised a beneficial influence in **epilepsy,** especially in those cases where acute cerebral hyperæmia is present.

This agent has its place in **chorea,** but only when its specific indications are present, not in those cases characterized by anemia.

In the treatment of **facial neuralgia,** especially of the fifth pair, its influence is pronounced. It should be used hypodermically over the sciatic nerves in the treatment of **sciatica.** It controls **headaches** from **cerebral engorgement** with nervous irritability and excitability.

It is a serviceable remedy for **migraine** and **tic douloureux.** In persistent stitchlike pains, in the deep muscles of the back, which often completely incapacitate a man for work of any kind, full doses, just short of its apparent physiological action, will act in a most specific manner.

In **rheumatic stiffness** of the muscles of the neck, often accompanied with sharp pain, this agent should be freely given. In **acute rheumatism** and in **rheumatic fever** it is often sharply indicated. Given in connection with aconite, bryonia or rhus tox, as these are indicated, no better treatment can be instituted.

I consider gelsemium a most important heart remedy. The cases are those of **rapid heart** from over excitability; from irritability, with exaltation of nerve force, but where the patient is in full strength. No other remedy need be given in some of these cases. It relieves palpitation so induced and cures **cardiac neuralgia.** It is especially useful in the irritable heart of hysteria, influencing the entire train of symptoms at once. It is contra-indicated in weak heart, and where there are valvular lesions of any considerable character.

In **sea-sickness** specific gelsemium has been used with marked success. A teaspoonful of a mixture of thirty drops in four ounces of water is taken at the time of sailing, and repeated hourly the first day. Afterward it is taken less frequently. In this connection, be it said, in sea-sickness the remedy that cures one person may fail in another, and it is not to be expected that gelsemium will affect all alike.

I am inclined to the belief that in the South, its natural habitat, the conditions assumed by acute disease are more directly and specifically influenced by gelsemium than in the colder climates. Perhaps those factors of disease in which gelsemium is specifically indicated are more frequently induced or increased by the climatic influences of that locality. At least, our physicians in the South, who use the remedy to any extent, use it much more freely, and seem to find its indications present more often than we do in the North.

Recently a number of observations have been made on the action of gelsemium in **epilepsy.** One writer used it with veratrum in his cases, and has had unusually good results. He endeavors to anticipate the spasms, whenever possible, and gives the remedies in combination between times.

Many physicians have treated **stage fright,** or fear in meeting the public, or of students in fear of examinations, and have abolished it entirely with five drop doses of gelsemium, repeated two or three times, according to the susceptibility of the patient. Aconite also acts well here, but in smaller doses.

In the treatment of **tetanus,** Dr. Lewis of Illinois prevented the development of three cases, with echinacea for the toxemia, and gelsemium and passiflora for the spasms, used by the mouth and hypodermically. Dr. Matthew combined twenty drops each of gelsemium, phenol, and water as a hypodermic injection. In twelve cases he injected this entire quantity every three to six

hours, saving all the patients. This combination has been subsequently used with much success. In 1880 Dr. J. Marion Sims gave gelsemium for tetanus and produced very satisfactory cures. He gave forty minims of the tincture every hour or two, reducing it to twenty minims, as the convulsions decreased and continuing this to full convalescence. In the tetanus of horses, it has been frequently used, hypodermically, by veterinarians throughout America. They claim that it cures many cases.

Dr. Smith, of Leesburg, Florida, told me that in the **malarial disorders** which prevail in his locality he found indications for its use in nearly all acute cases and almost invariably obtained prompt and satisfactory results. He has occasion to prescribe larger quantities of it than of all other fever and sedative remedies combined. Dr. Wm. M. Durham, of Atlanta, Georgia, and several other physicians of the South confirmed Dr. Smith's opinion as to the frequency of the occurrence of its indications.

All these physicians unite in the opinion that gelsemium quickly brings about that condition in periodical **malarial disorders** in which the antiperiodic, quinine, can exercise its happiest influence. It restores secretion, softens and slows the pulse, reduces nerve excitation and irritation, causes a mild transpiration from the skin, and assists in cleaning the tongue. All these conditions must be present if quinine be given to marked advantage and with no unpleasant results.

These physicians claim further, that given during the time of the administration of quinine, it prevents undue stimulation of a sensitive nervous system, does away entirely in most cases with the tinnitus aurium, and other unpleasant phenomena, and enhances the influence of the quinine in all lines of its action, the desired effect being obtainable by a less quantity of this antiperiodic than would otherwise be required. These suggestions are no doubt applicable in other localities to a degree.

I have heard physicians say that they believed there were times or seasons when gelsemium influenced their patients with the same indications much more directly and positively than at other times. Perhaps this is in line with the theory of "epidemic remedial influence" or "epidemic remedial conditions" advanced by Rademacher and referred to by Scudder and other writers.

Co-operative Agents: Macrotys racemosa is an excellent remedy with which to combine gelsemium where the **muscular system** is involved. It promotes the action of gelsemium in all heart troubles, and in irritable and inflammatory conditions of the entire urinary tract. Opium intensifies the effects of this agent, but is slower in its action and its effects are not so quickly dissipated. They are not often prescribed together by those who are familiar with the action of gelsemium.

Lobelia and this agent will be found to act well together in certain selected cases; in severe convulsive manifestations especially. When **morphine** is given for relief of pain during powerful spasms, it acts as an antispasmodic. Gelsemium combined with it when indicated will be found to exercise all of its influence and control the pain which would otherwise continue, and thus prevent the antispasmodic effects of the remedy to an extent. Dr. Owen of Texas dissolves one grain of morphine in 240 grains of specific gelsemium. He gives this for **premature labor pains** in doses of from ten to fifteen drops, and in other conditions where both remedies are indicated, he gives from ten to twenty drops, as in severe persistent lumbago, sometimes with immediate results.

Other agents which act harmoniously with it to a greater or less extent are passiflora incarnata, the bromides, and chloral hydrate, conium maculatum, physostigma, veratrum, and Jamaica dogwood. It works nicely in fevers in careful combination with aconite.

Antagonists—This agent is antagonized by alcohol, by strychnine, nux vomica, digitalis, ammonia and, to a certain extent, by caffeine and belladonna.

Antidotes—In overdoses, heat applied, with electricity, and alcoholic stimulants, friction, artificial respiration, and hypodermics of atropine or strychnine should be administered. Strong coffee and the physiological salt solution are active antidotes also.

ACONITE. ACONITUM NAPELLUS.

Synonym—Monkshood.

CONSTITUENTS—Aconitine, amorphous and crystalline; Pseudo-Aconitine, Aconine, Pseudo-Aconine, Picraconitine, Aconitic Acid, Sugar, Fat and Resin.

PREPARATIONS—Extractum Aconiti Radicis Fluidum, Fluid Extract of Aconite Root. Dose, one minim.

Tinctura Aconiti Radicis, Tincture of Aconite Root. Dose, from one to ten minims.

Specific Medicine Aconite. Dose, from one-twentieth to one-half minim.

Aconitine Crystalline. Dose, one five hundredth of a grain.

Aconitine Amorphous. Dose, one one-hundred and thirty-fourth of a grain.

Physiological Action—In a moderate dose of five minims of the tincture, a sense of numbness and tingling is felt in the tongue and lips, with muscular weakness and depression; by doubling the dose these symptoms are intensified and prolonged, the pulse falls and the breathing is slowed. A poisonous dose causes tingling in the skin, pain in the joints, vertigo, dimness of vision, extreme debility, pulse forty to fifty per minute and irregular, skin cool and moist, burning heat in the œsophagus and stomach, nausea, vomiting and purging. There may be severe gastric and intestinal spasms, headache, complete loss of sight, hearing and speech, while consciousness remains; pupils dilated. muscles tremulous or convulsed, pulse imperceptible; death by syncope.

Aconite acts on the vaso-motor nervous system. It is a powerful depressant of the heart, and if given in sufficient quantity will paralyze that organ. Its apparent influence is upon the terminal filaments of the sensory nerves first, and afterwards, more slowly, upon the nerve trunks. It depresses the nerve centers of the cord, and destroys reflex activity and voluntary power.

A drop of a solution of aconite in the eye causes the pupil to contract. Larger amounts induce toxic symptoms, the principal of which are increase of tingling and numbness, excessive perspiration, rapidly lowering temperature, pupillary dilation, dimness of sight, loss of hearing and sense of touch, and diminished action of the sensory filaments supplying the skin.

Muscular weakness is marked; trembling and occasional convulsions may ensue. Excessive depression comes on, and the power of standing is early lost. The feet and legs become cold, the face pale, and the patient has a tendency to faint. There may be violent burning in the stomach with great thirst and dyspagia, and vomiting and diarrhea may occur. The pulse is weak, rapid, and almost imperceptible; acute, lancinating pain may be felt, and more or less delirium may result, though as a rule the intellect remains unimpaired.

"The manner in which aconite affects the nervous system is not yet definitely known. That it is a heart paralyzer seems to be an accepted fact. Death may result from syncope, though usually it occurs from respiratory paralysis. The action of a lethal dose is rapid, toxic symptoms showing themselves within a few moments." (Lloyd and Felter.)

Administration—In my earlier teachings of the action of this agent, I taught that it was a remedy for sthenic fevers only. I have since been convinced that its influence in very small and frequently repeated doses, greatly

broadens its application. Homeopathic physicians class it as one of the most important agents and their dosage is always minute. In such dosage, with small, feeble, frequent or corded pulse, in adynamic or asthenic fevers, it may be given with excellent advantage.

It restores normal conditions, so strengthening the action of the heart as to even bring a subnormal temperature, in some such cases as in cholera and malignant intermittents up to the normal point. It acts in harmony with belladonna in equalizing the circulation, lessening determination of blood, increasing arterial tension and greatly improving the capillary circulation.

In **sthenic fevers** it may be given in larger doses, with a view to producing results which are in line with its physiological action. It is contraindicated in that dosage, however, when the sthenic stage is passed. It should be given, if at all, in very small doses. One drop of the specific medicine in a four ounce mixture, a teaspoonful every half hour or hour, will sometimes produce the best results in patients under twelve years of age. In the sthenic stage five drops of the specific or fifteen drops of the U. S. P. Tincture in a four ounce mixture, to be given in dram doses hourly, is usually required.

So common is the use of aconite in fevers that all practitioners with experience recognize the **indications.** One physician suggests that in **intestinal fevers** the results are not so satisfactory, because of the fact that intestinal toxemia is so persistent. If the intestinal tract can be thoroughly cleansed and the toxemic influences removed, then the remedy acts as in other fevers. The same is true of **septicemia** from local causes.

Specific Symptomatology—When the pulse is small, hard, quick and sharp, the skin dry and hot, the secretions suddenly suppressed, the temperature rising, chilliness up and down the spinal column, a shivering when the bed coverings are moved, or from a slight draft, or on the least exposure, the agent is directly indicated.

It is also indicated when the pulse is full and hard and sharp, with suppressed secretions in the initial stages of acute inflammation of any organ, and at the onset of protracted fevers and especially of exanthematous diseases.

In **asthenic fevers,** which are usually protracted, the pulse small, feeble, frequent, sometimes wiry and corded, with or without evidences of impairment of the capillary circulation, the agent is specifically demanded, but in small dosage. With these phenomena, its use may often be continued for a few days, then discontinued to be resumed later as before, if needed.

In the early stages of local inflammatory disorders, which involve the mucous membranes, where the secretions of these membranes are perverted or suppressed, the agent in small doses is indicated. This condition is found in laryngitis, tonsillitis and bronchitis, also in gastritis, colitis, or enteritis, and especially in cholera infantum.

Therapy—Aconite has become the greatest of the agents used by the profession in the control of **fever;** but its indication must be complied with.

At the onset of fever Aconite is the remedy. At that stage of the disease when the evidences of some disorder are apparent, and yet its localization cannot be determined, the indications for treatment pronounced, why should the physician wait until a group of symptoms appears that has a name—that is known as disease—when the indications for one remedy are so conspicuous? We have known of many cases where all the evidences of approaching inflammation were plainly apparent, where the initial fever has been promptly met with Aconite and no inflammatory condition has ever developed. It is the experience of all physicians.

Aconite is specifically **the fever remedy in childhood.** Infants are susceptible to minute doses often repeated, and it is kind and soothing in its action. Five drops of the tincture to four ounces of water given in teaspoonful

doses every hour is the usual maximum dose for a child one year of age. Because of its prompt action and ready elimination the doses must be given frequently.

In **severe fevers,** it is better to give one half teaspoonful every half hour. As soon as the sedative influence is apparent, the skin becomes moistened, the restlessness abates and the temperature falls, the doses must be reduced in size or in frequency until no longer indicated. Simple fevers will abate in from four to twelve hours under this administration of Aconite.

Aconite promotes tone and power in the arterial capillaries, and is opposed to blood stasis. In this influence it has a powerful auxiliary in belladonna. The two agents, in small doses, work harmoniously in incipient inflammation. Their combined influence in capillary engorgement is most salutary.

At the onset of inflammation, the synthetic heart depressants will perhaps stay the fever, but their influence is not so benefically exercised upon the inflammatory processes. If inflammation is in progress they will not dissipate its results. Aconite retards pathologic exudation, suppuration, adhesion, induration and hypertrophy. This can by no means be as truly said of any other agent. Aconite certainly antagonizes inflammation or inflammatory processes and their results. It hastens resolution and promotes rapid absorption of inflammatory products.

Under the influence of this agent there is an entire change in the heart's action. The heart beats more slowly and quietly, the pulse becomes fuller and more natural, there is a general soothing effect upon the nervous centers, and the natural secretions from all the emunctories are re-established. It promotes free diaphoresis, and thus, a more rapid dissipation of heat. It is thus especially indicated when the skin is dry and hot. The mouth is no longer dry, the eyes assume a more natural appearance, and there is a large increase of the urinary secretion and the arterial tension is materially lessened. Aconite has a direct effect on the heat centers, inducing marked reduction in temperature. It is due to this influence that it is so reliable whenever there is an excess of body heat.

In acute **congestion** or in inflammation of the **brain** and spinal cord or their meninges, this agent exercises a double influence in the initial stages, but as soon as prostration or lack of power is evidenced it must be discontinued. In **cerebro-spinal meningitis** of infancy, with gelsemium and other antispasmodic sedatives, its influence is of prime importance. Acute discrimination must be exercised as to the limits in which it will be useful.

With the statements made, concerning the action of this remedy, it will be seen that in the diseases of children, and especially during the **summer,** aconite is more frequently called for perhaps, than any other one **fever** remedy. The fevers resulting from heat, from gastric disturbances and intestinal faults, as well also as those of nerve irritation from any cause occurring during warm weather, nearly all show the aconite indications, and consequently respond very quickly to this remedy.

Aconite has a direct influence on respiration and upon the respiratory organs. In **pneumonitis** its influence upon the capillary circulation is so pronounced that it is impossible to overlook its benefits. Usually for the first five days of the fever its indications are conspicuous and no remedy will take its place. If given with veratrum at this time the violence of the circulation and temperature is restrained more promptly. In **bronchitis** it allays irritation, restores secretion, and by its paralyzing effect on the end nerve filaments quickly soothes the irritable or inflamed condition of the mucous membrane.

In **pleuritis** it is the first remedy to be thought of in the initial stage. Its influence is enhanced here by the use of asclepias tuberosa, and by alternation with bryonia. The chilliness, cutting pain on respiration, sharp cough and dry

skin and mucous membranes, all point directly to it; but as soon as effusion to any great extent occurs, the agent may be dropped and the other agents continued.

It is of essential value in the treatment of mucous and serous inflammations. Its influence is evidenced in a marked manner in the treatment of acute **enteritis** or **peritonitis,** local or diffused, idiopathic, traumatic or septic. In gastritis, appendicitis and hepatitis; in acute **nephritis,** cystitis or urethritis, specific or non-specific, it is the first indicated remedy and may be continued until asthenia appears. In acute catarrh and other similar inflammations it may be persisted in as long as the inflammation lasts.

Its influence in stomach and intestinal troubles is in part due, although to no great extent, to its local as well as its general influence. In the inflammatory stage of **dysentery** and **cholera infantum** minute doses of ipecac and aconite exercise a specific effect when the causes of the disease are removed and intestinal asepsis secured.

In the onset of **diphtheria** it is an essential auxiliary. In acute tonsilitis, pharyngitis or laryngitis its specific influence is conspicuous because of its local as well as its constitutional effects. Minute doses will often abort a case of **croup** or terminate it abruptly. Its internal administration in acute inflammation of the throat or post-nasal mucous membrane is greatly enhanced by a warm spray which contains aconite in an appreciable quantity.

In the treatment of continued or **septic fevers** aconite is usually indicated at the onset, but as soon as impairment of the blood, by the influence of high temperature and rapid destructive metabolism, with defective excretion of the waste products, is apparent, the agent must be discarded. The nerve force is deficient by this time and depressing agents are contra-indicated. This is especially true in typhoid conditions. The changes take place early, and the period of aconite indications is very short. Cactus grand, organic antiseptics and bryonia will produce a sedative influence, and we will find their indications conspicuous when the time for aconite has passed.

Aconite is of value in the treatment of **rheumatism** and rheumatic fever. In addition to its general influence upon inflammatory conditions it is a great promoter of excretion. It is combined to an advantage with macrotys, sodium salicylate, bryonia, or rhus tox.

In **exanthematous disease** aconite is doubly indicated because of its direct action upon the capillary circulation of the skin. It assists in determining the eruption to the surface and promoting exfoliation. It curbs the temperature and prevents complications and conduces to a normal condition of the mucous surfaces, which is important where those surfaces are in danger of being involved also.

In acute **mastitis,** if treatment be inaugurated at once, an actual specific effect is accomplished by administering a full dose of aconite with ten drops of the tincture of phytolacca decandra, one hour, and alternating it the next hour with aconite and ten grains of acetate of potassium. But few doses will be given until abatement of the active symptoms will be observed. The same course may be advised in prostatitis or acute orchitis with similar results. In **metritis** it has a prompt influence and gives excellent satisfaction.

Aconite is a remedy of prime importance in the treatment of **amenorrhœa** when the suppression results from acute cold. It is conjoined with other measures indicated, and is prompt and satisfactory. Macrotys enhances its influence here, as well as polygonum punctatum. When the secretion of the skin and mucous membrane is restored by aconite, a full dose of quinine will sometimes accomplish the desired result, when it would accomplish nothing without this agent.

Aconite is so assuredly a specific in febrile conditions that its influence in chronic diseases is almost entirely overlooked. It is in certain chronic and non-febrile conditions a very reliable remedy because of its certain action upon the nervous system. John King advised its use in treatment of non-febrile **spinal irritation** in young women, and the writer has followed his suggestions in this condition for years with superior results in many cases.

Its direct influence upon the cerebro-spinal system is recognized by homœopathists, Deschere says: "Aconite is useful in mental diseases and hysteria when there is particular aversion to excitement; the patients show an intolerance of music; they can bear no sounds."

Aconite is an important remedy in the treatment of **affections of the heart.** The symptoms indicating it in these cases are numerous and important, and necessarily so, since aconite restrains the blood flow and also exerts a special action on the heart and its nerves. There are congestions of both heart and lungs, palpitation with anxiety, cardiac oppression and even syncope. The palpitation is worse when walking, lancinating stitches occur and prevent the patient from assuming an erect posture or taking a deep inspiration. Attacks of intense pain at times extend down the left arm from the heart and are associated with numbness and tingling in the fingers.

The agent is advised by many in **angina pectoris** when there are strong contractions or pure hypertrophy, but not in enfeebled heart or where there is much valvular insufficiency.

In **reflex vomiting** without prostration or exhaustion aconite is useful. This is especially true in some cases of the vomiting of pregnancy.

In **neuralgia** it is of use externally as well as internally. The aconitine, in granules, is the best form for its internal administration in neuralgia. Externally the tincture may be applied.

Webster has used aconite externally for **pruritus,** with excellent results. Occasionally the condition returns but in most cases the cure has remained permanent. Harrington confirms Webster's observations as does Robinson, who believes that the influence is induced by a direct anesthetic effect at first, with an influence upon the nerve endings, which prevents a return of the condition. The remedy is diluted and applied according to the discretion and knowledge of the physician.

Aconite is of common use in local pain, to relieve congestion, irritation and distress. Perhaps the most immediate influence obtainable in **acute pain** is to pour ten drops each of chloroform and aconite into the palm of the hand and hold it over the seat of the pain for two or three minutes. The effect is instantaneous and marvelous. It may be used in this manner in acute stomach or bowel pains until the cause of the pain is removed by other measures, or in acute pleurisy, and especially in angina pectoris. The pain ends with the application, and measures can be adopted to prevent its recurrence. Any local pain or neuralgia will yield, for a time at least, and in some cases it will not return. Sciatica treated two or three times per week with this simple formula will sometimes cease to return.

We have observed that aconite intensifies, modifies and otherwise improves the action of several other agents with which it may be combined or alternated. The characteristic effects of Macrotys racemosa will occur in much less time with this remedy than when given alone. The influence of belladonna upon all local congestions and in equalizing general circulation is intensified in a characteristic manner when the remedy is given with, or alternated with aconite. Given in proper doses with veratrum the influence of both remedies is active. Their influence on serous inflammation is most marked. In many cases either alone will not produce the same results.

Given with gelsemium in nervous excitement, cerebral fullness, nervous twitchings and fevers which result from irritation of the nerves and nerve centers, the effects of both are heightened.

Given with asclepias tuberosa, with proper external means, hardly any other agent will be needed in acute pleuritis.

Veterinarians find aconite immensely beneficial in the treatment of the inflammatory diseases of animals; but objections arise in the treatment of disease in horses, from the fact that horses are much more susceptible to its action than man. A correspondingly smaller dose must be given, and repeated quite often.

Toxicity—Poisoning by aconite is not common. An overdose produces in the mouth and throat a tingling sensation, followed by symptoms of strangulation from paralysis of the nerve endings. The tingling becomes quickly general. This is followed by a sensation of numbness. The skin, relaxing, becomes covered with cold sweat, and finally becomes cold. The patient becomes too weak to stand, the respiration is greatly depressed and insufficient, the heart beats more feebly and the pulse may vary every few minutes in its character, but it is always weak. The temperature falls rapidly. Aconite depresses the heat centers, and, by dilating the capillaries of the skin, permits rapid heat radiation, thus at the same time, acting in a two-fold manner upon the temperature. Consequently the temperature of the surface of the body is a fairly correct criterion by which to judge of the internal temperature.

There may be vomiting, failure of the special senses from the general paralyzing effect of the agent, syncope or mild delirum and convulsions. These symptoms are not usual.

Antidotes—If a full toxic dose be taken, the above symptoms advance most rapidly, and no time whatever should be lost in combating the influence of the agent. It has no known physiological antidote. The conditions must be met according to their indications. If there is any reason for believing that the stomach contains any of the agent, large quantities of warm water should be swallowed and immediately evacuated. It may be vomited or siphoned out with a long stomach tube, or pumped out, but extreme nauseating emetics are contra-indicated. A mild infusion of oak bark, drunk freely, serves the double purpose of diluting the aconite and antidoting it by the tannin it contains. Tannic acid is believed to be a chemical antidote to a limited extent, and given in suspension in water is efficient.

The most immediately diffusible stimulants must then be given freely. Alcoholic stimulants, ammonia, capiscum, in a hot infusion, and digitalis, strophanthus or atropine by hypodermic injection, or nitro-glycerine are most serviceable remedies. External heat continually and electricity are demanded. Lobelia should prove valuable. A pint of vinegar, diluted, saved one life.

VERATRUM. VERATRUM VIRIDE.

Synonym—American Hellebore.

CONSTITUENTS—Veratroidin, Jervine, Pseudo-Jervine, Rubi-Jervine, Cevadine, Starch, Resin.

PREPARATIONS—Tincture Veratri Viridis, Tincture of Veratrum Viride. Dose, from two to ten minims.

Specific Veratrum. Dose, from one-tenth to five minims.

Physiological Action—Taken in moderate doses, Veratrum Viride reduces the pulse rate in a marked degree, which becomes extremely rapid and feeble on any exertion; this condition is followed by severe nausea and vomiting, together with muscular weakness. Taken in a poisonous dose these symptoms

are increased in severity, the pulse becomes almost imperceptible, the skin cold and clammy together with vomiting, retching, hiccough, faintness, dizziness, blindness and unconsciousness. These symptoms indicate that the drug is a powerful spinal and cerebral depressant.

Although veratrum is a powerful poison, it is so regular and uniform in its action, and so devoid of erratic and unaccountable or uncontrollable influences, that it can be given within the limits of its maximum dosage with safety.

In overdoses it produces vomiting, usually before enough is absorbed to produce serious results. It is not rapid or violent in its first effects and is not cumulative. It is quickly eliminated and the effects of single doses are transient. It can be watched even when the doses are large, and stopped before harm results. It is really the safest of our active agents. Its poisonous effects are easily antidoted. It is better given in small doses, repeated every half hour or hour, in acute cases, as its influence is exercised in a more uniform manner, is more permanent, is more easily controlled and is not so apt to disturb the stomach. A large dose produces quick depression, although the effect is transient. If the dose be often repeated, the stomachic irritation quickly becomes so great as to interfere with all medication.

Veratrum is a better remedy for adults than for children. It is not as easily adapted to infants and the feeble as aconite, and its manner of action is not as satisfactory.

Veratrum, in its direct heart depression, resembles the coal-tar depressants, although much more regular and uniform in its action and perfectly controllable. It steadily slows the heart and circulation, the temperature declining correspondingly. Its influence upon the emunctories is not marked. Aconite influences the heat production and heat-radiation, stimulates all emunctories and the function of all the glandular organs and hastens the removal of inflammatory products. Effusion or suppuration are thus prevented, and if this agent is begun early, when the temperature has declined, there will be no local lesions remaining to contend with as the results of the inflammatory action.

Veratrum will assist in the removal of morbific products, but not with the immediate influence upon the results of inflammatory actions that are apparent from the use of aconite. It is an active eliminant which provides for its own elimination. Veratrum should not be given when inflammation has resulted in marked structural change and the products of inflammation are plainly present. Here aconite may be given as long as no general depression occurs.

Specific Symptomatology—Veratrum is indicated in the onset of **sthenic fever** when the pulse is full, large and bounding, and the tissues are engorged, where there is fullness of the capillary circulation.

It is especially serviceable when there seems to be **obstruction** of the **venous capillary circulation.** The face and skin are flushed, but usually of a full, dull, dark hue, and not always the bright-red flush with hot, dry skin which indicates aconite and gelsemium. The following indications suggest it.

Tongue coated white or yellow with a red streak down the center.

Congestion that occurs at the base of the brain.

Convulsions that occur as a result of septicemia.

Tissues full, not shrunken; marked arterial throbbing with bloodshot eyes.

Erysipelas appearing like ordinary inflammation (red).

The skin is usually soft and covered with warm perspiration. In these cases Veratrum reduces the arterial pressure and permits, or even assists, the more rapid removal of the venous obstruction.

In administering **veratrum,** because of its direct action on the heart it is necessary, if given for a short time only, in full doses, that the patient remain in a recumbent position. In sthenic inflammations, especially such as results from infections, and this includes a long list, and exophthalmic goitre, it

exercises a most delightful influence when given in small doses, frequently repeated, the patients should thus get the best results when in a recumbent position, but that position is not then obligatory.

Therapy—The characteristic indications for veratrum are found in the onset of **pneumonitis** in strong men previously healthy and vigorous. In these cases, given in doses of a drop of the tincture every half hour, it will slow the pulse and slowly reduce the temperature after four or five hours. This effect can be continued for a few doses longer, and then the doses should be smaller or given farther apart. The pulse should be slowed, in a case with violent premonitory symptoms, down to the normal beat and held there for awhile, and if the symptoms do not quickly abate, the influence may be continued until a pulse of sixty or fifty-five, or even, in a strong man, fifty beats is reached, if the stomach be not yet irritated.

In **pleuritis**, in **bronchitis**, in **peritonitis**, especially pelvic peritonitis from sepsis; in **hepatitis** and **nephritis** and **cystitis** always at the beginning of the acute stage before much structural change has occurred, it may be given, and will retard and often throw off the attack. It is of value in the earlier stages of **meningitis** and **cerebritis**, if given understandingly. If the violent heart action be controlled, the processes of disease and any tendency to convulsive action will be at once restrained.

In continued fevers this agent, like other depressants of nerve force, is not always the best remedy to use. The reactionary power of the nerve centers is greatly lowered by disease, and if depressants are given they are apt to still further decrease the nerve force and minimize its restorative influence over the system. Advantage will sometimes follow its early use in a case of extremely high temperature with violent and noisy delirium, but it is not the remedy to persist in nor to continue when the prostrating influence of the fever is apparent.

In **tonsillitis** aconite as an internal remedy is almost specific, but its influence is greatly heightened and the inflammatory stage shortened by applying veratrum with a camel's-hair pencil over the tonsils. Diluted—one dram in a half-glass of water—it is an excellent gargle in any inflamed throat. In these cases it aborts the inflammation and determines immediate resolution.

In **erysipelas** it is of value both internally and externally. For external use in this disease a somewhat dilute non-alcoholic preparation is preferable, or the fluid extract, full strength or diluted one-half.

It is seldom that other applications will be needed, and the force and frequency of the heart's action can well be restrained by its internal use. If begun early in erysipelas, there are few conditions likely to arise that will contraindicate its use.

The first investigators into the properties of veratrum pronounced it an excellent alterative. It has not been generally used as such, but those who have so used it have expressed the strongest confidence in it. Prof. A. L. Clark, writing on the subject in 1889, said: "As an alterative, especially as an antisyphilitic remedy, there is no better agent in the vegetable kingdom. Indeed, there is room for doubt whether the animal, vegetable or mineral kingdoms furnish a better remedy in purely syphilitic cases. If the patient has been already saturated with mercury, as is too often the case, doubtless the administration of some of the preparations of iodine will be a necessary adjuvant. In the uncomplicated secondary forms of the disease it will be seldom that any other remedy will produce as satisfactory results as can be obtained with the veratrum alone.

Of a reliable fluid extract four or five drops three times a day will be usually well borne by the stomach, and the sensitiveness of that organ is my sole guide in dosage. If four drops disturb the stomach use three for a few

days, then increase to four, then perhaps to five. Its smallness of bulk, not disagreeable taste, and, above all, its satisfactory effects, constitute strong recommendations for its use." Perhaps its power in this line increases its efficacy in the treatment of puerperal convulsions.

Its alterative and eliminative influence as well as its sedative power caused the older writers to say that veratrum would positively cure puerperal fever.

Other observers have spoken most highly of its action in developing **phthisis pulmonalis.** Positive claims are made that, judiciously administered, it has aborted the disease.

While I have spoken against its use in continued fevers, there are several writers who have given it in full doses at the **onset of typhoid fever,** while sthenia was yet present, and have had most salutary results.

In the early stages of **acute rheumatism,** its indications are present sometimes quite conspicuously, and if given in emphatic doses, it will sometimes quickly terminate the disorder. In articular rheumatism, it may be applied freely, externally, over the swollen and inflamed joints.

In the treatment of **rheumatic fever,** one writer says that when with the fever there is rapid strong pulse, caused by the toxines, veratrum used as a sedative is especially valuable because of its alterative properties, exercising a double influence, removing the causes of the disorder as satisfactorily as any other known remedy.

It is given in **sthenic inflammations** with the above symptoms, in **erysipelas** with general symptoms of inflammation, with a red stripe through the center of the tongue; in **nervous irritation,** with threatened convulsions; usually those which have suddenly appeared. In these cases the pulse is rapid, but may be full, or it may be corded or sharp, hard and wiry.

In cases where there is previous **gastric irritation,** usually shown by a long, narrow and pointed tongue, with red tip and red edges, the agent will not be of benefit, but will increase that condition. Where there is **nausea** from the presence of undigested or foreign matter in the stomach, the rapid pulse, etc., being present, its action may be beneficial. In these cases the tongue is usually pale, broad and thick.

For **bilious colic** Dr. Bates wrote some years ago that he relied upon this remedy.

There are some cases of **chorea** in which veratrum will serve an excellent purpose. These cases are more or less acute in development, and are usually very violent. The heart is irritable and the pulse rapid.

Dr. Woodward speaks very highly of veratrum in the treatment of **asthma.** In spasmodic cases he is confident of its beneficial influence, but he has given it principally in those sthenic heart cases where asthmatic breathing has developed within a few days and persists. He gives one or two drops every hour unless unfavorable symptoms occur. He expects favorable results within a few hours. It is a remedy for some cases of **hay asthma.**

The old writers cautioned against giving large doses of quinine and veratrum, at the same time, as their influences were antagonistic, and Dr. Percy claimed that it was a positive antidote to strychnine poisoning, quickly controlling the spasms and assisting the elimination of the poison.

A satisfactory cure of **tetanus,** with veratrum and gelsemium, has been reported. The case was one of a young girl, 14 years old, attacked after an operation, for the removal of the ovaries, with a most severe form of tetanus. The case presented the classic symptoms in the extreme. When paraldehyde, morphine, chloral and the bromides had failed, the antitetanic serum was used. This also failed, and the patient was put upon veratrum. Small doses failing, larger doses were given in conjunction with gelsemium. Eight minims

of each every hour was given per rectum. The effect was prompt and satisfactory, but the agent was discontinued because of vomiting, when the symptoms returned. Ten minims of veratrum and eight minims of gelsemium were then given every hour, and the symptoms were promptly controlled. There is no doubt that the powerful alterative properties of veratrum, add greatly to its efficacy in the control of tetanic and puerperal convulsions.

It is useful in **acute gonorrhœa,** preventing **chordee** and abating the activity of the symptoms. It is as useful also in orchitis from whatever cause.

It is a valuable application in localized inflammation, such as boils, carbuncles, felons, ulcers with heat and swelling, "cold sores" on the lips and inflamed pimples.

The use of veratrum as an antispasmodic is now quite common. It may be given in **convulsions** with active cerebral hyperæmia. It is especially reliable as an emergency remedy in persistent cases of convulsions in childhood while the cause is being removed, its influence often assisting in the removal of the cause. From one drop to three or four may be given at a single dose, according to the age of the child, and repeated with caution.

In **puerperal convulsions** the mass of evidence in favor of veratrum is overwhelming. One old physician reported in the Medical Record (1888) an experience in the treatment of an average of eight cases per year for twenty-eight years, without the loss of a patient, with veratrum alone. Another treated twenty-three cases with veratrum, with recovery in all. In these cases full doses are given, closely watching the effects on the stomach, if given per os, and always watching its effects upon the heart. A dose of five drops can be repeated every half hour for three or four doses. At times five drops have been given every half hour for four or five hours. This important influence is exercised through its power to control blood pressure—reducing arterial tension. It is best used hypodermically.

In many severe cases with **active cerebral engorgement** as much as fifteen drops have been given hypodermically and repeated after a time.

Three drops of the tincture of veratrum twice daily, gradually increasing the dose to twelve drops, then gradually reducing, may be given with care in a desperate case of **exophthalmic goiter** with **tachycardia.** This agent at such a time is important. It will usually control the rapidity of the pulse in a satisfactory manner while it materially assists in antidoting the toxins, and thus conduces to the action of other indicated remedies.

In its influence upon exalted activity of the heart, veratrum is of service in **palpitation** from temporarily increased functional power of the heart—the irritable heart of otherwise strong, vigorous men—the violent action induced by the use of tobacco in some cases inducing high arterial pressure and the palpitation of hypertrophy without valvular incompetence. It is likewise valuable in **aneurism,** restraining hyperactivity by reducing the vasomotor tonus. In these cases a dose of from three to four drops four times each day will do better than the small and frequently repeated dose.

BRYONIA. BRYONIA ALBA.

Synonym—Bryony.

CONSTITUENTS—Bryonin, Starch, Gum, Sugar, Albumen, Wax, Fat and various Salts.

PREPARATIONS—Tinctura Bryoniæ, Tincture of Bryonia. Dose, from one to five minims.

Specific Medicine Bryonia. Dose, from one-tenth to two minims.

Physiological Action—In large doses bryonia is an active hydragogue cathartic and sometimes causes inflammation of the stomach and bowels. In poisonous doses it causes a fall of temperature, dizziness, delirium, weak pulse, cold perspiration, dilated pupils and other evidences of a depressing action on the nervous system. The recent root is highly irritant when locally applied, and capable of producing vesication. The results from laboratory observations of this agent do not to any degree suggest its clinical adaptions. These have been determined by the closest of clinical observation.

Specific Symptomatology—The following symptoms demand the use of bryonia: Distress or pain in acute inflammatory disease, which is aggravated by movement increased by pressure; elevated temperature, with hard, frequent, vibratile pulse; the muscular structures sore and tender, as if bruised; acute lung or bronchial disorders, with no expectoration, dry cough, short and harsh, or hacking, with soreness increased by coughing; flushed right cheek, frontal pain extending to the basilar region; irritating cough.

Again: Sharp, cutting, lancinating or tearing pain from serous inflammation; increased muscular tension, and tenderness on pressure, aggravated by motion; headache on the right side; inflamed lung structure, with pain and soreness relieved by lying on the inflamed side, usually with a bright spot on one cheek. Chronic soreness in the chest, without fever, with harsh, dry, sharp cough. With this latter indication its influence is often enhanced by alternation with small doses of belladonna.

Bryonia promotes the elimination of heat, and like aconite, it opposes the dryness of the mucous membranes induced by inflammation which suspends secretion. It acts upon all serous membranes directly as stated. It also acts upon the viscera covered by these membranes. It is thus valuable in **enteritis,** in the inflammation of the **glandular organs,** and in pulmonary and bronchial inflammations, always looking for its precise indications—tenderness on pressure, tiny shooting pains, or pain increased by motion.

The absorption of inflammatory products, either of a serous or sanguineous character, is greatly facilitated by this remedy. It opposes the breaking down of tissue and pus formation. Its influence upon inflammatory processes and upon the results of inflammation is even more positive in certain cases than aconite.

Therapy—Bryonia is a remedy of great value in the treatment of all acute inflammations of the thoracic viscera or of the pleura. In **pleuritis** its indications are usually all present. Uncomplicated cases will yield to this agent alone. Occasionally, though, more rapid results will be accomplished by alternating it with aconite or with asclepias tuberosa. It must be continued if effusion be present.

One physician, in two cases of pleurisy where there was at least a pint of serum in the pleural sac of each, gave bryonia alone, and persistently using it for a reasonable time, the entire quantity in both cases was absorbed, and the patient made an excellent recovery.

In **bronchitis,** with short, quick cough, with quick, sharp pains, especially if the sputum be bloody or frothy, bryonia acts directly. It should be given in small doses, at short intervals, and should be persisted in. It will subdue the pain and the cough promptly and exercise as marked an effect on the fever as any special sedative known.

In **pneumonitis** it may be positively indicated. If used in combination with other specific remedies, abatement of the symptoms will be even more rapid in these cases. Although opposed to complex medication, the author has used the following combination in these conditions in infants and children with the most happy results. The two prescriptions should be given as speci-

fied in alternation. In severe cases in small children, or during severe paroxysms, it is very desirable to give a yet smaller dose and alternate the remedies every twenty or thirty minutes:

℞—Tinct. Aconiti, U. S. P. ..... ♏v
Tinct. Belladonnæ, U. S. P. ..... ♏viii
Aquæ Dest. ..... ℥ii

M. Sig. Half of a teaspoonful every hour, alternated with the following prescription every half hour:

℞—Tinct. Bryoniæ ..... ♏viii
Tinct. Ipecacuanhæ ..... ♏iv
Aquæ Dest. ..... ℥ii

M. Sig. Half teaspoonful every hour, alternated with the above as stated, every half hour.

I have in late years been using bryonia in **acute neuritis.** I have found in many cases the precise indications for the use of this remedy, and in one exceedingly bad case, I got excellent results, indeed, but I combined it with Mag. Phos. 3x, though the indications for bryonia alone were very plain.

Dr. Henderson specifies a form of **neuralgia of the face,** usually on the right side caused by cold or from a draft with dull pain and stiffness or tenderness of the muscles, especially if there should be a sharp catch under the right shoulder or in the right side increased by inspiration as immediately relieved by a combination of bryonia and sticta, ten drops of each in four ounces of water, a teaspoonful every half hour.

Bryonia controls the temperature and the fever processes, when the exact indications are present, as positively as any of the other known special sedatives.

Synovitis with sharp pains on motion wherever located, demands bryonia, and **rheumatic conditions,** where the distress is increased by movement, with sudden, sharp pains, especially where there is acute rheumatic swelling of the finger joints, it is demanded. The **fevers of infancy,** where movement causes pain, evidenced by sharp, crying out; inflammation of any organ, accompanied with sharp stabbing pain or stitches, a sensation of fullness and deep soreness are controlled by it.

In **protracted fevers,** with dry mucous membranes, cracked lips, excessive thirst; constipation, with hard, dry stools; scanty urine, with dark color and high specific gravity, bryonia should be given, and in **asthenic fevers** the remedy in small doses may be persisted in, with no depressing influence upon the patient.

In chronic **disorders** of the **liver** or **spleen,** with deep-seated soreness and quick, shooting pains, especially if there be some elevation of the temperature, it will produce the best of results.

It should invariably be used in **acute appendicitis** from the appearance of the first indications. I am convinced that we have no more important or efficient remedy than this in this disorder. It will save many operations if given early.

In a most obscure case, in consultation at one time, I discovered extreme tenderness on pressure over the pancreas—little shooting pains—pain increased by motion, the patient lying immovable on the back, temperature of 101½ degrees. I diagnosed **acute pancreatitis.** The patient was certainly near death. The persistent use of bryonia relieved every condition in a satisfactory manner, causing me to conclude that the diagnosis was correct, and that we had prevented the formation of pus by the prompt use of this remedy. When these indications pointing to the pancreas are present in **diabetes,** this remedy should be given.

Dr. Jones says that bryonia is the remedy for inflammation of the **mammary glands** when those glands are of stony hardness, pale, hot, painful and sore, when they must be supported. He says that it is a remedy for **headache** when it is of a bursting character, as if the head would split, worse on movement or on stooping over, relieved by lying still. He has found where a patient suffers from nose bleed at the time of menstruation, that bryonia, given in small doses, will restore the normal condition.

I am so confident of the action of this remedy in **cough,** especially in children, that with many patients suffering from no other trouble but a dry, hacking, persistent cough with or without some irritation and soreness, I am apt to give bryonia as the first remedy, or I combine it with any other simple, directly-indicated remedy.

Auxiliary measures should be adopted as the character of the case suggests.

In **peritonitis** with quick, sharp pains, flushed face and anxious countenance, bryonia is indicated. This agent, in mild cases, will subdue all the inflammatory processes and **control the pain** satisfactorily **without opium.**

During the early stages of any inflammation in which bryonia seems to be indicated, aconite will facilitate its action and assist in the control of the processes, but bryonia can be continued to most excellent advantage when the results of inflammation are extreme, and weakness and prostration are present, when aconite might have a depressing effect and be contra-indicated.

In acute **pericarditis** and **endocarditis** the specific indications for this agent are often present, and its influence is prompt. It will be of great service if there is effusion with evidences of decreasing power of the heart.

In acute **rheumatic inflammation** of the **heart** or pericardium it is one of the most direct remedies. Properly combined with indicated auxiliary measures, no remedy will act more satisfactorily.

It is of much value in typhoid conditions, especially in **typhoid pneumonia** or in **pleuropneumonia** or broncho-pneumonia with typhoid complications. In **typhoid fever** with severe enteric symptoms this agent is often of great service in restraining the retrograde processes and controlling excessive temperature. In **septic fevers** its influence will be marked and valuable. In septic peritonitis it may be given alternately with aconite, or aconite and echinacea, the latter remedy directly controlling the sepsis.

Bryonia is indicated in **rheumatic fever** and in **acute rheumatic arthritis.** It must be given as in other acute conditions, in small doses frequently repeated. In muscular rheumatism and in rheumatic muscular pains it will accomplish good results if given in conjunction with macrotys or alternated with macrotys and aconite. In acute rheumatism of the joints of the fingers or hand, it seems to be of value.

Because of its direct action on serous membranes, a few years ago I was led, from the extreme tenderness and pain on pressure, to prescribe bryonia for **spinal tenderness.** I immediately found that I had made the important discovery of one of the best remedies with which to relieve that serious condition. Indications for other remedies will suggest their combination in some cases, especially when this condition is present during pregnancy.

In **mastitis** or **orchitis** it is useful, and if the fever be high, the pains sharp and cutting and the face flushed, the influence will be prompt, indeed. In these cases, it is seldom given alone, but usually with aconite, phytolacca or other direct remedies.

RHUS. RHUS TOXICODENDRON.

Synonyms—Rhus Radicans, Poison Oak, Poison Ivy.
Locality—North America.
CONSTITUENTS—Toxicodendric Acid, fixed oil wax, tannin, mucilage.
PREPARATIONS—Specific rhus tox. Dose from one-twentieth to two minims.

In the preparation of the specific rhus, the freshly gathered mature leaves are used. It is at first green in color, afterward light-brown or yellowish. It is volatile, and irritating to many. From two to ten drops in four ounces of water is the usual administration. A tincture of rhus is prepared, but it varies according to its manufacture and the quality of the drug used, and is not reliable. Dose, from one-tenth to two minims.

Physiological Action—Most persons are poisoned by handling the poison oak and the several poisonous varieties of rhus—rhus toxicodendron or radicans, rhus venenata and rhus pumilium. It causes an erysipelatous inflammation of the skin, the swelling sometimes being so excessive as to obliterate the features, or the body may become so greatly swollen that the person is unable to move. Internally in poisonous doses of the berries it causes drowsiness, stupor, vomiting, convulsions, delirium, dilated pupils, hurried respiration, pulse at first full and strong, finally small, frequent, feeble. Poisoning by an infusion of the root causes a vesicular eruption, burning in the throat and œsophagus, dry, hoarse cough, nervous twitching and wandering of the mind, constriction of the temples, chilliness, nausea, thirst, debility, faintness and convulsions.

It relieves cerebral engorgement by increasing arterial pressure. In minute doses it acts as a cerebral sedative to the overworked and irritable brain and improves its tone and functional activity. It acts somewhat similarly to strychnine in that it produces increased functional activity of terminal nerve filaments and is beneficial in some forms of paralysis.

Specific Symptomatology—In inflammatory fevers with sharp hard pulse; acute inflammation involving the skin, with bright circumscribed redness, extreme soreness or sharp burning pain; extreme redness of local parts inflamed, with great local heat and sharp pain; sharp supra-orbital pain, especially of the left orbit; burning in the eyes with flushed face; inflammation with constitutional impairment, evidenced by a sharp red tongue and deep red mucous membranes. The tongue has a pointed tip upon which the papillæ are elongated and pointed. In subacute or in chronic disease also with the above specific evidences, it is demanded.

The differential diagnostic points between rhus and bryonia, are that rhus is the remedy when the patient suffers most when warm and at rest, or when the distress is aggravated by heat, while bryonia is indicated when the distress is increased by motion. One prominent homeopathic writer is authority for the statement that it has direct influence upon the tendons, sheaths of the nerves and fasciæ, hence its influence in rheumatism. Restlessness seems to be a leading indication for rhus, as a specific agent. Whether it be a **meningeal irritation** or "**rheumatism,**" the patient shows this same symptom. In many respects in its indications rhus is the opposite of belladonna.

Therapy—The indications for this remedy are present in **acute erysipelas** to a marked degree, especially in erysipelas of the head and face, or that involving loose cellular tissue. If it be given in the first stages of this disease the symptoms abate rapidly. If typhoid symptoms be present in erysipelas it is an excellent agent, its influence being marked upon typhoid conditions. It is useful in **typhoid fever** and in typhoid conditions complicating acute inflammations. It seems to exercise the influence of a special sedative in these cases when aconite and veratrum are contraindicated. Sordes with dry red tongue and dry

mucous membranes, flushed face, bright restless eyes, with tympanites, all demand rhus. It soothes the **cerebral irritation** of typhoid; inducing rest and quiet, and controls delirium. It has antiseptic properties also which antagonize the disease processes within the blood. It prevents disintegration of the red blood corpuscles, and increases the vital powers.

In **scarlet fever, measles** and **smallpox** the indications for this agent are often conspicuous, and it will be found of first importance, especially if there be great injection of the conjunctiva, swelling of the palpebræ, extreme lachrymation and photophobia. In the latter stages of these diseases when the skin is livid, the tongue red, or red and glazed, with offensive breath, and offensive discharges, and with failing vitality, it is demanded.

In acute **inflammatory rheumatism** the indications for rhus are conspicuous. The agent is often of first importance in this disease. It may be alternated with aconite or other suggested remedy for the fever, or if there be deep muscular soreness, with macrotys. Its value in all forms of rheumatism is great, and cannot be explained on the basis of its physiological action, as the homeopathists obtain excellent results from very minute doses. It is given in chronic rheumatism and to relieve the results of rheumatic inflammation.

In persistent dry, tickling **bronchial coughs** rhus is a good remedy, whether they be acute or chronic. It is combined with or alternated with bryonia or aconite in capillary bronchitis with these characteristic coughs.

Dr. Hurd claims that when **Lagrippe** first made its appearance, the first two cases had a guiding symptom that caused him to give full doses of rhus tox. The patient would seize the head with both hands and groan as if he were in agony. This peculiar **frontal headache** was relieved within an hour by this remedy, establishing a line of investigation for its use.

The use of this remedy in small doses, internally, frequently repeated with **rhus poisoning,** has long been advised. The experience of the editor has confirmed the belief that it is of benefit.

When **gastric** or **intestinal disorders** in children induce **cerebral engorgement** with great restlessness and flushed face, the specific tongue, mouth and mucous membrane indications being present, rhus is the remedy. These cerebral symptoms may be induced by any inflammatory disease, and successfully cured with rhus. In adults they are found in prolonged adynamic fevers, and often are a serious complication. Rhus will meet other prominent indications often while correcting the brain phenomena.

It has an **antispasmodic** influence, preventing **spasms** when induced by cerebral engorgement, or irritation which is of reflex origin or caused by gastric or intestinal irritation, the characteristic indications for the remedy being present. Webster says he values it more highly than gelsemium or lobelia in infantile convulsions, if its indications are present.

In gastro-intestinal disturbances accompanying the inflammatory conditions over which rhus has an especial influence, this agent is a direct sedative. It arrests nervous and reflex vomiting promptly, and vomiting from any cause when the **tongue** is pointed with **reddened tip and edges.** The so-called "strawberry tip" directly suggests rhus. In acute abdominal pain, in **cholera morbus,** with extreme vomiting and spasmodic pain, this agent is valuable.

In local inflammations, induration and swelling tending to suppuration, as of boils, felons and carbuncle, the indications point to this remedy, and given internally its influence is often excellent. In ulcerations with red areas and red edges, in scrofulous indurations and ulcerations, it is useful. In eczematous and erythematous conditions it is of value. It is of service in parotitis and in inflammation of the sub-maxillary glands.

This agent must be used continually, and the prescriber must familiarize himself with all its side influences before he can fully appreciate its great value.

In pruritus of the vulva or other localities where there is erythema, with redness, persistent in some cases, especially with blonde children with eczematous tendencies, or children of a scrofulous diathesis, this agent is most prompt and valuable.

There is a form of **eczema,** usually acute in character with the inflammatory evidences of burning, redness, itching, and perhaps swelling, that rhus will quickly cure. The homeopathist advises it for these in the second decimal dilution, five drops every two hours.

In any **skin disease** where there is **violent itching,** circumscribed redness, burning, swelling, pain and vesication, especially if fever be present, the condition more or less acute as above mentioned in erysipelas or other skin disorders, this remedy is prescribed with success.

SYNTHETIC DEPRESSANTS.

In my first editions I gave a conspicuous place to the use of coal tar derivatives as remedies that control fevers. During the fifteen years that followed, these remedies did not gain ground in the opinion of the profession. Acetanilide and phenacetin perhaps held their own. Antipyrine was largely dropped except for pain. Exalgin is used in but very few conditions. I therefore have not in this rewriting given them separate space.

Antipyrine in its physiological action is similar to that of **phenacetin,** but more pronounced. All the four remedies herein included, produce pallor: first by impeding the circulation through depression, and secondly after protracted use, by destroying the red corpuscles and introducing a new toxin—methemoglobin. Cyanosis will follow large doses with all. There is languor, trembling, and with antipyrine especially, profuse sweating, fall of temperature, impeded respiration, increased feebleness, and rapidity of the pulse, coma, and difficult breathing with full extreme doses with profound collapse.

Antipyrine relieves pain to a larger extent than the others, but the almost invariable depression caused, prevents its general use. If it were not for this it would be a valuable therapeutic remedy. It reduces temperature, and controls nervous excitability.

Acetanilide is a safer remedy especially when combined with a sodium salt and caffeine. Its use is reduced to its control of headaches, but so many unpleasant results have occurred that it is under the ban. Its continued use is not advised because of its action named above on the red corpuscles. Fewer accidents occur with this remedy than with antipyrine. Five grain doses are within safe bounds, though this dose has produced alarming symptoms. None of these remedies should be used except in sthenic cases, and then repeated but few times.

Of all four, probably **Phenacetin** is the safest. It regulates sthenic fevers to a certain extent, relieves pain, and distress, unlocks secretions, produces a moist tongue, soft skin and full pulse. Cyanosis does not as readily follow it, as the others. These remedies are all erratic in their action. They are not like the organic agents; these exercise a steady, uniform, smooth, regular, permanent influence, acting in perfect harmony with the natural forces in whatever they do, especially in overcoming fevers. There is no perceptible reaction after their action, while after these synthetic remedies the temperature recurs in many cases higher than before.

Exalgin never has held a high place except for some form of pain. For some special purposes it is relied upon. It is now no longer used as an antipyretic. I at one time cured a number of cases of **chorea** with this remedy, that would not readily respond to our other methods. At first I thought it would be an addition to our list, but later when I came to treat the feebleness, anemia and

irregularity of the heart, I found in many cases, when only two grains, three times a day, was given, I discontinued it entirely. I am confident that a thorough knowledge of the organic remedies will produce in every way a more satisfactory class of remedies than can be secured from the use of these erratic chemical products.

COMPARATIVE SYMPTOMATOLOGY OF ANTIPYRETICS.

Gelsemium—Fever with nervous phenomena—nervous excitability, restlessness, flushed face, bright eyes, contracted pupils, sharp, quick pulse, nervous twitchings, evidences of acute determination of blood to the brain.

Aconite—Sthenic fever with sharp, hard, quick pulse, dry hot or burning skin, chilliness up and down the spinal column, suppressed secretions; at the onset of acute fevers; in the early stages of acute inflammations; in the developing stages of the exanthematous fevers.

Veratrum—Sthenic fever with large, full, bounding, fast pulse, with high temperature, engorged capillary circulation; at the onset of acute local inflammation, in previously strong patients; in acute convulsions with high temperature and rapid pulse.

Bryonia—In the **fever of acute inflammation;** if in the lungs or bronchi there is sharp, hard, short, quick cough, inducing pain and soreness, quick pulse; if in serous membranes there are quick acute pains, diffused soreness and tendency to effusion. Acute synovitis, with pain on movement and threatened exudation, is relieved by it.

Rhus Toxicodendron—Acute **inflammatory fever** with sharp, hard pulse; **involvement of the skin,** bright, circumscribed redness, with burning pain and extreme soreness; fever with sharp supra-orbital pain, burning in the eyes, flushed face, red mucous membranes, dry tongue with reddened tip and edges, red, narrow, elongated tongue with brown coat; sordes.

Many careful prescribers use **antipyrin** or **acetanilide** or phenacetin in the **sthenic stage of violent acute fevers,** or inflammations, and if care be exercised in their administration, and the patient closely watched for the first appearance of their depressing action, good results can be secured occasionally in adults, especially in strong men. The entire train of symptoms can be sometimes abated. There is but little distinction to be made in their symptomatology. If given with the first symptoms of acute influenza—**la grippe**—their action is usually salutary.

Phosphate of Iron—It is impossible to deny the marked benefit that will occur in very many cases of fevers, especially in the early stages of high temperatures where the cause is undetermined, by the use of the Homeopathic third or sixth decimal trituration of the above salt called Ferrum Phos. I have succeeded with the third. Ten grains of this dissolved in four ounces of hot water, and given to a child with a temperature of 104 to 106 degrees in teaspoonful doses every ten minutes, retaining the heat, have caused so many of these high temperatures to suddenly abate for me and a normal condition to supervene that I would not deny its influence.

After using the indicated remedies in the case without satisfaction, I have dropped them, and substituted this until the temperature was materially reduced and have then gone back to the original indicated remedy, with great satisfaction.

I have no printed authority for the fact that if persisted in, in these doses until the temperature is at the normal point, there would be a subsequent **subnormal temperature** in quite a proportion of these cases, that will be difficult to elevate to normal. I have only observed this in my own practice, and

I avoid it by stopping this agent earlier. No harm comes from this, but it need not be induced.

The results are similar whether used in sthenic or asthenic fevers, but I have observed more promptness in the former than in the latter form, naturally.

Belladonna—Must be studied with reference to its influence in the **developing stage of inflammations.** It will be found classed with nerve stimulants. It is *a most important specific remedy* in equalizing the circulation and preventing the local hyperæmia essential to all local inflammatory action. It is especially indicated when there is fever with dullness or tendency to stupor, with dull eyes and dilated pupils. It works in perfect harmony with aconite or bryonia. It is not a sedative to the fever, but combats the fever processes. It is given usually with a direct fever remedy.

Macrotys is a valuable remedy in fevers whenever there is muscular aching, general muscular soreness, or muscular irritability; when the muscles are sore as if pounded or bruised. The muscular distress contributes to the general distress sometimes more than any one other factor, and must be allayed. This remedy, a few drops in a four-ounce mixture given with the other fever medicines, is immediately effectual.

Arnica for the same purposes as the above, ten drops in a four-ounce mixture, with the other remedies, accomplishes the same results for which macrotys is prescribed. In some cases, these two remedies can be combined with advantage. The above mixtures are given in teaspoonful doses every hour.

ASTHENIC OR ADYNAMIC FEVERS.

It will be observed in the study of the above remedies as applicable to the reduction of fevers, that with the exception of one or two they are to be prescribed only in **sthenic fever**—in which there is an apparent temporary exaltation of vital force—in which the inherent dynamic influences have unwarranted exercise. Where temporarily, the nervous and vital powers have reacted above or beyond physiological limits, the agents are prescribed to exercise a restraining or inhibiting influence upon the fever, by a sedative or depressing influence upon the nervous system or upon the heart and circulatory apparatus. They depress vital force.

In many cases fever exists where the vital forces are already depressed or exhausted to a greater or less extent, and where there is extreme feebleness. In such a case depressants of vital force are contra-indicated.

In these **asthenic** or **adynamic** conditions, it is necessary that the fever be controlled as in sthenic cases, but a class of remedies must be used which stimulate, encourage or increase the vital forces, in direct opposition to the action of those advised in sthenic cases.

The conditions in which adynamia with exalted temperature is apt to prevail, are in the later stages of typhus and typhoid fevers, in protracted fevers of any kind where there has been a great draft upon the vital forces, in the progress of severe inflammation which has resulted in the breaking down of structure and the deposit of inflammatory products, and in tubercular or other cachexia.

While the vital forces must be nourished, supported and encouraged toward ultimate restoration, measures must be used also, which will restrain the temperature, if possible, at the same time. We have a limited number of remedies that act specifically for this purpose, and they cannot be placed in a distinct class. This influence of these agents will be found fully considered in the class in which the agent is placed because of a wider influence. They will be found classed usually as nerve or heart stimulants.

A TABULATED SUMMARY AND COMPARISON OF THE ACTION OF FEVER REMEDIES.

	ACONITE	GELSEMIUM	VERATRUM	BRYONIA	RHUS TOXICODENDRON
WHEN INDICATED	(a) At the onset of fevers, and during fevers in sthenic patients. (b) In small doses in protracted fevers, in asthenic cases.	In sthenic cases. When nervous irritation is present and spasm threatens, or acute cerebral engorgement; in neuralgic pains.	Only in sthenic cases and in convulsions or threatened convulsions with rapid heart action.	In either sthenia or asthenia, when indications exist.	In either sthenia or asthenia. Most often indicated in the latter.
AGE OF PATIENT	Emphatically the child sedative, but equally applicable in middle life; less prompt in the aged.	Excellent in infancy. The remedy in full doses for strong adults; less frequently indicated in the aged.	The agent for strong adults, and women at childbirth; more difficult to adapt to infants; seldom indicated in the aged.	A remedy applicable any time of life; weak and strong; to infants, and to the aged.	Applicable to all by proper adjustment of dosage and by careful study of indications.
GENERAL CONDITIONS, OR LOCATION OF DISEASE	In all acute fevers and inflammations with increased temperature.	In acute cerebral engorgement; acute nervous irritation, and nervous excitability.	Threatened local engorgement; threatened convulsions.	In inflammations of serous, or of the synovial membranes, or of the organs covered by serous membranes; pulmonary and intestinal structures.	In local inflammation, where the skin structure is involved with redness, circumscribed tenderness and heat or pain. In typhoid conditions or low protracted fevers.
HEART AND PULSE INDICATIONS	Heart strong and rapid. Pulse rapid, quick, sharp, hard; in asthenia soft, small, feeble, but regular; given then in very small doses.	Heart strong, irritable, violent in action, increased in muscular power; exalted nerve force in heart disease; contraindicated in feeble heart.	Heart strong and rapid; pulse full, large, hard; or small, hard, very rapid; contraindicated in feeble heart.	Heart may be either weak or strong, if other indications are present, pulse quick. Is not a heart depressant in proper medicinal doses.	Quick and rapid pulse. Usually soft, feeble, compressible, or may be hard or wiry.
TEMPERATURE	Fever always present in acute cases. In chronic adaptation heart and pulse must guide.	Fever usually present, of a nervous type.	Fever usually present; heart's action rather than temperature to be considered.	Fever present	Fever present
SKIN, FACE AND EYES	Skin dry and hot; capillary circulation actively engorged; eyes bright.	Skin dry and hot, usually; face flushed, bright red; eyes bright, pupils contracted.	Skin may be cool, bright red, or dull red, or even dusky colored.	Usually hot, either moist or dry; red spot on one or both cheeks.	Skin usually very hot. Especially in circumscribed area, which is bright red.
MOUTH AND TONGUE	Mouth dry and parched; tongue pale, soft, white coat, moist, or dry and harsh with brown stripe.	Red tongue, dry or moist; in protracted nerve irritation dry and dark red.	Mouth moist, full membranes, tongue dry, red stripe in center.	Tongue dry, usually coated, membranes dark.	Membranes dark, tongue dark, pointed red tip and edges; elongated papillae.
SECRETIONS	May be abruptly suppressed.	Usually suppressed. Of immediate importance, in full, frequent doses, in anuria, especially if from infection	Skin and kidneys usually free in action; in uremic convulsions secretions deficient.	Usually deficient.	Usually suppressed.
PAIN	General distress, and headache; local pain in inflamed organs.	Severe headache with extreme restlessness; local pain of nervous origin, acute neuralgias.	Pain depends upon cause, may be local; may be bursting headache as in puerperal convulsions.	Quick, shooting, darting pains; local soreness and tenderness on pressure; general muscular aching.	Pain in inflamed area; general muscular aching.

Bryonia and **Rhus** of the previous class have a most important place in these fevers, as has been specified. One of the best, if not the best of the remedies for this purpose is **Cactus,** which will be found among the specified heart tonics. **Digitalis** is excellent for this purpose, although while it sustains the heart through the progress of the fever, it does not, to so great an extent as cactus, cause a reduction of the temperature or improve the general nerve tone and add to the nutrition of the heart. **Strophanthus** acts much the same as digitalis. **Anhalonium** is said to possess this power, but it has not yet been widely used. Other agents will be mentioned as we progress.

One of the safest measures is the abstraction of heat by the use of water. Much care must be exercised that the water be not too cold. The temperature of the water is lowered in proportion as the vital force is able to react under it. In feeble cases, sponging with water at temperature from 100 to 110 degrees is most satisfactory.

Judicious nutrition and perfect elimination are essential considerations in the treatment of adynamic fevers.

Note—The study of this first chapter of remedies has proven the statement previously made, that it is impossible as yet to arbitrarily classify our agents. It will be seen that, while these agents are used in the control of fevers, and as nerve sedatives, they are also antispasmodics to a marked degree in some cases, hypnotics, analgesics, diaphoretics, diuretics or alteratives. In each of the following classes the same fact will be found true. We have endeavored to classify the remedies as they are most commonly used, but each must be studied without regard to class, in the entire field of its action, especially as indicated by its specific symptomatology.

CHAPTER II.

Sedatives Commonly Used in the Control of Pain—Anodynes, Analgesics.

OPIUM.	SALTS OF MORPHINE.	CONIUM MACULATUM.
MORPHINE.	CODEINE.	CANNABIS INDICA.
	HEROIN.	

OPIUM. PAPAVER SOMNIFERUM.

Opium is the concrete milky exudation obtained by incising the unripe capsules of the white poppy of Asia Minor.

CONSTITUENTS—Morphine, Codeine, Thebaine, Pseudo-Morphine, Narcine, Narcotine, Papaverine and twelve other alkaloids combined with Narceinic acid.

PREPARATIONS—Opii Pulvis, Powdered Opium. Dose, one-half to two grains.

Tinctura Opii, Tincture of Opium. Dose, five to twenty minims.

Tinctura Opii Deodorati, Tincture of Deodorized Opium. Dose, five to twenty minims.

Tinctura Opii Camphorata, Camphorated Tincture of Opium (Paregoric). Dose, from one-fourth to two drachms.

Pulvis Ipecacuanhæ et Opii, Powder of Ipecac and Opium (Dover's Powder). Dose, five to ten grains.

Pulvis Ipecacuanhæ et Opii Compositus, Compound Powder of Ipecac and Opium. (Beach's Diaphoretic Powder.) Dose, three to five grains.

Morphinæ Sulphas. Dose, one-tenth to one-fourth grain.

Pulvis Morphinæ Compositus, Compound Powder of Morphine. (Tully's Powder.) Dose, five to ten grains.

MORPHINE.

A white or colorless crystalline body in shining prismatic crystals; soluble in thirty-six parts of hot alcohol, and in alkalies; almost insoluble in water. But little used in medicine.

Dose, from one-eighth to one-fourth of a grain.

The following salts of morphine are in common use:

Morphine Acetate.

A yellowish-white crystalline body, or an amorphous powder, bitter, inodorous except a slight odor of the acetic acid; soluble in two and one-half parts of water. Dose, from one-twentieth to one-half of a grain.

Morphine Sulphate.

In white feathery, silky crystals, without odor; of an intensely bitter taste; soluble in twenty-one parts of water and in seven hundred parts of alcohol. Dose, one-tenth to one-fourth of a grain.

Morphine Hydrochlorate.

Muriate of Morphine occurs in white needle-shaped, feathery, lustrous crystals; bitter and odorless; soluble in twenty-four parts of water and in sixty-two parts of alcohol. Dose, from one-twentieth to one-half of a grain.

Apomorphine Hydrochlorate.

This is the product of the action of hydrochloric acid on a modified form of the alkaloid morphine. It may also be obtained from codeine. It occurs as white or grayish white crystals, without odor, bitter, turning slightly green upon exposure to the air; soluble in forty-five parts of either water or of alcohol. If it produces an emerald-green tint in solution in water it must be rejected. It may become changed in character and dangerous. Solutions must be freshly made.

Apomorphine was first used only as **an emetic;** usually hypodermically. The dose for this purpose is from one-twentieth to one-sixteenth of a grain, although one-eighth of a grain may be given. It is not safe in any dose with children. It may be given to eject bodies from the esophagus, to evacuate the stomach after the injection of poisons, and in extreme asthmatic or catarrhal attacks.

A field of action has developed for this remedy, outside of its influence as an emetic, which is important. There is a consensus of opinion among careful observers as to this influence. One writer says that in **wild delirium, sleep** may be induced with this remedy, and a restful quiet. It should be given in doses of from one one-hundredth to one-thirtieth of a grain, hypodermically injected. The dose is less than the emetic dose, and yet sufficient to produce a physiological effect. It is not given until after the patient is undressed and in bed ready to go to sleep.

Where it is used for its hypnotic effect alone, and the patient has not previously taken it, it might be well to begin with a dose as small as the one one-hundredth of a grain. In sthenic cases, with much delirium, a little nausea need not be avoided. The influence of the agent is not protracted, and in some cases it must be repeated in two or three hours. In others it produces a restfulness, which results in sleep, independent of further action of the remedy.

In **hysterical attacks,** the agent is valuable, as it produces general quiet, and refreshing sleep. It may be used in the place of morphine and opium with those who are addicted to a habit for these drugs, and it will produce the same

results. The drug is a treacherous one, and consequently dangerous, and must therefore be given with care.

In very minute doses, it is given in **bronchitis,** where there is a deficiency of secretion, or in croup, producing relaxation and expectoration. It is given as an expectorant in cough mixtures, with good results, but its emetic influence should not be induced. One one-hundredth of a grain, repeated every two hours, will be sufficiently large dosage. It produces a watery secretion of mucus, which is often undesirable.

It should be used only with adults, as stated, as children are too susceptible to its influence. Kinnett has used it in pain from spasms of the pyloris, and others mention its influence for **spasmodic pain** in severe, acute stomach disorder in sthenic cases.

Dr. Dice believes apomorphine given in small doses frequently repeated in the initial stage of appendicitis will prevent the development of many cases of this disease. He dissolves also a dram of sulphate magnesium in four ounces of water and gives a teaspoonful every two hours with it.

Apomorphine in doses of one-thirtieth of a grain or less, frequently repeated controls some very severe cases of vomiting.

In the treatment of alcoholism, this agent is given in sufficient quantity to produce mild nausea; then one-thirtieth of a grain of strychnine or other indicated stimulant is given for its influence upon the nervous system at the same time.

CODEINE.

Occurrence—An alkaloid of opium closely related to morphine, often, if not carefully prepared, containing a certain proportion of morphine.

Character—White octahedral crystals, bitter, odorless, permanent, soluble in eighty parts of water and in three parts of alcohol. The dose of codeine is from one-fourth to two grains.

Physiological Action—Its influence is that of an anodyne and antispasmodic, more active as an antispasmodic than morphine and much less narcotic. It controls pain without checking secretion to as great an extent as the other alkaloids of opium.

Therapy—It has a more marked influence upon **pain** in the **abdomen** and in the **pelvic organs.** Spasms, neuralgia and other painful conditions in these parts are well controlled by codeine. **Cramp colic** and spasmodic dysmenorrhœa yield readily to its influence. It is advised in **diabetes mellitus** to control the excretion of sugar. It has been given in doses of fifteen or twenty grains daily for this purpose, in some cases with permanent results.

Codeine has a marked influence upon **spasmodic cough.** It is often given to soothe irritable conditions of the air passages and to control persistent annoying and exhausting cough.

Physiological Action of Opium and Morphine.

The action of **opium,** and of **morphine** and its narcotic salts, is much the same. Opium is stimulant and narcotic, according to the dose and susceptibility of the patient. Infants and old people are easily poisoned by the drug, while those addicted to alcohol can take very large doses without any bad effects; and those accustomed to the drug can take a poisonous dose with impunity.

In the healthy adult a moderate dose of opium stimulates all the nervous functions of the body, raises the spirits and excites intellectual action; this gives way to a condition of placidity, freedom from care, and a state of quiet enjoyment. In an hour or less, consciousness is lost in sleep, which may continue for eight hours or longer. On waking there is evidence of disturbance of the func-

tions of the organism, such as nausea, vomiting, headache, constipation and diminished secretion, except that of the skin.

In a dose sufficient to cause death the period of excitement is short, while the strength of the system rapidly gives way to drowsiness and apoplectic sleep. There is stertorous breathing, dusky countenance, slow pulse, nearly total insensibility, only responding slightly to violent agitation, with confusion of the mind, and an inclination to continue in a comatose state with increasing debility. After a few hours, six to twelve, according to the dose and the resisting power of the patient, the face becomes pale, the pulse from being full and strong becomes weak and thready, with cold extremities, a cool and clammy skin, a slow gasping respiration; a condition from which it is impossible to rouse the patient and death soon follows.

The pulse is first slow from stimulation of the vasomotor nerve centers, and becomes rapid as these become paralyzed. The pupil is first contracted by stimulation of the oculo-motor nerves, and dilates as death approaches and these become paralyzed. Death results from paralysis of respiration.

With some individuals there appears to be an inherent and usually permanent idiosyncrasy against the action of opium and morphine. An exceedingly minute dose with such, will produce unpleasant symptoms. These are nausea or violent vomiting, spasm of the stomach and loss of appetite, obstinate constipation or abdominal pain. In others there is nervous excitement, restlessness, headache, tremors, general distress and an increase of pain. With others it produces extreme wakefulness instead of restful sleep. In some there is diarrhœa instead of constipation. Given under the conditions we have named as contra-indications, it will often produce these phenomena; where there is an absence of idiosyncrasy, and where given under the proper conditions, the effects would be desirable.

Itching of the skin, inducing an apparent miliary eruption, is one of the unpleasant effects of its use, which, like any one of the others, may be always greatly exaggerated in certain individuals.

By using water as a solvent, or combining opium with ipecac or camphor, or in some cases with the bromides, these unpleasant effects can, in great measure, be overcome.

Its application to open wounds in childhood has produced marked narcotic effects. It has poisoned infants while nursing, the mother either taking it as medicine or habitually.

Caution—All of the effects of these agents are especially marked in infants and early childhood. The nervous system is profoundly impressed by them, and the dose, if given at all to very young babes, should be infinitesimal.

Its administration can be avoided in nearly all cases with these little patients, as we have access to many agents which, while not working actively in adults, produce most satisfactorily soothing, anodyne or pain-relieving properties in childhood.

Opium addiction is acquired by continued use of the agent, and is debasing and deadly in its effects.

Another serious objection to its administration in large doses often is that it conceals or obscures the actual condition, the diagnostic symptoms or the specific disease indications, and permits disease to advance to formidable proportions before its real character is known. This is true of appendicitis and other purulent inflammatory conditions.

This agent is so convenient and produces such immediate effects that it is often used by the indolent, careless physician, when other agents would produce better after results, and would more speedily promote a permanent cure. It is, therefore, proper to *caution* the young physician against depending upon it to too great an extent, and to urge him to study well all other agents acting syner-

gistically, so that when his knowledge of the other agents permits him to choose between them he will prefer them. He may thus be able to select an agent with a single direct influence, where, with the administration of this, he has undesirable side influences to overcome in addition to the treatment of the other conditions.

Administration—Opium may be administered by the mouth, by the rectum or vagina, by the hypodermic injection of its alkaloids, by application to a portion of the surface of the body after removal of the cuticle, by inhalation or by insufflation.

Where there is a temporarily apparent contra-indication for its use, the aqueous extract or the deodorized tincture (aqueous) or other aqueous preparations, may be used, as water does not dissolve the narcotine, which is believed to be the irritating and depressing principle of the alkaloids.

Or it may be given in conjunction with some agent which will overcome the antagonizing conditions. The acidity of the stomach may be neutralized by an agreeable alkaline aperient. The inactive secretions may be partially reestablished by pilocarpine or jaborandi, or the bromides may be given in conjunction to soothe the nervous system, or ergot to unload the brain of an excess of blood.

The hypodermic use of morphine is demanded and is justifiable where great pain is present. In these cases the size of the dose must be determined by the circumstances. Its influence is prompt and satisfactory.

This method is preferable because the chemical influences of the gastric secretions upon the salt are avoided.

Veterinarians find it necessary to always administer morphine in this manner, as often no desirable effects are produced if brought in contact with the stomach and intestinal secretions.

Specific Symptomatology—When opium is given carelessly or promiscuously, unfavorable results may occur. The conditions under which the administration of opium or its narcotic salts are admissible are as follows: There is pain without cerebral engorgement; there is an absence of flushed face, but not pallor; there is a relaxed, cool and perhaps moist skin; the tongue is moist and the pupils are not contracted.

Extreme wakefulness or restlessness, painful, spasmodic conditions, excessive passive discharges of whatever character and local inflammations with the above conditions all indicate the use of the agent.

Pain is the great and primary indication for opium. The agent can often be substituted in mild cases, and with children, and the causes of pain can often be removed by other agents; but severe, persistent, racking pain has no other antidote except anæsthesia.

Contra-Indications—In its primary influence it is a brain and nerve stimulant. It is, therefore, contra-indicated where there is an irritated and overstimulated nervous system, with flushed face, bright eyes with contracted pupils, dry, hot skin, dry, coated tongue and inactivity of the excretory functions. Administered under these circumstances, it will increase the restlessness and induce general distress and painful wakefulness.

Therapy—In sudden **acute pain,** in pain from wounds or injury, or from burns, the contra-indications are seldom present, and morphine can be administered usually hypodermically.

Pain, like a persistent high temperature, will in time produce serious impressions upon the system which, in themselves, will be hard to overcome. When pain is not extreme equally good results, however, can be obtained in many cases from smaller doses of this agent, as from larger ones, with much less impression upon excretion.

In the successful and highly satisfactory treatment of **peritonitis, appendicitis, pleuritis, ovaritis** or **metritis,** this author early adopted the uniform method of giving the indicated remedies as indicated, and for **general or local soreness or tenderness** increased on pressure or on movement of the bed or clothes, he frequently gives from two to five drops of the deodorized tincture of opium every two hours; seldom more. This acts in harmony with bryonia, which is specifically indicated, especially if there be occasional quick, sharp, darting or shooting pains, with the soreness. Heat may be applied. In from six to twelve hours the distress is relieved, and in twenty-four hours the patient is in every way improved. This is accomplished without producing dullness, drowsiness or undue sleep, or without locking up the secretions and excretions, in fact, without exhibiting but few if any of the physiological influences of the remedy.

Where distress or wakefulness is present, and of such a character that morphia is directly indicated, a small dose often repeated in the stomach will sometimes do better than large doses. In these cases, if half a grain be dissolved in two ounces of water, and a teaspoonful be given every fifteen minutes, the patient will soon become soothed and quiet and will sleep naturally without knowing what has induced it; a much smaller quantity than is usually given, being found necessary. In gastric hyperacidity add a grain or two of sodium bicarbonate to each dose.

It reduces congestion and engorgement of serous membranes most rapidly, and is thus specific in the above-named inflammatory conditions, when small, sharp, stabbing pains and diffused tenderness are the leading symptoms.

It has an especial action on mucous surfaces. Its influence tends to reduce excessive activity or hyper-secretion. It is for this latter effect that it is useful in **catarrhs** of all characters, in **diarrhœas** and excessive activity of all secreting organs.

It controls irritation of the peripheral nerves in the intestinal canal, and thus arrests **diarrhœa** and controls undue peristaltic action, which in these cases is often necessary. In **surgical diseases** of the intestinal canal and after operations this effect is quickly and essentially obtained.

Opium is a desirable **diaphoretic.** It promotes excretion from the skin to a marked degree, exercising this function often, while it locks up the intestinal and renal secretions. It is often given in combination with a relaxant or an emetic for this purpose, and is officinal in combination with camphor and ipecac, as **Dover's powder.** It is or it may be combined with powdered asclepias tuberosa with happy results.

It is common practice to use opium or morphia in solution for **eye washes** —collyria. It is serviceable in many cases.

Opium and its alkaloids are powerful **antispasmodics,** and are of general use in local spasm and in convulsion. Specifically, it is useful in colic from **biliary** or **renal calculi,** in **uterine** and **ovarian colic** and in the **pains** of **labor,** properly adapted; also in **lumbago, sciatica, angina pectoris,** gastrodynia, pleurodynia and other forms of neuralgia.

In **puerperal convulsions** morphine, hypodermically, was by some considered a most superior agent, although those familiar with veratrum prefer the latter. The dose must be large and must be repeated if needed. It is now seldom relied upon in this serious condition. It locks the secretions preventing elimination, obscures actual conditions and encourages stasis.

Many physicians use opium to control **passive hemorrhage,** hemorrhages from the kidneys and womb, from the lungs and bronchi, and from the stomach, and from the bowels in typhoid.

It may, however, usually be dispensed with in these cases, as it is not

desirable to lock up the natural secretions of these organs, a common result from the use of this agent.

It was advised by Pavy as an important agent in the treatment of **diabetes,** to control all unpleasant conditions, especially the elimination of sugar and the extreme thirst. Its influence is not permanent, and it does not cure.

It is used also in **spermatorrhœa,** and will temporarily reduce sexual erethrysm and unload the organs of blood and restrain abnormal losses and discharges, but it is not usually curative and cannot be persisted in without injury.

For **gonorrhœal** injections and as bladder washes and in leucorrhœa, it is incorporated in liniments and is used as a cataphor.

In the form also of **suppositoria,** introduced into the rectum or vagina, it is useful for painful conditions in the rectum and lower bowel, and in painful pelvic disorders.

It is also applicable in this manner to **painful kidney** and certain bladder troubles, in stone and gravel, and in obstinate vomiting.

Immediate relief from the tenesmus of **dysentery** is accomplished by the injection of a few drops of a liquid extract of opium in two ounces of a solution of starch, following the bowel movement.

In China, India, Persia and Turkey, in Mohammedan and Hindoo countries, where their religion prohibits the use of alcoholic intoxicants, opium was at one time smoked more generally than our own people use tobacco and alcohol. Its effects are fearful. To this may doubtless be ascribed much of the intellectual inactivity, the moral debasement and the lack of advancement of the civilization of these countries.

Toxicity—Opium has been used as much if not more than any other agent for suicidal or homicidal purposes. It is certainly a desirable agent for suicide if one desires a comfortable and painless death. It is also acceptable when euthanasia is desired.

Antidotes—It is antidoted by extreme heat, physical activity, increased nerve action and stimulation. Active mechanical emetics or the stomach pump should be used to evacuate the stomach. These are mustard in warm water, ipecac, lobelia in single full doses, or sulphate of zinc.

The direct antagonists are atropia in small doses hypodermically in the early stages of its toxication, strong coffee, or caffeine hypodermically in large doses—two to five grains, strychnine hypodermically and nitro-glycerine, alcohol, ammonium and digitalis. Potassium permanganate will neutralize the poisonous properties of morphine. The patient is kept moving with flagellation and electricity and in extreme cases artificial respiration.

HEROIN. HEROIN HYDROCHLORIDE.

Synonyms—Diacetylmorphine Hydrochloride.

This is one of the recent derivatives of opium which has come into use because of its soothing influence over the respiration and the respiratory apparatus.

This is a bitter, odorless powder, composed of minute white crystals. Unlike morphine, it does not stupefy the patient nor induce constipation. It is classed among the opium preparations, and is therefore included in the Harrison Act, as one of the habit-forming drugs.

The agent is given in doses of from one twenty-fifth to one-sixth of a grain. Small doses frequently repeated will produce the best results.

It is without doubt a powerful depressant to the nervous system and especially to the respiratory center. One of my patients, of his own accord, purchased a bottle of a mixture of heroin for a cough, and took it so frequently that a temporary but severe mania was induced, for which he was taken to a detention hospital, and received injuries from which he died. It is thought to be of some benefit in the treatment of certain coughs. It is an ingredient of several proprietary cough remedies.

CONIUM. CONIUM MACULATUM.

Synonyms—Poison Hemlock; Poison Parsley.

CONSTITUENTS—A volatile alkaloid Conine, Conhydrine, Methylconine, Pseudo-Conhydrine.

PREPARATIONS—Extractum Conii, Extract of Conium. Dose, one-half grain.

Extractum Conii Fluidum, Fluid Extract of Conium. Dose, two to six minims.

Expressed juice of the fresh plant preserved with alcohol. Dose, three minims.

Specific Conium. Dose, one to five minims.

There is great variation in the quality of the different preparations of conium, and care must be exercised in selecting a good one.

Physiological Action—When given in a sufficient dose, conium causes complete relaxation of the whole muscular system; the eyes close, the movements of the eyeballs are sluggish, mastication and swallowing are difficult, speech is slow and maintained by an effort, the voice is hoarse, while the heart and intelligence are not disturbed. In a fatal dose, the lower limbs become paralyzed, the effect gradually ascending to the upper part of the body, intelligence being retained to the last.

Administration—If the characteristic odor of this substance is absent, the probabilities are that it is devoid of value, as it is the volatile principle which possesses the odor, and it is that upon which its value as a therapeutic agent depends to a great extent. Care must be taken in diluting fluid preparations as they are apt to precipitate. Fresh preparations only, diluted when administered, are reliable.

Specific Symptomatology—The agent relieves the **pain** of **cancers** and **ulcers.** In this it is of specific value. It is of much importance in **ulceration** of the **stomach** either acute or chronic, and in incipient **gastric cancer.** It will soothe the pain more efficiently than other apparently more powerful agents. It must be given in large doses; as much as fifteen minims of the fluid extract are sometimes needed. Large doses must be carefully watched. It relieves distress in the glandular organs and in glandular enlargements, when there is a scrofulous or cancerous cachexia, dull aching pains not usually acute, not sharp cutting pains. In the pain of cancer of the pelvic organs or of the mammæ it gives relief, and, indeed, it gives relief to pain in the pelvic organs whatever the cause or character.

Therapy—The anodyne and antispasmodic soothing properties of the agent suggest its use in spasmodic affections and irregular muscular movements—movements attended by extreme activity of the motor nerves. In **paralysis agitans,** in **chorea** and in **hysteria,** in **delirium tremens** and **acute mania** it is thus advised. Its use in **trismus, laryngeal spasm,** in irregular muscular twitchings and spasmodic **wry neck,** will be attended with excellent results. In profound spasm, as in convulsions, epilepsy and tetanus, while of some benefit, it is of no marked value and more potent agents are prescribed. In its ad-

ministration, hypodermic injections of **Hydrobromate of Conine** are sometimes much more prompt and satisfactory in their action.

Conium is useful in many kinds of cough and inflammatory diseases of the chest. In **whooping cough** and in many other spasmodic coughs it is of much service. It is useful in **asthma** and the difficult breathing of **emphysema.** It may be used internally or the ointment may be applied over the chest.

It is valuable in **laryngitis** and in dry irritable bronchial coughs and in phthisis. In all such coughs the vapors inhaled from the fluid extract or juice dropped on the surface of hot water, in a rather close-mouthed vessel, is sometimes of marked benefit. In the pains of **chronic hepatitis** conium is excellent.

As an application to **cancerous surfaces,** poultices prepared from the leaves have given relief, and ointments carefully prepared which contain the juice or small quantities of conine, will be found of service. Lotions containing the juice or fluid extract will be found of use in open sores and persistent ulcerations.

In ovarian pain or pain from **ulceration of the cervix uteri,** or other persistent uterine pain or distress, a vaginal suppository containing a grain of conium may be inserted at night, or twice daily, if the patient be recumbent. **Rectal fissures** and painful ulcers may be treated with rectal suppositories. Pain from acute pelvic inflammation may be relieved by this method.

CANNABIS. CANNABIS INDICA.

Synonyms—Cannabis Sativa, Indian Hemp.

CONSTITUENTS—Cannabin, Cannabinine, Volatile Oil, Gum, Sugar, Potassium Nitrate.

PREPARATIONS—Extractum Cannabis Indicæ, Extract of Cannabis Indica. Dose, one-sixth to one grain.

Extractum Cannabis Indicæ Fluidum, Fluid Extract of Cannabis Indica. Dose, one to five minims.

Specific Medicine Cannabis. Dose, one to ten minims.

The strength of preparations varies, and some may be inert. If the precipitate formed when the drug is added to water be olive-green, it is active; but its strength should always be tested by tentative doses.

Physiological Action—Cannabis indica is narcotic. Bartholow classed it as a cerebral excitant. In some persons the drug causes excitement tending to acts of violence and crime; in others it excites merriment, or a maudlin state. In general it produces hallucination, perverts the natural perception of objects, intensifies the perception of sound, dilates the pupils, abolishes pain, and, in poisonous doses, causes spasms, convulsions, collapse, pale, clammy, insensible skin, extreme debility, feeble pulse, and finally paralysis of respiration. The habitual use of the drug causes bloating of the face, weak, tremulous limbs, injected eyes, imbecility, and ultimately death from marasmus.

Those who use cannabis regularly, believe that in medicinal doses it is not poisonous. It can be safely given in full doses, the tincture in from ten to twenty minims, and the solid extract in from one-half to two grains. It seems to be a true sedative to the stomach with few undesirable influences. Its best effects are secured when given in conjunction with alkalies in full doses or with mild aperients.

Therapy—Cannabis Indica is sedative, narcotic, anodyne and, to a limited degree, anti-spasmodic. It acts upon disturbed function of the nervous system.

It is a remedy for **disordered mental action.**

It is a remedy for **disorders of motility,** involuntary, irregular, muscular movements, especially if of a distressing character.

It is a remedy to arrest or control **pain,** often acting advantageously in conjunction with other pain-quieting agents, intensifying, modifying or favorably influencing their action.

It is a remedy for excitable and irritable **hyperæsthetic** conditions of the **genito-urinary organs,** with increased functional activity and uterine disorders.

In many forms of **urinary irritation,** its action is prompt and satisfactory especially, Quincey says, where there are only a few drops passed frequently, constant unsatisfied desire, burning pain and vesical tenesmus.

In the **wakefulness** of old age, in the **restlessness** of nervous exhaustion, and in **melancholia,** it is an important remedy. It is useful in the treatment of **neuralgia** and **hemicrania.** It takes high rank in affections of the brain and nerves of the head, especially if nervous vertigo be present, and in those attacks of hemicrania which occur periodically, very distressing, causing delirium and much prostration. It is especially applicable in **sub-acute inflammation** of the **brain,** in **delirium tremens** and in the **hypochondria** of the menopause.

This remedy has received a great deal of attention in its adaptability to **cerebro-spinal meningitis,** and with varying but encouraging results, especially in the earlier stages of irritation and congestion. It is useful also in **hydrophobia,** and in large doses it is sometimes palliative to the distressing symptoms. Minute doses will cure some cases of **tinnitus aurium.**

It is useful in the distress of **Potts' disease** and hip joint disease and in general rickets. In **epilepsy,** either alone or combined with the bromides, it has been given very extensively for several years.

Dr. Cook of Seattle suffered from **nervous breakdown** with extreme exhaustion; **tremor** on awakening in the morning, with active **functional heart disturbance.** He took five drops of specific cannabis three times a day on the tongue, followed by a sip of water. On extreme occasions, he would repeat the dose once in half an hour. Not only was the whole nervous excitability controlled, but the heart was restored to its normal action and the urinary irritability was overcome.

It is of much use in **paralysis agitans,** in relief of the lightning pains of **locomotor ataxia,** and especially in chorea and in general muscular tremblings. In chronic conditions accompanied by persistent pain, it ameliorates the pain.

In **functional disorder** of the **stomach** accompanied by pain, it is an excellent sedative, and in intestinal disorders it is equally applicable. It does not suppress secretions or disarrange the functional operations of the organs.

In aching and painful irritation, or in the passage of **gravel,** it is a most soothing remedy. It is beneficial here also in painful hematuria, whether from cancer or tuberculosis, from profound congestion or nephritis.

It is a soothing tonic to the uterine muscular structure, and in inertia and **subinvolution** it increases muscular power and energy and promotes contraction. It is useful in **menorrhagia** and **metrorrhagia.** It is a valuable sedative adjuvant to combine with the well known uterine tonics in general disorders of the pelvic organs amenable to medical treatment not of a surgical character, especially if the pains are of neuralgic or spasmodic character. It will allay **abnormal sexual appetite,** and will overcome the **hysteria** and emotional excitement which occur in some women at the menstrual period.

In **neuralgic dysmenorrhœa** it will occasionally cure patients who have been treated by other methods without results. There are few remedies that will excel it in this disorder, but the remedy must be given continuously, beginning before the expected paroxysm some little time and continued for a time after the paroxysm is relieved.

It is an excellent remedy in **gonorrhœa** with sexual hyperæsthesia. Here its influence is prompt; it arrests chordee, **priapism** and **spermatorrhœa.**

It controls violent erection and soothes the mental anxiety which aggravates the symptoms. It cures many **irritable** states of the **bladder.** It is curative in **strangury** and **painful urination** with burning and scalding. In spasmodic stricture, with gelsemium or macrotys, it relieves quickly. It is a remedy for functional **impotence.**

It is soothing to irritable bronchial **coughs** and laryngeal spasm, and in coughs from tickling in the throat; also in whooping cough and in spasmodic coughs of whatever character. It is a common ingredient of cough syrups.

Co-operatives—The agent acts similarly in a general way to opium, gelsemium, passiflora, the bromides, chloral and hyoscyamus.

CHAPTER III.

Sedatives Used to Induce Sleep.

PASSIFLORA.	PISCIDIA.	SULPHONAL.
HYOSCYAMUS.	CHLORAL.	VERONAL.

PASSIFLORA. PASSIFLORA INCARNATA.

Synonym—Passion Flower.

PREPARATION—Extractum Passifloræ Fluidum, Fluid Extract of Passiflora. Dose, from ten minims to one dram. Specific Passiflora. Dose, from one to fifteen minims.

Physiological Action—Ott reports a series of experiments to determine the physiological action of passiflora incarnata. As a result he concludes that the agent exercises a depressing influence upon the reflex activity of the spinal cord. In acute mania it arrests the exaggerated activity of the cortex. It temporarily reduces the pulse and arterial tension, the latter apparently being due to an action upon the vasomotor center of the medulla oblongata. It stimulates the respiration and can therefore be given in large doses without danger.

Passiflora given in excessive doses causes spasms and paralysis in animals. It acts as a narcotic and antispasmodic in man when given in moderate doses. No extended investigation concerning its physiological action has yet been made.

Broadnax said that it is used by negroes in an application of the bruised leaves as a poultice to the head, for headaches; also to bruises to relieve pain. A decoction is used in teaspoon and tablespoonful doses in various aches and pains. Old rheumatics use poultices made from a strong decoction with cloths wrung out and bound tightly over the swollen joints. His attention was called to it by the peculiar odor of a mess of the green bruised leaves, bound to an old woman's abdomen. By this he learned of its use and used it for twenty-five years quite steadily.

It is as yet difficult to explain the fact that in some cases this agent is prompt, efficient and highly satisfactory, while in others the same preparation is inactive. This fact has created a wide difference of opinion between observers as to its usefulness.

Specific Symptomatology—Wakefulness, disturbed sleep from mental worry, and exhaustion from cerebral fulness and from excitement, especially with feebleness. Anemic patients are relieved by it, also the wakefulness of infants and the aged. It is not usually efficient if the wakefulness is caused by pain, nor when the patient is in full strength.

Nervous excitement, and irritation with muscular twitchings—evidences of approaching convulsions in childhood—with marked cerebral fulness are indications, and it is given at any time preceding or during convulsive paroxysms if it can be swallowed. It is indicated in **convulsions** of any character.

Therapy—In the **convulsions** of **childhood** it is a most reliable agent. The writer has given it at the onset of the spasm when the approaching symptoms were unmistakable, and has had the satisfaction of seeing all the symptoms disappear so promptly, that confidence has become established. It has controlled **severe spasms** while the irritating causes yet remained, and after all antispasmodics except anæsthesia have been ineffectual. It can be relied upon to hold the spasms in check while the causes are being removed, and reduces their force and character. In **epilepsy** it lessens the number of the paroxysms, but to ward off the paroxysms the attack must be anticipated by a full dose of the remedy. When its approach is unannounced, the full effects of the agent are not obtained.

Passiflora has hypnotic properties which differ from other agents of this class in that the sleep produced is normal in all its characteristics. The patient goes to sleep naturally, can be awakened as usual at any time, to fall into a quiet, natural slumber. He awakens at the usual time rested and refreshed, with no disturbance of the cerebral functions, no languor, dulness or other disagreeable sensations.

Dr. Steele of Missouri uses passiflora in **chorea.** In persistent cases he combines it with macrotys with satisfactory results.

If given in doses sufficiently large, it may be relied upon to assist in the relaxation of the tonic spasm of meningitis, and local tetanic spasm. It has relieved a few cases of **general tetanus.** It has cured tetanus in horses. It may be given as an antidote to the spasms of strychnine poisoning, but it must be given in doses of from one-fourth to one-half ounce and frequently repeated. As an anti-spasmodic in cases where there is engorgement of the nerve centers, it is applicable. It has relieved tonic and clonic spasms, and the spasms of sthenic as well as asthenic conditions.

In the treatment of **hysteria** the agent should be persisted in. It may be given in conjunction with macrotys, gelsemium and pulsatilla, and if there be pain, due to menstrual or other disorders, it may be combined with cannabis indica, or Jamaica dogwood, in appropriate and properly regulated doses.

Dr. Roth believes that passiflora is a direct stomach sedative. A number of physicians have confirmed this opinion. One patient who had been on a **spree** for days suffering from **persistent hiccough,** took a teaspoonful of the tincture every hour. This gave him freedom from the hiccough and in a short time a quiet, natural, continued sleep, waking in the morning in nearly a normal condition.

Dr. Freeman gives a combination of passiflora four drams, hyoscyamus one-half dram, cannabis indica one-half dram in a four ounce mixture, and to patients addicted to **drug habits,** who cannot sleep, he gives from one to two teaspoonfuls of this at early bedtime, repeated if necessary.

One of the attending physicians in the tuberculosis wards of Cook County Hospital told this author that passiflora was his reliance in the **sleeplessness of tuberculosis,** especially controlling **the cough.** He would add two drams of passiflora to three ounces of water, and give a dram every half hour, the latter part of the day or early evening and during the night, and very seldom failed to secure satisfactory results. Other forms of **cough** can be relieved by it.

The agent is not known to possess injurious or poisonous properties. It has been used in erysipelas both externally and internally, and in acute inflammatory skin disorders with nervous elements and nervous complications.

HYOSCYAMUS. HYOSCYAMUS NIGER.

Synonym—Henbane.

CONSTITUENTS—Hyoscyamine, Hyoscine, Scopolamine, Hyoscipicrin.

PREPARATIONS—Extractum Hyoscyami, Extract of Hyoscyamus. Dose, from one to two grains. Extractum Hyoscyami Fluidum, Fluid Extract of Hyoscyamus. Dose, from five to twenty minims. Specific Hyoscyamus. Dose, from one to ten minims.

Physiological Action—Henbane is a narcotic and causes deranged vision, headache, giddiness, dilated pupils, dry throat, hoarseness, weakness of the lower limbs, spasms, cramps, paralysis, loss of speech, or loquacious delirium with hallucinations, followed by a dreamy sleep, according to the amount taken. A continuous use of the medicine causes an eruption of the skin of a red color, which is dry and itching. In some cases large doses cause furious delirium.

While power to temporarily increase nerve force—mild stimulant properties—is ascribed to hyoscyamus, that influence is much less marked than in belladonna and stramonium, although its general effects are in many ways similar to these agents in medicinal doses. It is almost entirely devoid of irritant properties, but is soothing, calmative and sedative to a marked degree.

Specific Symptomatology—It is specific in excitable mental conditions, and in the violent and noisy delirium of fevers and acute inflammations, to **subdue the excitement** and to **induce sleep.**

In all conditions where there are busy delirium, hallucinations, weight in the front part of the brain, extreme activity of the mind, disturbed sleep with wild and frightful dreams, coma vigil, flushed face, wild, red and restless eyes, it is a sure remedy. In the restlessness, ceaseless agitation and insomnia of exhaustion, and in diseases of infants and of the extreme aged and feeble, it is especially applicable.

Therapy—It is valuable in the **pneumonitis** of infants for its general soothing influence, and for its sedative effect upon the cough and respiration, and also in **bronchitis,** with short, sharp cough. A dry cough, increased upon lying down and relieved upon getting up, is surely relieved by its use.

It does not arrest secretion, and in this particular is in every way superior to opium. It does not disturb the mind or produce headache.

The anodyne properties of this agent are not marked in its general application, but administered in the **neuralgia** of exhaustion, in this variety of **neuralgic dysmenorrhœa** and in **irritable** conditions of the **bladder,** as well as in the bone pains of **syphilis,** it exercises anodyne properties to a remarkable degree. In hepatic, renal, intestinal, ovarian and uterine **pain,** accompanied with great restlessness, it is of much value.

As a **hypnotic** for infants and the aged there is no happier agent than hyoscyamus, in small doses. From five to ten drops of the fluid extract should be dropped into half a glassful of water, and a teaspoonful may be given every fifteen minutes, for two hours before the usual bedtime or until the patient sleeps. The sleep is quiet, restful, natural and not too sound. The patient awakens refreshed. It is indicated also in patients enfeebled from prolonged illness.

In **headaches** attendant upon the above irritable conditions the agent is applicable.

Since the profession has learned to use hyoscine and morphine together, for the peculiar **analgesic influence** of this compound, I am reminded that during the largest part of my experience I have been in the habit of combining morphine, when that remedy is indicated for pain, with hyoscyamus, with excellent results.

It is well known that morphine is acted upon imperfectly, or chemically, by an extremely acid condition of the stomach. Also that there are certain nervous constitutions that have unpleasant nervous irritation from its influence (an idiosyncrasy, often). In place of acting as a stimulant, it acts as an irritant and depressant.

I have learned that the use of hyoscyamus, in the proportion of ten drops of the specific medicine with one dram or more of strontium bromide, combined with a mild stimulant such as capsicum, and one grain of morphine added to the whole, has remarkable **pain relieving properties** out of all proportion to the small amount of morphine it contains. I add the above to two ounces of water or other simple menstruum, and give it in teaspoonful doses every ten, twenty or thirty minutes until the first effects are observed.

The influence of this simple preparation is exceedingly happy, especially where something soothing is needed for distress, general discomfort, nervous irritability, or wakefulness. A sensitive stomach after anesthesia for surgical operations, will retain this in a remarkable manner usually, and the patient can thus be kept free from pain and discomfort, and will enjoy natural and restful sleep with only an occasional dose.

The alkaloid **Hyoscyamine Sulphate**, in doses of one-eightieth of a grain, works better often than other forms of the agent in **paralysis agitans, locomotor ataxia**, the **tremors** of old age, and in **tetanus.** It is of value in **chorea.** In **chronic dementia,** with destructive tendencies, and sleeplessness, in **insanity** with delusions and hallucinations, in epileptic **mania,** and in fact, in mania of all forms it is excellent, especially when there are with the above, erratic tendencies.

Co-Operatives—Gelsemium, stramonium, opium and passiflora incarnata, facilitate the action of hyoscyamus. The alkaloid duboisia is said to be identical with hyoscyamine. Atropine is also identical in some of its properties.

PISCIDIA. PISCIDIA ERYTHRINA.

Synonym—Jamaica Dogwood.

CONSTITUENTS—Piscidin, Resin, Oil, Calcium Oxalate.

PREPARATIONS—Extractum Piscidiæ Fluidum, Fluid Extract of Piscidia. Dose, from a half to two drams.

Physiological Action—In moderate doses, Piscidia lessens sensation, induces sleep and increases the saliva and perspiration. In toxic doses it destroys sensation, paralyzes the respiratory centers, reduces the heart's action; first increases, then diminishes arterial tension and decreases the pulse rate. It first contracts, then dilates the pupils in full overdoses. It causes dyspnœa, spinal convulsions, general paralysis and death. It reduces reflex action, including tetanic spasm, by excessive stimulation of the spinal cord.

Felter and Lloyd quote Dr. Ott as giving the following concerning the physiological action of this remedy: It increases the salivary and cutaneous secretions, slows the pulse, increases the arterial tension, its action being succeeded by reduced tension, which is due to a weakening of the heart. It dilates the pupils, except when the patient is passing into a state of asphyxia, when contraction takes place. It does not affect the irritability of the motor nerves, nor the peripheral sensory nerve ending. It may cause heart failure or arrest of respiratory action. In some susceptible patients small doses produce nausea, vomiting and headache.

Dr. Harris of New York says the remedy increases dyspnea, which is followed, from sufficient doses, by respiratory paralysis.

There is drowsiness, gradually increasing; muscular relaxation; inco-ordination of movement; diminished reflexes; lowered sensibility; dilatation of the pupils. Toxic doses produce convulsions and a tetanoid condition caused by overstimulation of the spinal cord.

Piscidia stimulates salivary secretion, diaphoresis, and to a slight extent diuresis.

It logically follows that its usefulness depends upon its action upon the brain and spinal cord, for other remedies excel it in its effect upon the heart, lungs and glands. Furthermore, it is well to consider that this remedy has no direct effect upon the gastro-intestinal tract, and that it therefore induces no nausea, no anorexia; that it does not suppress the secretions; that it does not inhibit normal peristalsis; causes no unpleasant after-effects and produces no subsequent craving for drug. It may therefore truly be called a harmless nerve sedative, indicated in the three following conditions: (1) spasmodic affections; (2) neuralgic affections; (3) cerebral excitation.

Administration—The agent must be given in sufficient doses and repeated. It is not active in small doses. It lacks the power of opium, but operates in the same lines as an analgesic, with desirable exceptions.

It is especially applicable in those cases where the patient cannot take opium or morphine. It does not produce toxic or undesirable effects in medicinal doses.

Specific Symptomatology—The agent, in doses of from a half drachm to a drachm, will produce quiet and restful sleep, when the insomnia is due to nervous excitement, mental worry or anxiety, and in elderly patients, neurasthenics and children.

Therapy—In susceptible patients it will control **pain** and relieve **general distress.** It is distinctly a nerve sedative, and overcomes nervous excitability and also reflex irritability. It is an antispasmodic of much power in mild cases.

If given during the course of **inflammatory fever** of any character, and in inflammatory **rheumatism,** it is a useful and grateful remedy. It does not oppose other indicated agents, and induces the often needed sleep.

In violent **spasmodic cough** it produces relief, and in the irritating persistent cough of **bronchitis** it is of service as an auxiliary to cough syrups. In **phthisis** it controls the night cough and induces restful sleep.

It has been highly lauded as a specific in **whooping cough. The cough of phthisis** will yield to the remedy under consideration when large doses of codeine have failed. In **dysmenorrhea** piscidia has been remarkably efficacious. A **morphine habitue,** taking ten grains three times daily, suffered excruciating agony at menstrual periods. An increase of two grains at each dose brought no relief. Piscidia, in ten drop doses every hour brought relief, and hitherto has proved unfailing in that particular case.

Acute **intestinal colic** yields to piscidia. **Gall-stone colic** and **renal colic,** while not yielding to the remedy as they do to morphine, are rendered bearable by Jamaica dogwood after an initial dose of the former. It has been used to lessen **labor pains,** and has been lauded by some observers as highly efficacious.

Facial neuralgia seems particularly amenable to the action of piscidia. **Ovarian neuralgia** and pains due to straining on the uterine ligaments in displacement and tumor, are relieved by this remedy. It seems to have a satisfactory influence on all pelvic pain.

For **sleeplessness,** in both sthenic and asthenic conditions, piscidia is a reliable remedy. **Delirium** in sthenic conditions yields to piscidia as does **hysteria** consequent upon uterine and ovarian disorders. Piscidia is of use in hemicrania and congestive headaches generally.

In **obstetrics** it controls erratic pains and conduces to quiet and rest, and

overcomes rigidity by its specific relaxing or antispasmodic influence, although it does not interfere with the normal uterine contractions.

In the distress following the adjustment of **fractured bones** or reduction of **dislocations,** it is especially useful and satisfactory.

It is often applied to local painful conditions with benefit. It relieves **toothache,** local neuralgias, and the pain of developing felons and boils. In these cases it exhibits active anodyne properties.

It acts in close harmony with the vegetable uterine remedies, promoting the influence of macrotys, the viburnums, senecio, helonias, pulsatilla and dioscorea.

CHLORAL. CHLORAL HYDRATE.

The name Chloral is authorized when Chloral hydrate is intended. If Chloral proper is intended, the U. S. Dispensatory specifies **Anhydrous Chloral.**

The influence of Chloral in full therapeutic doses is exercised in the production of sleep. If it be taken on a comparatively empty stomach the patient becomes quiet in half an hour, and the sleep lasts from two to six hours, according to the previous condition of the mind, whether tranquil or disturbed. It usually produces a dreamless, natural sleep, followed by few unpleasant symptoms. Occasionally, however, the dose fails, and the second or third dose is necessary.

At other times it produces cerebral distress or headache, nausea, faintness and extreme lassitude. There is no marked apparent influence upon the pulse or respiration in normal cases, but the pupil contracts somewhat. During the period of induced sleep the patient may be awakened to full consciousness, may take food, may even transact items of business, and then lie down and almost immediately fall into a continued natural sleep. Cough is not always allayed by it, and this may awaken the patient, or a desire to urinate may awaken him.

Chloral has but little influence over pain. It may be given during pain to induce sleep. If that result is accomplished by sufficient dosage, the patient's countenance shows the presence of pain, and he will complain upon waking of its having continued during his sleep.

Greatly prolonged use of chloral produces impairment of the appetite, bad taste in the mouth and bad breath, with fetid fecal discharges, deficient secretion of the gastric and biliary fluids, and an increase of the nervous phenomena for which it is usually prescribed; also an eruption, irritation or ecchymosis and red rash of the skin with desquamation. It permanently abates both mental and physical vigor.

Contra-Indications—Chloral is contra-indicated in feebleness with exhaustion, or when there is a tendency to stupor or coma or general dullness, and in cerebral anæmia. It is contra-indicated in weak heart, especially if existing in alcoholism.

Specific Symptomatology—The direct influence of chloral is that of a profound **nerve sedative** and a **producer** of quiet, restful and natural **sleep.** In its influence over the muscular system it produces profound **relaxation** similar to that of gelsemium, but attended in extreme cases, or where the heart is feeble, with more danger.

Therapy—It is a promoter of quiet and repose in all conditions of nervous excitability and extreme restlessness. In the excitement and **noisy delirium** of **fevers** no agent acts more satisfactorily. It quiets excitement, overcomes the delirium if due to cerebral engorgement and induces normal sleep.

It is a superb remedy in the sleeplessness of **inflammatory fevers,** and in the earlier stages of **typhoid** and other continued **fevers,** except in the later or asthenic stages when the vital force is exhausted when it must not be given.

Chloral will induce sleep in **chorea,** and during the sleep the symptoms will abate, but it does not cure the difficulty.

Chloral is of much value in **hysteria** and the nervous phenomena of this condition. It is best given in conjunction with a stimulant in asthenic cases, as it possesses no inherent stimulating properties.

It is a reliable remedy in **pruritus** from nervous causes, especially pruritis vulvæ of pregnancy, with nervous erethism which causes increased nervous phenomena and prevents sleep. One or two doses of fifteen grains will often control the condition for a day or two.

In **puerperal convulsions** chloral is a reliable remedy and has been often used in the past.

In **rigid os uteri,** with or without general nervous irritation, with hot vagina and irritable nagging pains, and no advancement of the labor, chloral is a useful remedy. Fifteen grains repeated if necessary in half an hour will usually cause an entire change in the condition. It will quickly relax the rigid os and change the character of the pains. It will quiet the nervous excitement and secure an interval of restful sleep.

It acts promptly in such a case if a diluted solution of twenty or thirty grains be injected into the rectum, previously evacuted with a hot enema. It does not in these doses usually interfere with uterine contractions or subsequent involution.

It is a useful hypnotic in the **sleeplessness** of the aged, with whom small doses exercise a satisfactory influence. The influence of chloral upon children, in small doses of from one to three grains is very soothing. In **nervous and restless children** with disturbed sleep, children who toss about during the entire night or cry out frequently, or awake in terror, this agent has a charming influence. A small dose should be given an hour before bedtime and repeated as the child is put to bed—from one-fourth to three-fourths of a grain each year of the child's age. This should be repeated on two or three consecutive nights, if no unpleasant symptoms appear, when the bad habits will be temporarily broken. On their reappearance it may be resumed again for a night or two. The cause of the restlessness should be discovered and relieved also.

Chloral is an excellent remedy in **convulsions of children.** It is safe in proper doses and powerfully antispasmodic. In combination with the sodium or potassium bromides, a solution may be kept at hand for emergencies, and will prevent approaching spasm and promptly control those existing. It will allay nervous twitchings and other evidences of nerve irritation, and will soothe and quiet the patient and induce refreshing sleep. It is not to be given if the convulsions occur from exhaustion or after prostrating disease.

As we have learned our vegetable anti-spasmodics better, we depend on these with results so nearly perfect that we seldom think of the inorganic agents though potent and controllable.

Chloral is useful in **whooping cough** and in the paroxysm of spasmodic **asthma.** It will relieve **asthmatic dyspnœa** occasionally when dependent upon nerve irritation.

It is used in **epilepsy** with advantage. In nocturnal **petit mal,** if the attack can be anticipated, a full dose at the bed hour will usually ward it off.

In **tetanus** chloral has been in quite common use, full doses being necessary. A physician whose name we have now lost, reported several years ago that he had cured several cases of traumatic tetanus by opening the wound freely and filling it with finely-powdered chloral to the extent of sixty grains.

It is a reliable agent in **delirium tremens,** and in **acute mania** and in the **paralysis** of the **insane.** It soothes excitability as well as induces sleep.

Theoretically, chloral should prevent the excretion of sugar in the urine in **diabetes mellitus.** In practice, a few cases only have been so benefited. It deserves further investigation in this line.

Chloral is not a remedy for hypodermic injection; it produces local irritation and abscess. It has been advised for use by intravenous injection in the treatment of tetanus, puerperal convulsions, strychnine poisoning, and hydrophobia, but such care is demanded in its use that it has not received general adoption. Further investigations may prove its benefits.

Chloralamide is a derivative of anhydrous chloral. It is given in doses of five to thirty grains, and is prescribed for the same conditions as chloral. It is not so depressing on the heart, nor as irritating to the stomach.

SULPHONAL.

Synonym—Diethylsulphonedimethylmethane.

Administration—The dose is from fifteen to thirty-five grains. Its large dose and insolubility render its administration difficult. It is suspended in mucilage or syrup, and must be administered several hours before its influence is desired.

It is best given in hot solution upon a comparatively empty stomach, as it is only appropriated by decomposition, and not by the rapid absorption of a free solution. Its influence is so slow that often, when given to produce sleep, this influence is not exercised until the night has passed, causing the patient to pass a drowsy, uncomfortable day.

Physiological Action—It is not considered a poisonous agent, and yet much discomfort arises from its use with some patients. Symptoms of a toxic character will appear; difficulty of speech, temporary muscular inco-ordination, fullness of the head and vertigo; in prolonged cases, physical weakness, mental incapacity, forgetfulness, delusions and mental aberration. It colors the urine a deep red, as it is eliminated by the kidneys, and sometimes produces a characteristic rash on the skin. Its tastelessness is a redeeming quality, as it can be given without the knowledge of the patient. It does not irritate the stomach or bowels, neither does it suppress secretions. It does not affect the digestion or destroy the appetite.

Specific Symptomatology—It is a remedy for sleeplessness when the brain is overcharged and the mind is excited or worried. It is useful in those greatly worried over physical conditions, such as those suffering from **gonorrhœa** or **spermatorrhœa.**

Therapy—It is decidedly a **hypnotic,** but is not as reliable or as active as chloral, and yet it sometimes succeeds where that agent has failed. It is used in the **sleeplessness** of **alcoholics** and in **delirium tremens.** It has won its reputation largely in this latter condition.

In **mania** with extreme **nervous excitement** and general nerve irritation, and in pronounced insanity, it has been widely used with excellent results.

It is useful in **prolonged fevers** because of its non-irritating and non-depressing character.

It quiets the restlessness of teething children, soothes the gums like the bromides, wards off spasms and induces sleep. It is safe, and the little ones are probably more susceptible to its influence because of increased facility of appropriation. Its tastelessness is in its favor here also.

VERONAL.

Synonym—Diethylmalonylurea.

The agent is given in capsules of from five to ten grains. It is best given an hour before its influence is needed, as its action is slow. Long continued use demands an increased dose as it seems to lose its effect.

The agent is comparable with sulphonal. It is devoid of some of the objectionable influences of the other drug, and is more prompt in its action. Its free solubility contributes to this. **Insomnia** induced by **nervous excitability** of any character is relieved by it. Over doses induce protracted sleep in proportion to the amount taken. Two or two and one-half drams will produce death, though a fatal ending is slow in occurring. Sleep has been prolonged ten days with recovery.

If combined with **sodium, veronal** becomes a safer remedy with a somewhat wider influence. It is usually preferred in this form.

Trional and **Tetronal** so closely resemble sulphonal and veronal in their influence that we do not deem it necessary to introduce them as separate agents. They have gained no ground in the past seventeen years, while the two latter have increased in favor.

CHAPTER IV.

Sedatives Used for Their Influence on General Nervous Irritability—Inorganic Nerve Sedatives.

BROMINE.
BROMIDES.
AMMONIUM BROMIDE.
STRONTIUM BROMIDE.
BROMOFORM.
HYDROBROMIC ACID.
AMMONIUM VALERIANATE.
HYDROCYANIC ACID.

BROMINE.

Symbol—Br.

A solution is made by dissolving 160 grains of potassium bromide in two ounces of water, to which one troy ounce of bromine is added.

Its salts, the bromides, and hydrobromic acid are the preparations which are commonly used in medicine.

Therapy—The agent uncombined is but little used. It was originally believed to assist metabolism like iodine, and investigations were conducted in that line. In all cases of dyscrasia it was used, but was finally abandoned. It was used universally during the American Civil War as an application in **hospital gangrene,** and was sometimes given as an internal antiseptic.

The general effect of bromine is that of a nerve sedative and antispasmodic. Its influence on the circulation of the nerve centers causes a marked reduction of nerve force. **This characteristic influence is exercised** in all the compounds of bromine, modified, of course, by the therapeutic influence of the substance with which it is combined, producing characteristic properties permanent in the individual combination.

BROMIDES.

Potassium bromide. Dose from ten to thirty grains.
Sodium bromide. Dose from ten grains to one drachm.
Lithium bromide. Dose from five to twenty grains.

Calcium bromide. Dose from five to thirty grains.
Ammonium bromide. Dose from two to twenty grains.
Strontium bromide. Dose from five to thirty grains.
Ferrum bromide, Ferrous bromide. Administered in the form of a syrup.
Syrup of the Ferrous bromide. Dose from ten to forty minims.
Zinc bromide. Dose from one to two grains.
Aurous bromide. Dose from 1-100 to 1-16 of a grain.

Character—The compounds of bromine with the alkaline earths are isomorphous compounds—white granular crystalline solids, readily soluble in water, sparingly soluble in alcohol. They exhibit in a more or less modified form, as has been said, the characteristic properties of the bromine.

Physiological Action—The effect of the bromides in large doses, upon the animal economy, is that of universal depression similar in many ways to that of gelsemium, but not as quickly induced, and more permanent, as inorganic salts are by no means as quickly eliminated as organic remedies. Repeated and continued doses of the former are usually necessary to induce the characteristic phenomena, although sensitive patients exhibit them after comparatively small doses. There is slowly progressive paralysis first of the motor and finally of the sensory nerves. There is a paralysis of the voluntary muscles with trembling and uncertain gait, with ultimate inco-ordination. Muscular contractility is abolished more or less completely.

The capillary contraction finally induces an extreme inefficient capillary circulation, with a marked and characteristic pallor. There is an interference with metabolism and with the oxidation of the blood, which results in more or less complete anæmia.

There is a characteristic fetor of the breath and an eruption on the skin, at first simple or papular, then similar to acne and finally pustular, ulcerative and suppurative, becoming furuncular in character.

The bromides are eliminated with every secretion, but so slowly that in the doses usually prescribed there is accumulation of the salts in the system from excess of ingestion over excretion. These have been found in the urine nearly forty days after the administration of the remedy had ceased.

Specific Symptomatology—The direct indications for the use of a bromide are nervous excitement, nervous paroxysms or spasms from irritation, exalted nerve action from temporarily increased nerve force, fullness of the capillary circulation, and a marked determination of the blood to the nerve centers.

In anæmia, in atonicity, relaxation or flaccidity of the general muscular structure, the bromides are contra-indicated.

As their chemical reaction is alkaline, their chemical influence during protracted fevers when the secretions are all deficient, including the acids, increases the condition. There is, of course, an excess of the alkaline elements in the body fluids. When as at this time the mucous membranes are dry and dark, the tongue thin, pointed, dark coated teeth covered with sordes; give instead, **hydrobromic acid,** as the bromides are contra-indicated.

Therapy—They are applicable in all forms of **nervous irritation,** with or without spasm, but they should be given in conformity with its specific symptomatology.

Spasms of a general and also of a local character, with cerebral fullness or fullness of the nerve centers, congestive nervous irritation are relieved by the bromides.

In acute **cerebral, spinal** or cerebro-spinal **inflammation** the bromides are indicated because of their direct influence upon the vasomotor system. In the delirium of fevers with their indications they act promptly. Their influence is greatly enhanced by combination with ergot, where the capillary circulation of the brain is very full.

The bromides are in constant use to anticipate or control **convulsions,** their antispasmodic influence being constant and reliable. Whether the spasms are infantile, hysterical, puerperal or epileptiform, the bromides can be given according to the indications named, usually with good results.

The bromides have been more generally prescribed in **epilepsy** than any other agent. It is in these cases that their physiological influence has been studied, as the condition known as bromism has been often induced. Brown-Sequard's formulæ for the treatment of epilepsy were at one time widely used. The following was the one used for children from eight to twelve years of age.

℞—Potassii Bromidi .....ʒi
Ammonii Bromidi .....ʒiiss
Potassii Iodidi .....ʒi
Potassii Bicarbonatis .....grs. xl
Spt. Chloroformi .....ʒii
Infusi Columbæ .....ad. f. ʒvi

M. Sig. Take two drams morning and noon, and three drams at night, freely diluted with water. When the convulsions are reduced in number or cease entirely, the size and frequency of the dose is diminished. It is sometimes given only when the paroxysms can be anticipated.

He advised the substitution of the infusion of digitalis instead of columbo when the heart is feeble or when there is general weakness.

The author advises adherence in these cases, to the rules herein laid down as indicated for the use of the Bromides, and their avoidance, when contra-indicated, as far as possible.

In cases of epilepsy where the indications are plain and the influence of these agents seems to be beneficial, it is sometimes necessary to keep the patient under their influence for some months, and sometimes for a year or two, notwithstanding certain unpleasant cutaneous results. Very small doses at long intervals will often keep up the good results.

In cases resulting from injury or from organic lesion, no permanent results are likely to be obtained.

Further on in this work, in considering the compounds of sodium and potassium, I have suggested that the physician exercises too little care, in selecting that **compound of an alkaline earth,** which is indicated in the particular case which he then has under observation. We have under consideration several bromides with a different base. The base exercises an influence that is very seldom considered, when our thought is fixed upon the desired action of the bromine.

Every element in any compound, influences its characteristic therapeutic action to a greater or less extent. The **potassium** influence in every compound of potassium must be considered. This agent is plainly sedative or even depressant to muscular contractility. This influence, with the nerve sedative influence is characteristic of bromine also. Consequently this combination should be selected when an agent is needed not only to reduce nerve irritation but to reduce muscular activity, as in the case of powerful muscular spasm.

Potassium Bromide acts upon the stomach, reducing muscular power, nerve tone, and glandular activity. To a certain extent this is also its influence upon the bowels. It suspends peristaltic action. This influence, pushed, induces irritation which may be followed by inflammation. Such being the case, potassium bromide should be used only when these organs are intact, exercising full power, and should be discontinued when that power shows signs of abatement. By the above influence this remedy impedes its own absorption.

Potassium Bromide is given with good results in **whooping-cough,** in paroxysmal asthma, in vomiting of pregnancy and in irritative or reflex bron-

chial cough; also in reflex palpitation and in some forms of cardiac neuralgia and in gastrodynia.

The **Sodium Bromide** is more kindly in its influence than the potassium salt. It does not irritate the stomach, and is thus more rapidly absorbed. Its alkaline influence against hyperacidity is more readily exercised. When needed for general nervous irritation when arterial tonus is low, this agent is preferable. It is selected for infants and those aged and feeble.

Lithium is the remedy to assist in tissue metamorphosis and in the elimination of urea, the urates and uric acid. Consequently in **lithæmia,** when there is nervous excitement, irritation or spasm, where the blood is loaded with these substances, the bromide of lithium will be the most serviceable. It works specifically upon the kidneys, soothing irritation and stimulating functional activity. Although the Bromides are often advised promiscuously in **rheumatism,** the **lithium bromide** is the indicated remedy—generally because of the condition named above.

The **Lithium Bromide** is selected when with nervous excitability there is lithemia with or without renal or cystic irritation.

In irritation or **irregularity** of the **heart's** action from the above causes, the bromides are directly indicated. The usual heart tonics, such as digitalis and cactus, will increase the disorder. In rapid heart from irritation of the sympathetic, we have had this fact confirmed in a remarkable manner.

In delirium tremens, in **hysterical mania, nymphomania or satyriasis,** or in other forms of irritation of the sexual organs with excitement, the bromides are certain in their action.

In **sexual hyperæsthesia** so evidenced with excessive determination of blood, potassium bromide is the remedy. The effect of this agent in removing sexual feeling and diminishing sexual power and the power of erection, is due to the permanency of its influence in inducing capillary contraction, producing a local anæmia.

The bromide of sodium acts nicely in **insomnia** from nervous excitement and overwork of the brain, overstrain of the nervous system.

In the administration of **morphine per os or opium** in any form, nausea and excitement, and in some cases dangerous phenomena, are apparent in patients of a nervous temperament with disordered stomach. These, often attributed to idiosyncrasy, are sometimes entirely overcome by administering the agent with small doses of the bromides. The most desirable influence of the opium salt is then obtained. This is especially true where there is gastric hyperacidity.

There are certain forms of indigestion which need a bromide. These are accompanied with some nerve excitement, functional heart irregularity, or palpitation. Five or ten grains of the **strontium bromide,** repeated as needed especially if there is hyperesthesia is the superior agent.

In certain cases of deep seated stubborn rheumatism, fifteen grain doses of the **bromide of potassium** has been given three times a day with good results.

I believe that a bromide has a direct influence on the nerve irritation caused by the cutting of teeth in infants. I have depended for years on small doses one-half to one grain, given every half hour to one hour to effect, when there is excessive irritation pointing to the gums or teeth.

AMMONIUM BROMIDE.

Synonym—Bromide of Ammonium.

Administration—The dose is from two to twenty grains, and it is given in solution in syrup or elixir. A dose of ten grains may be repeated every two hours.

Specific Symptomatology—This agent is a nerve sedative when the cerebral or nervous excitement is due to exhaustion, feebleness and over-worked condition of the nervous system. It is the most active of the stimulating sedatives. It will exalt the enfeebled nerve force by its stimulating influence, and by the soothing influence of the bromine the irritation is relieved, the excitement is quieted and restful sleep will follow.

Therapy—It is an excellent remedy when the nerve sedative is needed in asthenic conditions. It improves the enfeebled, irregular and **irritable heart action** under these circumstances and increases the pulse. It lacks much of the depressing influence of the other bromides upon the heart. It will more quickly irritate a sensitive stomach than the others. In erratic **sexual excitement** from exhaustion or over-indulgence; in **spermatorrhœa** with sudden spasms of sexual excitement followed by complete relaxation, feebleness and coldness of the parts, this is a temporary remedy. Tonics must be given with it. It will control undue **nocturnal excitement** and emissions, during the recovery from the use of tonics. It is not a good remedy to persist in, in any case. It is the best of the bromides for epilepsy when there is feebleness and lack of capillary fulness in the nerve centers—a tendency to anæmia of these centers.

STRONTIUM BROMIDE.

Synonym—Bromide of Strontium.

Formula—$SrBr+6H_2O$.

The strontium bromide seems to exercise no independent influence on the muscular structures. Instead of irritating the stomach or intestinal tract, it first soothes these organs; then acts as a tonic, regulating their secretions, neutralizing excessive acidity, and promoting normal functional activity. At the same time it exercises the full bromine influence on the nervous system. It is thus an exceedingly desirable agent when there is atonicity, or even actual disease of the stomach or intestinal tract.

Therapy—This bromide takes the place of other alkaline agents in the treatment of disordered digestion with a sedative influence added. This is especially true in cases of the so-called **nervous dyspepsia.**

Germain-Sée reports a series of thirty-two cases of **dyspepsia** in which the condition was in all cases promptly ameliorated. Some of these were suffering from dilatation. Several of them have been cured. M. Sée calls special attention to the fact that from the beginning there was "a notable diminution of gases." The bromide of strontium he said, "acted against both the acetic and lactic acid fermentations, and especially against the gases of decomposition." M. Sée exhibited the bromide of strontium in daily quantities of from two to four grams, divided into three doses and adminstered with meals. He concluded his report to the French Academy in the following words: "It produces no distressing effect upon the stomach, even when given in elevated doses, and it may even be taken in quantities of four grams (one dram), maximum, with each meal."

The bromide of strontium seems to be better borne by the stomach than any other alkaline bromides. This is indeed important, as perhaps one-half of the difficulties in which a bromide must be prescribed, are complicated with stomach troubles. It is further important because the strontium salt is not irritating to the stomach surfaces, and at the same time it is sedative, and tonic, and neutralizes excessive gastric acidity, as above stated.

In its sedative influence, it is in every way similar to sodium bromide. The strontium salt is **anti-fermentative.** It is a sedative also and valuable in **neurasthenia, diabetes** and **albuminuria.** I am prescribing it now quite generally instead of other bromides.

The dose is the same as the potassium or sodium salt. In those conditions known as nervous dyspepsia, it will be found to be the very best possible sedative. It should cure some of these cases with no other internal remedy. My own experience confirms the above observations of Germain-Sée.

BROMOFORM.

Synonym—Tribromethane.

Formula—$CHBr_3$.

Physiological Action—It is a motor depressant of much activity. It has produced death in a few cases, and in several instances it has produced collapse, with depression of the heart and respiration, great muscular relaxation, coldness of the skin and extremities, cerebral congestion and contraction of the pupils.

Therapy—It is an **anæsthetic,** but has not as yet been generally used for that purpose. It has a depressing influence upon the vaso-motor system, but does not actively depress the heart. It is antispasmodic to a marked degree. It is an antiseptic and analgesic.

It was in quite common use among prominent physicians at one time in the treatment of whooping cough. Some are yet enthusiastic in its praise and others are apathetic.

The following method for the preparation of an emulsion of bromoform is advised:

℞—Bromoformi .....ʒi
Tinct. Tolutani, ...ʒii
Syrupi Tolutani, ...ʒi
Mucil. Acaciæ, ...ʒiv
Acquæ Menth. virid., q. s. ad, ...ʒiv

Mix the bromoform with the tincture of tolu and add gradually to the mucilage and syrup, previously mixed in the bottle. Shake vigorously and dilute with the spearmint water. Dose, from one-half to one dram.

HYDROBROMIC ACID.

Formula—HBr.

The solution of hydrobromic acid gas in water produces the liquid acid of pharmacy. It is a colorless liquid with the characteristic properties of the mineral acid. The official acid contains about ten per cent of the gas.

Administration—It should be given in from fifteen to thirty drop doses, diluted, every two hours, until the condition is much improved, when the doses may be given farther apart and other treatment resumed.

Specific Symptomatology—In conditions where a nerve sedative is demanded and where there is a deficiency of normal acids, evidenced by a thin, red, dry tongue, long, narrow and pointed, with red mucous membranes, with the conditions hereafter named, hydrobromic acid is indicated.

The symptoms for which this agent will be found specific are: Wild, erratic and unpleasant dreams, constantly present when the patient is asleep, for a few

days preceding actual delirium; face flushed, pupils dilated, increasing dullness with disinclination to consecutive thought. This is followed by mumbling and incoherent talking in the sleep, which rapidly increases as the fever increases, to extreme dullness and coma, with the characteristic accompaniments, constant muttering, picking at the bed-clothes, involuntary discharges, etc.

Therapy—The writer has not been able to find any agent which will take the place of this remedy under the conditions above named in the **delirium** of **typhoid fever.** It is true beyond cavil that if the delirium of any fever is kept in abeyance and the mind is kept clear, all other conditions are very much more amenable to treatment. Experience has taught us that this is so important that in severe cases of delirium other treatment at times must be suspended until this result has been accomplished.

In these cases if there be widely dilated pupils, and especially if the enteric symptoms are marked, **ergot** in ten drop doses will greatly assist its action.

In **nervous wakefulness,** present in some fevers, or where the patient is terrorized by a seeming inclination to fall from great heights as soon as he falls into a doze, the sleep disturbed by frightful dreams, the agent is specific. This condition sometimes follows the administration of quinine and opiates in conjunction. A single dose of fifteen drops of dilute hydrobromic acid will often be followed by a refreshing night's sleep.

The action of this agent in general, is identical with that of the bromides of sodium and potassium, except that the proportion of bromine present is much less, and to produce the marked effects of bromine, doses sufficiently large to sometimes produce gastric irritation must be given. It is therefore not a remedy for epilepsy, but it has a field of action in which it greatly exceeds the alkaline salts.

AMMONIUM VALERIANATE.

Synonym—Valerianate of Ammonium.

Formula—$NH_4C_5H_9O_2$

Administration—It is given in doses of from two to ten grains. Five grains may be given for a sufficient time in syrup or elixir.

Physiological Action—The ammonium valerianate paralyzes the spinal cord in lower animals, and reduces nerve force in all cases in overdoses. It is an active sedative of the stimulant type, similar to the bromide of ammonium, but with a wider field. It is more palatable and more acceptable to the stomach. In combination with the bromides it produces very satisfactory results.

Therapy—This agent was once a panacea for "nervousness." It was popular among nervous women with hysteria—any enfeebled condition with **hyperexcitability**—and it is prescribed for its specific soothing and nerve strengthening power during pregnancy, when the nervousness is a most troublesome symptom, preventing sleep at night, and rendering the wakeful hours miserable. It is given at the menopause for this condition, and for the heat flushes complained of at that time.

It is indicated for nervous excitement with patients where there is gastric acidity in excess with **feeble, hysterical or nervous patients.**

HYDROCYANIC ACID DILUTE.

Synonym—Prussic acid.

Formula—HCN.

Administration—The dose of the acid should not generally exceed three drops, although four drops is declared as the maximum dose.

Five or ten drops in a half of a glass of water, a teaspoonful given every hour or two for a short time will produce good results. The dose should be frequently repeated because of its evanescent effect. One and two drop doses are often sufficient.

If the patient is taking too much, the evidences are tightness in the region of the stomach, weight on the top of the head and dizziness or faintness. It should be promptly discontinued when these symptoms appear.

Toxicity—In full toxic doses the influence of hydrocyanic acid is almost immediate. The patient gasps, struggles and becomes convulsed and falls. The face becomes purple, the eyes are open and staring; the teeth are tightly shut and froth exudes from the mouth. The heart continues to pulsate rapidly, in some cases after the respiration has ceased.

In smaller but poisonous doses the heart becomes slow, the respiration labored, the face more slowly cyanotic, and there is mental disturbance. This may be followed by vomiting, complete unconsciousness; muscular spasm of local groups of muscles, resulting in involuntary defecation, spasmodic and quickly relaxing erections of the penis, collapse, and death quickly following. If life is prolonged to thirty minutes hopes of restoration are entertained, as the volatile character of the agent causes its rapid elimination. Recovery takes place rapidly if at all.

Specific Symptomatology—The agent is a nerve sedative to local nerve irritations. It relieves **reflex nervous irritation,** also physical irregularities of nervous origin. It is advised in the reflex **vomiting** of **pregnancy** and reflex vomiting induced by pain or local injury.

Since our knowledge of reliable vegetable sedatives has been perfected, this erratic and dangerous remedy has justly fallen into disuse. It is now quite fully replaced by others in its every field.

Therapy—In one case of persistent **vomiting of pregnancy,** the patient's life was endangered by its violence. I had given this agent continuously with no effect. I then dilated the external os and cervix somewhat; overcame constrictions and pressed out all the rugæ. The vomiting still persisted, until hydrocyanic acid was again administered when it ceased at once, permanently.

It is commonly used as a **gastric sedative,** especially for persistent vomiting of any character. It occasionally controls **pain in the stomach,** especially in **neurasthenics** where there is persistent nervous vomiting, and in the **reflex vomiting of phthisis.** It is also used in the **nervous regurgitation of food,** and relieves the various forms of coughs whatever the cause. It is used in some cases of **whooping cough.**

It is credited with the relief of angina pectoris, and with the control of irritable and irregular heart action, from overstimulation. It is used in **tobacco** and **cigarette heart,** and in some cases of **difficult breathing** from disturbed heart. It was used externally for **pruritus,** especially in pruritus vulvæ of nervous patients during pregnancy. It has been applied to **urticaria, erythema,** and **eczema.**

Antidotes—In concentrated form, death results often too quickly for assistance. If time permits ammonia is inhaled, artificial respiration is induced and chlorine gas is inhaled as it is chemically antagonistic.

CHAPTER V.

Minor Nerve Sedatives.

ASAFOETIDA.	VALERIAN.	HERACLEUM.
SCUTELLARIA.	APLOPAPPUS.	GUARANA.
HUMULUS.	OENANTHE.	PEONY.
	SOLANUM.	

ASAFŒTIDA. FERULA FŒTIDA.

Part Employed—The dried milky juice obtained by incising the green matured root of the Ferula fœtida.

CONSTITUENTS—Resin, Gum, Volatile Oil, Sulphur.

PREPARATIONS—Emulsion Asafœtidæ, Emulsion of Asafœtida. Dose, two ounces.

Pilulæ Asafœtidæ. Pills of Asafœtida. Dose, one to four pills.

Tinctura Asafœtidæ, Tincture of Asafœtida. Dose, one to two drams.

Therapy—This agent is a mildly stimulating nerve sedative. Its soothing influence upon the brain is of no mean order. This is especially observed in **hysterical conditions,** in hystero-epilepsy and in hypochondriasis. It arrests hysterical paroxysms and produces quiet and rest with a pleasant sense of exhilaration. It relieves the flatulence of hysteria also. In nervousness, especially that of weakened and exhausted conditions, and of children, it is soothing, and often wards off spasms.

In spasmodic conditions of the stomach and bowels with **tympanites,** in the absence of active inflammation it is a remedy long used. In accumulations of gas in the stomach or bowels it has been used to the best advantage.

In **spasmodic bronchial affections,** in **whooping cough,** and in **asthma** it was a favorite with the older doctors. In the bronchial catarrhs of the aged and infants it has been given with advantage, especially if nervous depression was present. A three-grain pill was the celebrated "Keeley cure" for la grippe, and those who have used the remedy in epidemic influenza are usually enthusiastic in its praise.

SCUTELLARIA. SCUTELLARIA LATERIFLORA.

Synonyms—Scullcap, madweed, hoodwort.

CONSTITUENTS—A bitter principle (crystalline glucoside), volatile oil, fat, tannin, sugar.

PREPARATIONS—Extractum Scutellariæ Fluidum, Fluid Extract of Scutellaria. Dose, from five to thirty minims. Infusum Scutellariæ, Infusion of Scutellaria.

Specific Scutellaria. Dose, from one to ten minims.

The remedy is usually prescribed in the form of the specific medicine. The normal tincture is very satisfactory, and in some cases scutellerin is the best form of the remedy to give. The glucoside in granules, which contain one-twelfth of a grain, will produce good results.

Specific Symptomatology—French advises this remedy for two distinct lines of specific phenomena. The first is where there is irritability of the nervous system, with restlessness and nervous excitability; inability to sleep without pain; general irritability, with insomnia from local physical causes. The second is

where there is nervous disorder, characterized by irregular muscular action, twitching, tremors and restlessness, with or without inco-ordination. These symptoms are found in **chorea, paralysis agitans, epilepsy** and **delirium tremens.** Its soothing influence continues for a protracted period, after the agent is discontinued. It is not a remedy of great power, but when indicated is of much service.

Its specific nerve sedative properties were those observed by the older writers who obtained this influence from a strong infusion which without doubt will yield results not obtained from small doses of the finer pharmaceutical preparations.

Therapy—Its soothing influence upon the nervous system conduces to quiet and **restful sleep.** In large doses in **delirium tremens,** it is a sufficient remedy. Its influence will be enhanced by combining it with capsicum, the tincture of red cinchona, or some other non-alcoholic stimulant. Combined with macrotys, the value of both these agents is increased in their adaptability to **chorea.**

In restlessness, or in **nervous excitability** producing insomnia, and in prolonged fevers, it promotes sleep and at the same time stimulates the skin and kidneys to increased activity. Its soothing influence is retained after the agent is discontinued. The agent was at one time supposed to exercise an influence over the spasms of hydrophobia, but it is doubtless too feeble for such a purpose.

HUMULUS. HUMULUS LUPULUS.

Synonym—Hops.

Part Employed—The strobiles.

CONSTITUENTS—Volatile Oil, Resin, Trimethalamine, Asparagin, Tannin.

Lupulinum, **Lupulin,** is a granular powder separated from the strobiles of hops and is bright brownish-yellow in color, with the odor and taste of the drug, in which its principal strength resides. Dose, from five to ten grains.

PREPARATIONS—Tinctura Humuli, Tincture of Hops. Dose, from one to two drachms. Extractum Lupulini Fluidum, Fluid Extract of Lupulin. Dose, from ten to sixty minims. Specific Lupulin. Dose, from one to ten minims.

Action—Tonic, nervine, hypnotic.

Physiological Action—Hops stimulate the stomach, improve its tone, encourage the appetite and assist the digestion. They add force and volume to the heart, and when that organ is irregular from nervous irritation or from reflex gastric irritation, act as a soothing agent to overcome those conditions.

Specific Symptomatology—The influence of this agent is marked in those cases of **nerve irritation** and **wakefulness** where anxiety and worry are the cause. In this it is somewhat similar to hyoscyamus. It is more particularly serviceable where **sexual irritation,** spermatorrhœa and dread of impotence are present, and where there is abnormal or erratic, and at times violent sexual excitement.

Therapy—In all forms of nervous excitement it is soothing in its influence, and a hypnotic of much value. This is especially the case in **hysteria** and in the sexual irritation of females.

In mild conditions of **insomnia,** with persistent worry, in patients recovering from neurasthenia, and in hysterical patients, or in cases where there is no organic difficulty or pain to cause the wakefulness, small and frequent or single full doses of this agent will have a marked tranquilizing effect. A pillow

of hops will have a soothing influence in some of these cases, and may be all that is needed to induce sleep.

Fomentation made by dipping a muslin bag filled with hops into hot water, wrung out and applied over painful **acute local inflammations** and painful swellings, is a favorite domestic measure. Applied to **facial neuralgia,** or over an ulcerating tooth, or in the earache of children, it allays pain and promotes sleep.

In the treatment of **delirium tremens** a capsule containing a grain of capsicum and eight grains of lupulin given during the intense excitement preceeding the attack, will sometimes ward it off. Half of a teaspoonful of each of the tinctures in combination may be given. A strong infusion of hops and cayenne pepper is excellent in this case to be drunk hot as demanded.

The **anaphrodisiac** influence of this agent suggests its use in **priapism** and in **chordee,** and in spermatorrhœa where these conditions exist, and where there is sudden active determination of blood to the parts. It is not the remedy when the parts are cold, weak, inactive and non-excitable, and where the erections are feeble or impossible. Five to ten grains of lupulin at bedtime, with ten or fifteen drops of the fluid extract of ergot in those cases where the tendency to fullness of the circulation is marked, will preserve rest and quiet for the night. A full dose of camphor monobromate with lupulin is excellent.

A suppository containing lupulin and camphor monobromate, five or six grains of each, or the one-fourth of a grain of ergotin, may be inserted into the rectum at bedtime with fine results.

The sedative effect of lupulin is exercised to a good advantage in the treatment of **nocturnal emissions** by its influence in soothing the nerve centers, promoting rest and sleep, especially in hysterical patients, and in those who suffer from **irritation** in the **genito-urinary tract** and in the control of **sexual excitement** and desire. It prevents **cerebral hyperemia** and corrects disorders of the gastro-intestinal tract. It modifies the secretion of the gastric fluids inhibiting the output of acids.

VALERIAN. VALERIANA OFFICINALIS.

Part Employed—The rhizome and roots.

CONSTITUENTS—Volatile oil, valerianic, malic, acetic and formic acids; tannin, sugar, starch, mucilage, extractive, resin.

PREPARATIONS—Extractum valerianæ fluidum, fluid extract of valerian. Dose, ten minims to two drams. Specific valerian. Dose, five to sixty minims. Tinctura valerianæ ammoniata, ammoniated tincture of valerian. Dose, one to two drams. Oleum valerianæ, oil of valerian. Dose, one to five minims.

Physiological Action—Valerian in large doses stimulates the brain, causing headache, giddiness, perverted vision, restlessness, agitation, nausea. Large doses of the oil cause increase of urine with slow pulse and drowsiness, ending in deep sleep. It lessens sensibility, motility and reflex excitability, and, if the dose be large enough, causes central paralysis. The first effect is stimulation, followed by depression of the nerve centers.

Specific Symptomatology—Valerian is not a narcotic. Its influence upon the nervous system is best obtained when the circulation of those centers is inactive and feeble, especially when there is a paleness of the face and the skin is cool. It is directly indicated in hysterical conditions of whatever character with feebleness; with nervous excitement, and morbid vigilance, in hysterical epilepsy, and in nervous headaches with some pallor. It is excellent in the hysteria and nervous disturbances incident to the menopause. Its gen-

eral soothing effect in all these cases is desirable. It controls distress and imaginary pain and produces quiet, permitting sleep and rest.

Therapy—This agent has long been known as a nervine. It is gentle and soothing in its influence upon the nervous system, especially upon the spinal centers. It is applicable in the **nervousness** of **depression** because of its gentle stimulating influence, and in these cases its influence is heightened by combining it with stimulants.

This result is effectually obtained from the valerianate of ammonium, which is the most active of the valerian compounds. In conditions where the nervousness is induced by hyperactivity—actual increased nerve force—or where there is organic disease, it is not the remedy.

The agent exercises a good influence in combination with macrotys in the treatment of **chorea.** Its influence upon **disordered motility,** although not marked, is similar to that of cannabis indica, hyoscyamus and scutellaria.

In **pruritus,** with nervous excitement from feebleness, it is a desirable agent. It has been used in stomach disorders and in diabetes, but its influence is not marked in these cases.

APLOPAPPUS. APLOPAPPUS LARICIFOLIUS.

Synonym—Herba del Pasmo.

LOCALITY—Texas, New Mexico, Arizona, California and Northern Mexico.

This may be closely related to damiana. We insert it here, that it may be kept before the minds of our readers until its properties are determined. Webster and others mention it as a remedy in **tetanus.** Its infusion is used by the native Mexicans and Spaniards for this condition. In **convulsions—epileptic, hysterical** and **puerperal**—it has been used. Its anti-spasmodic influence when used hypodermically must be studied.

More recent writers confirm Prof. Webster's statements urging its use in **tetanus.** In some parts of California, and New Mexico, there is but little fear of tetanus, as they administer this remedy freely, almost ad libitum. It is not poisonous, but few if any unpleasant results having been observed from its action. It is given in the **convulsions** of **childhood,** whatever the cause may be. A number of physicians confirm its influence in this class of disorders.

Several physicians have used the remedy in **chorea,** and claim that it is superior to other agents in certain persistent, otherwise intractable cases. It has controlled the spasms of **meningitis,** and will probably be an important addition to the specific medication of that disease. In puerperal convulsions, reports are not sufficient to direct us in its application. It has been observed that when **palpitation** of the **heart,** or serious disturbance of the action of this organ from a high degree of nervous excitement is present, this agent is curative. It must have further investigation.

ŒNANTHE. ŒNANTHE CROCATA.

Synonym—Water Dropwort.

CONSTITUENTS—An acrid emetic principle (resin), essential oil.

PREPARATIONS—Specific Œnanthe. Dose, one-twentieth to one-half minim.

Administration—The profound influence of this agent upon the nerve centers is quickly observed. It must be given in minute doses. Five drops of

the specific medicine in three, four or even six ounces of water will be found sufficient. Fluid extracts or ordinary tinctures are not to be prescribed, because of uncertain strength.

Physiological Action—Œnanthe crocata is extremely poisonous, and from its resemblance to common garden parsley has frequently caused death in men and animals. Toxic doses cause burning heat in the throat and stomach, with disturbance of intellect, cardialgia, nausea, vertigo, violent convulsions, furious delirium, or profound sleep; loss of sight, hearing and speech; rolling of the eye-balls upward, feeble pulse, abolition of sensation and of motive power, with increasing intellectual dullness. There are universal chills, rose-colored spots on face, breast and arms; lividity and swelling of the face, with trismus and bloody froth from mouth and nostrils, stertorous breathing, coma, death.

Autopsies performed on patients dead from the accidental use of this agent have shown an engorgement of the blood vessels of the brain and cord. There was effusion of blood and bloody serum in the occipital foramen. The sinuses of the dura mater and the veins of the pia mater also were distended with blood, as were also the sinuses of the vertebræ. There were apoplectic foci in the cerebral mass. There was serous effusion in the cellular tissue beneath the arachnoid, in the ventricles and at the base of the brain.

Therapy—The agent acquired a reputation in the treatment of **epilepsy.** It has cured a few violent cases and very many cases of **petit mal.** Fisk reported five cases cured, and other trustworthy investigators have had similar results. It is indicated in those cases which, instead of fullness of the capillary vessels of the brain and spinal cord, there is anæmia of these organs more or less marked. This distinction was made by Henning, and is an important one.

It has proved of value in cases where epilepsy has resulted from injury, in cases where there is an impairment of the brain structure and imperfect cerebral circulation with impairment of the nutrition of the brain.

It has not increased in reputation, nor has our knowledge of its action increased greatly during the past fifteen years. It deserves a closer investigation.

SOLANUM. SOLANUM CAROLINENSIS.

Synonym—Horse nettle.

PREPARATIONS—Tincture Solanum. Dose, from twenty to sixty minims. Specific Solanum, made from the root. Dose from five to twenty minims.

CONSTITUENTS—Solnine, Solanine, Solanidine, Solanic acid.

Therapy—The remedy has been used with some success in the treatment of **epilepsy.** It was used in an Eastern hospital for epileptics experimentally, with a reduction in the number of paroxysms of twenty-five per cent. It may be given in all forms of epilepsy in sufficient frequent doses to produce a sensation of dullness or drowsiness. It has cured some stubborn cases and has relieved many. Its specific field is yet to be determined.

It has been used in the treatment of **puerperal convulsions** with satisfactory results, in a few cases. In hysterical paroxysms it has been useful.

HERACLEUM. HERACLEUM LANATUM.

Synonyms—Masterwort, Cow Parsnip.

CONSTITUENTS—The root contains a volatile oil, and a crystallizable substance containing heraclin.

PREPARATIONS—A tincture, and a fluid extract. The dose of the tincture is from five to sixty minims. Fluid extract from two to twenty minims.

Specific Symptomatology—Blood dyscrasia, with general local manifestations. The tongue is heavily coated with a pasty coat or furred. The mucous membranes are of a bluish or leaden color. The membranes of the throat are discolored, with very sluggish circulation, appearing as if they would slough. The breath has a bad odor. There are erosions of the mucous membrane of a whitish character. The pulse is full and sluggish, and there may be a low grade of fever. In some cases the temperature is high, with a slow pulse, the patient is drowsy, and there is general capillary stasis.

The remedy has not received general attention. Felter and Lloyd give very limited action to it, but Dr. Vassar, of Ohio, has made some extended observations, which are worthy of note, and should be confirmed or disproved, by future thorough investigation.

Physiological Action—The doctor says the plant must not be confounded with the wild parsnip, and similar plants. A good preparation of the green root must be obtained to produce good results. The remedy is an irritant to the skin, sometimes causing inflammation. Its poisonous properties are similar to those of the wild parsnip. It acts upon the nervous system as an antispasmodic. It produces, when taken in the mouth, a sensation of tingling, prickling, a benumbing sensation upon the throat, fauces and tongue, similar to that of echinacea, aconite and xanthoxylum. In fact, the doctor compares it in its entire influence, with echinacea. It stimulates the pulse, and strengthens the capillary circulation. With the tingling and numbness of the throat, is difficult deglutition. Its antispasmodic influence seems to be exercised independent of the alterative influence the agent would exercise over depraved blood, as a cause of spasms.

Therapy—It is given in **general spasm** in **puerperal convulsions,** and in **epilepsy.** While Doctor Vassar has not used it in **meningitis.** his knowledge of its influence suggests that it would be a valuable remedy in that disease. In the treatment of convulsions, he would give as high as thirty drops of the strong tincture. In the treatment of puerperal convulsions he gives it as high as dram doses, until the patient is under control. He considers it as useful as gelsemium or veratrum. He has used it in several cases. He gave it in one extremely severe case of **puerperal fever,** where the temperature was 106 degrees, and obtained highly satisfactory results. In this case, he gave it in conjunction with small doses of jaborandi. He has treated several cases of **epilepsy** with it, two of which were completely cured. The others were benefited. He has given it in **tonsillitis, diphtheria,** and ulcerated sore mouth. As a vegetable antiseptic, it has many of the properties of echinacea, and some that echinacea has not. He has given it in cases of blood poisoning, with good results, but has not had an opportunity to observe fully, concerning its action for the same purposes, that echinacea is given as a corrective of bad blood.

He believes that it exercises an influence upon the capillary circulation of the spinal cord, and upon the capillary circulation in general, similar to that of ergot. He has obtained results from its use in several cases, similar to those previously obtained from ergot.

He has given it in glandular swellings, where there is threatened destruction of tissue, where the parts seem lifeless, or where there were foul and indolent ulcers.

He has given it in **nervous dyspepsia,** with all the phenomena of that complicated disorder. It is given in small doses, in these cases. It overcomes a tendency to flatulence, preventing flatulent decomposition of the food, and favoring digestion. It is especially demanded when there are offensive gases, discharged after meals. When there is an excess of acidity in the stomach or bowels, from any cause this acidity should be previously neutralized.

The sore mouth or sore throat that calls for this remedy is that accompanied with a cadaverous fetor to the breath, where there is a bad taste in the mouth, the tongue very dirty and pasty in its coating. He intends to investigate it in diphtheria farther, not having had an opportunity to make an extended observation in this disease.

In the treatment of the disorders of women, he finds it applicable in amenorrhea, and especially in dysmenorrhea. In these cases the pains being quite severe, before or immediately the flow starts, the agent seems to act like gelsemium. If other specific indications are present the indicated remedy is prescribed in conjunction with this. The agent will be found useful in certain forms of kidney trouble, and in the uric acid diathesis. It must have further careful investigation as it promises to be an important remedy.

GUARANA. PAULLINIA SORBILIS.

Synonym—Brazilian Cocoa.

PREPARATIONS—Extractum Guaranæ Fluidum. Fluid Extract Guarana. Dose, five to thirty minims.

Extractum Guaranæ. Extract of Guarana. Dose, three to ten grains.

Specific Guarana, from one to fifteen minims.

CONSTITUENTS—Caffeine, Tannin, Volatile Oil, Saponin, Resin.

Physiological Action—In its influence it is a tonic and mild nerve stimulant and sedative. Gaurelle, who first called attention to it, mentioned it as a most useful tonic in protracted convalescence. He had great confidence in it in persistent diarrhœas, especially those of phthisis. Others have used it successfully in chronic diarrhœas.

Therapy—The fluid extract of this agent, given in doses of from ten to thirty minims, has been used specifically in the treatment of **headaches,** other than those due to actual disease of the stomach, as from catarrh or ulceration or cancer. In many forms of headache, and especially the form due to functional gastric derangement, known as "sick headache," it is certainly a serviceable agent.

PEONY. PEONIA OFFICINALIS.

Synonym—Piney.

PREPARATIONS—The tincture. Dose, from one to thirty minims.

Therapy—The agent is an antispasmodic. Through a mild but persistent tonic influence, it is **soothing** to the **nervous system** of debilitated patient and of the aged. It is curative wherever there is irregular muscular action. It is useful in **chorea,** either alone or combined with other positively indicated remedies. It has been given with good results in **convulsions** of **childhood,** and

other convulsive phenomena, and its persistent use in **epilepsy** has resulted satisfactorily in some cases. It is not a powerful remedy, but it is one that has a steady and persistent influence, and will therefore be found of use as auxiliary to the action of positive but temporary remedies. It has been given in **whooping cough,** and will probably be found valuable in the treatment of other **spasmodic coughs.**

The juice has been expressed from the recent root, and has been administered in doses of from one to two drams. The powdered root in dram doses has been given. Thirty grains of the powdered seeds have been administered to overcome night **terrors** and **nightmare** in aged people and people afflicted with these forms of chronic disease, accompanied with dropsy. It relieves all forms of **nervous irritation,** and is beneficial in **reflex irritability.**

CHAPTER VI.

Depressants Used to Induce General and Local Anæsthesia—Anæsthetics.

CHLOROFORM.	NITROUS OXIDE.	MENTHOL.
ETHER.	COCAINE.	NOVOCAINE.
	EUCAINE.	

CHLOROFORM.

Formula—$CHCl_3$.

Synonyms—Formyl chloride. Trichloromethane.

Physiological Action—Chloroform taken internally in sufficient quantity is an irritant poison. Being insoluble and easily diffusible, it produces intense local **effects rapidly.**

It is an irritant and vesicant. Its influence when confined and evaporation prevented, is profound. It produces intense burning pain with subsequent slight anæsthesia. Taken into the stomach it produces pungent warmth, burning and finally, gastric irritation. In conditions of gastric pain with flatulence it induces increased peristaltic action, relieves the pain, causes expulsion of the flatus and acts as an antispasmodic.

When inhaled its influence is that of a sedative. If given in small quantity with an abundance of air, there may be a little hysterical excitement, but the patient quickly falls into an apparently natural sleep. The pulse becomes round and full. The respiration becomes slower and regular and the face is slightly flushed.

If increased to an excessive amount the face becomes pale, the breathing becomes irregular, heavily stertorous and labored, and may cease suddenly. The cheeks are puffed with the expiration. The heart's action becomes rapid and feeble, and the appearance is alarming. If the symptoms are not vigorously combated death may occur suddenly.

Therapy—When first discovered it was believed to be able to fill an important part in therapeutics. It was given internally in **spasmodic conditions,** often with good results. It was used in **whooping cough** and other spasmodic coughs, in asthma, in hysteria and in **spasmodic pain.** Its influence by inhalation so quickly overshadowed all other influences that its internal use was neglected. It is useful, however, internally in the above-named conditions and in **hiccough, angina pectoris, biliary** and **nephritic colic** and in simple acute painful conditions. From half a dram to a dram internally, largely diluted, will produce a certain amount of anæsthesia similar to that produced by its inhalation, although not so profound.

Its antiseptic influence renders it serviceable in fermentation and decomposition in the stomach, and a few drops taken in water stops many form of **nausea** and **vomiting**. Five to ten drops on a lump of sugar will hold in check many cases of **sea sickness**.

It is valuable in its external influence. It will relieve **neuralgic pains, lumbago, sciatica** and many conditions where a local irritant is not contra-indicated. If the anodyne influence of the agent, in its external use, can be obtained without its irritating effects, its field is greatly widened. It is then applicable to **painful swellings** and **local inflammations**—to **rheumatic arthritis** and to inflamed joints. It is often combined in liniments with other anodyne remedies, such as aconite, belladonna, opium, camphor and menthol.

This is accomplished to an extent by using it in the form of a spray when local anæsthesia results. Combined with menthol and sulphuric ether in the form of a spray, it will be found sufficiently anæsthetic for the opening of **boils** and **abscesses,** for the extirpation of superficial growths and for various minor operations.

A doctor was called to a very young infant where there was **ulceration** of the umbilicus. On examination he found it infected with **maggots**. He applied chloroform very slowly drop by drop, destroying them all quickly. This can be used in the nostrils in filthy cases, where they are infested, and in other localities.

Dr. Bogart says that in violent paroxysms of **whooping cough,** if chloroform be administered as the paroxysm approaches, until the coughing stops it will prevent subsequent paroxysms, especially early ones, and if pushed will result in a cure, in a proportion of the cases. Relief only results in other cases.

Dr. Lankford gave fifteen drops of this agent fully diluted with water in a very severe case of **nettle rash,** and relieved the condition quickly.

A French authority gives ten or fifteen drops of chloroform in water, where from **sunstroke** with intense cerebral disturbance, the heart needs a profound stimulant. Chloroform diminishes the asthenic irritability of the heart and nerve centers, and controls the circulation to a beneficial extent.

In large doses of from one-half a dram to one and one-half drams, internally it has been given properly diluted by a number of physicians.

A few drops of chloroform diluted and given internally will sometimes relieve severe abdominal pain.

It will control **congestive chill** and re-establish active capillary circulation; it will also prevent the **chill** in malarial conditions.

General Anæsthesia—The science of surgery owes its development to the introduction of anæsthetics. The growth of surgery for all purposes, except to save life alone, has been most rapid since the American Civil War. Cosmetic surgery, plastic surgery, abdominal surgery, pelvic and surgery for the relief of deformities and for the cure of existing chronic conditions, have all had their birth and development in that time. General anæsthesia has been the greatest boon to the human race. It is not necessary here to detail the application of anæsthesia to specific surgical conditions.

The administration of chloroform is demanded in all cases of severe **pain** not relieved by other anodynes, and in all **painful operations**; also in convulsions as an **antispasmodic,** in the **convulsions** of strychnia and other convulsive poisons, and to an extent in the convulsions of **cerebro-spinal meningitis, tetanus** and **hydrophobia**. In violent **convulsive coughs,** in **reducing dislocations** and setting **fractured bones,** in **nephritic** and **renal colic,** in the pains of **labor,** in reducing **strangulated hernias,** in hysteria and angina pectoris. In convulsions from whatever cause the administration of chloroform is advisable in the careful judgment of the physician. In **puerperal convulsions** there is often no other apparent recourse. In the convulsions of childhood and infancy

it is seldom needed, as the list of efficient antispasmodics, for internal or hypodermic use, is now great, and one or more is usually at hand. These are usually more permanent in their effects than anæsthetics. In the spasms of **epilepsy** its use is often demanded, if no more than for temporary relief.

In **violent chorea**, especially the malarial form, severe and intractable to the usual methods of treatment, chloroform given for a short time at intervals of from three to six hours, will modify the severity of the movements. In **whooping cough** a few drops may be held in the hand to the child's nostrils, and will modify the paroxysm. In violent coughs of a reflex origin chloroform is of much benefit.

Special Administration—The use of chloroform by inhalation for the production of profound anæsthesia far overshadows all its other uses. It has been in constant use since 1847, when it was introduced to supplant ether. It is agreeable, speedy, profound and in every way convenient, and does not produce the disagreeable after-effects of ether. The opinion of many careful administrators is that it is hardly as safe as ether even in safe hands, and that it demands absolutely expert administration.

Its administration is no longer trusted to other than experts. If intrusted to students, or inexperienced newly graduated physicians, or self-confident isolated physicians with limited experience, who do not appreciate the extreme danger and responsibility, it is a dangerous agent. The apparent mortality from its use is much greater than that of ether, which is undoubtedly due in part to faulty administration. The agent produces a profound influence upon the respiratory centers and upon the heart, and this effect is often obtained suddenly. There are usually evidences of its approach which are quickly observed by an experienced administrator and avoided or successfully combated.

In its administration the physical condition of the patient must be fully considered. If there be any quantity of albumen in the urine, if there be diabetes mellitus, weak heart, with insufficient valvular action, or if there be dropsical conditions of the heart or thorax, it must be avoided for protracted operations, and given with greatly increased care for minor or short operations.

In the preparation of the patient the stomach should be empty, the neck entirely free from any tight bands, the clothes should be open and loose, to obtain unrestricted circulation and respiration, and the patient should have unquestioned confidence in the administrator.

He should be kept in a horizontal position and in no case should the agent be administered in a sitting posture, especially when operations involving the nerves of the face are contemplated.

Esmarch's method of administration is now almost universallly adopted by clinical surgeons. It consists of the use of a thin gauze spread over a wire frame which lies loosely over the mouth and nose. On to this the chloroform is dropped—drop by drop—slowly but continuously, the patient breathing through the gauze. There is no concentration of the vapor and there is a free admixture of air. This produces no previous stage of resistance or excitement, but few if any untoward symptoms appear, the after results are not unpleasant, and the amount of the agent necessary to be administered is greatly lessened.

Restorative Methods—During the administration, the pulse and respiration are constantly watched, and any variations from normal carefully observed, and if at all conspicuous the agent must be discontinued and restorative method adopted. The pupil contracts at first, but if danger appears it dilates. The use of the nitrate of amyl inhalation, the injection of brandy, strychnine, digitalis, nitro-glycerine or carbonate of ammonium solutions will usually restore the pulse if failure is apparent. If respiration stops, the patient should be inverted, and artificial respiration persistently applied for at least an hour,

with flagellation or hypodermic stimulation. Orificial surgeons claim to have restored many patients by the dilatation of the anal sphincter.

The injection of one-half dram to two drams of hypodermic lobelia, is now found to be a reliable method of restoration, promoting the influence of and acting in harmony with other authorized methods.

The Laborde method of tongue traction, when adopted, has produced excellent results, and should be well understood. It consists of traction on the tongue from its base, steadily and rhythmically, imitating in time the normal respiratory movements.

Any method is enhanced in its influence by heat—by immersion of the patient in a hot bath, or by the pouring of a stream of hot water of from 110 to 120 degrees from a height moving slowly up and down the spine. Care must be exercised or the shock from this will be too great.

The free use of strychnine for a day or two before the administration of chloroform, with a single hypodermic of morphine at the time, is a common custom. This is believed to prevent shock, to avoid after-emesis and to permit of more ready anæsthesia with a less quantity of the anæsthetic.

Anæsthesia in Labor.

In no condition is chloroform administered with so much assurance, with so little anticipation of serious results and with so much satisfaction to the patient, as in **labor.** In these cases, if the usual care be taken, no unpleasant results occur. There is a record of a few deaths having occurred since its introduction, but the percentage is infinitely smaller than in any other class of operations. It is in every way superior to ether because of the pleasantness of its administration and lack of after effects.

The dangers from its use are in producing too complete anæsthesia early in the case, or in the expulsive stage, paralyzing the involuntary muscular fibers and preventing proper contraction and subsequent involution, thus promoting post partum hemorrhage. There is another danger and that from administration when the patient is in a semi-recumbent or sitting posture. Its paralyzing effects on the heart may be quickly induced between the pains, but if pain recurs at once, injurious influences will be overcome. The writer has thought that the safety of the agent in labor was due to the antagonizing influence of the regularly recurring severe pains. If serious symptoms suddenly appear they can be overcome by lowering the head and inducing a recurrence of the pain.

In the second stage of labor a few breaths of dilute chloroform vapor taken just as the pain approaches, will often produce great relief with no apparent effect upon the consciousness of the patient. Many physicians allow the patient to hold a folded handkerchief in her hand on which a few drops have been poured and to administer it herself on the occurrence of the pain. This is a careless habit and should not be tolerated. When the pains are abnormal, cutting, aggravating and irregular in character, an increased quantity of chloroform will often change them quickly to normal.

It will dilate a rigid os and promote general relaxation of the parts, will encourage diaphoresis by overcoming nervous irritability, and will promote the labor in a kindly manner. It is seldom that complete anæsthesia is essential except in complicated cases, or in cases of primiparæ where there is slow dilatation of the external parts, in the expulsion of the head, or in instrumental cases. In these, complete anæsthesia need not be maintained for a great length of time. The physician is censurable who refuses from prejudice to use safe

anæsthesia in severe cases, or when indicated in labor. The day of experimentation on suffering mothers should now be long past.

The duty of the profession to the obstetric woman, the importance of relieving as large a proportion of the pain as possible, has been overlooked almost, until the present time. It is just now that there is a universal recognition of the need of measures that carry the mother safely through this most critical time of her life, with the least possible pain. It is surprising how much need there is yet, of education, both of the mother and the physician, in the fact that the old traditions that a mother must suffer pain in labor, are groundless, and that in line with all other improvements and advancements that have been made the physician **must see to it** that the woman passes through this period with a minimum of pain.

In addition to the use of general anesthesia by inhalation, a combination of hyosine, morphine, and cactine quite well known in America, at the present time, has been used for perhaps ten years for its hypnotic influence. This has its many advocates. There are some objections and an occasional accident, but properly managed it renders the patient insensible to pain, with comparatively little danger. The combination is made in tablets of two strengths. One contains morphine hydrobromide 1/4 grain, hyosine hydrobromide 1/100 grain, and cactine 1/67 grain, a concentration of cactus grandifloris. The other strength is just one-half of this formula. This is the strength used during labor.

An irrational unjustifiable publicity has been given to the use of scopolamine and morphine in producing what has been sensationally called "Twilight Sleep." Such publicity can result only in serious harm. The use of these agents in hospital practice with trained nurses and expert assistants produces an unconsciousness which permits the labor to proceed to completion, without the knowledge of the patient, or if conscious of pain it is forgotten when the pain has passed. The original advocates of the method have not declared it safe for common use, and all who use these agents appreciate the danger, especially to the child.

A reliable physician has recently informed me that he has used heroin with as good results as any other agent, and believes that it will be found to be safer. In uncomplicated cases not prolonged, I have for many years used a simple combination which has proved effective. The method of its preparation is found under hyoscyamus on page 110 of this volume.

Of this just before the pains are well established, I begin by giving a teaspoonful every fifteen or twenty minutes until the patient shows evidences of being well influenced by the compound; then with chloroform, short of unconsciousness, the patient is kept in a comfortable condition until the final pains, when total unconsciousness with the chloroform may be carefully sustained for a sufficient period. This course will not carry enough of the anodyne agents to give complete relief in extreme or protracted cases. It is in the medium uncomplicated cases which should constitute the mass of labors, that it works well, without danger to the mother or the child, if carefully adjusted.

ETHER.

Synonym—Sulphuric Ether.

Formula—$(C_2H_5)_2O$.

Physiological Action—When inhaled, ether causes an increase in force and frequency of the pulse and sustains for a while the heart's action, while chloroform depresses it. It depresses the respiratory centers and irritates the

respiratory tract, but this influence is not so immediately dangerous; hence its general use as an anæsthetic. If the respiratory centers are not paralyzed it will sustain its stimulating action on the heart often through a prolonged and profound anæsthesia.

Ether is a common and comparatively safe anæsthetic. It produces local anæsthesia, also, by the abstraction of heat. Internally it is an active poison, although less so than chloroform. Death occurring more slowly, there is more time for the administration of restoratives. Artificial respiration and the application of electricity to the spinal centers and to the respiratory muscles are the available means of restoration.

For anæsthetic purposes ether is found, as stated, to be safer than chloroform, but its slowness of action, its irritating influence upon the respiratory tract, the prolongation of the stage of excitement and the subsequent discomfort, the disagreeable stomach and head symptoms, are all so objectionable that they overbalance the danger from chloroform. With careful, confident surgeons, however, chloroform usually has the preference.

Administration—General anæsthesia was discovered through the use of ether. Its administration is conducted similarly to that of chloroform, except that the vapor is kept more confined. It produces a preliminary stage of excitement, with flushed face, succeeded by pallor. A larger quantity and more time is necessary than with chloroform. It often induces violent vomiting, which is protracted during the recovery from its influence. During its administration the pulse and respiration should be closely watched. Slow, shallow or irregular respiration must be quickly observed and the agent withdrawn until the respiration is increased in strength—if necessary, by artificial means. Irregular action of the heart must have the same care, but with ether the respiratory symptoms are likely to appear first. It is used in all cases where a general anæsthetic is needed. They need not be enumerated.

Ether has an unusual influence in reducing the temperature. The reduction in extreme cases amounts to nearly four degrees, and it is seldom less than two. The patient must be prepared for so marked a reduction, as it may increase the shock and lessen the power of the system to react from the shock after the operation. Every precaution should be taken to conserve the body heat.

The vapor of ether is inflammable, and it must be administered with great caution where there is danger of ignition.

Therapy—Internally ether has a sweet, pungent taste. It produces a sensation of warmth in the stomach and acts as a stimulant and a narcotic. It has been used in **spasmodic colic,** in bilious and nephritic colic, and in neuralgic or other pain in the stomach and in the intestines. It relieves flatulency, it stimulates gastric and intestinal secretion and increases peristaltic action. It is given in **angina pectoris,** in **spasmodic asthma** and in **heart failure** after **prostrating disease** or **after hemorrhage.** Its influence, although prompt, is so transient that other stimulants either replace it or are used with it. Its hypodermic use as a stimulant has the objection of being liable to produce abscess.

Injected deeply over the main nerve trunk, it has cured persistent neuralgias, especially sciatica. A few drops of pure ether are used in the injection, which may be repeated after twenty-four or forty-eight hours.

Ether spray applied to the surface is a local irritant and anæsthetic. Its inherent influence is enforced by the freezing effects of the extreme cold induced by its rapid evaporation. It has long been in use in minor surgical operations. Amputations have even been performed under its local influence. It is used in this manner for **neuralgias** and local pains. The restoration of the tissues after the freezing is often quite painful.

The following tabulated statement of the action of chloroform and ether from The American Dispensatory will prove of value in comparing these two important anaesthetic agents.

CHLOROFORM.	ETHER.
Agreeable to odor.	Unpleasant odor.
Pleasant to inhale.	Unpleasant to inhale.
Non-inflammable, but decomposes in presence of burning gas, liberating chlorine gas, which is at once an active irritant.	Inflammable, and cannot well be used around fires and lights.
Less irritant to the air passages.	More irritant to the air passages.
Must be slowly administered.	May be given more rapidly.
Air to the extent of at least 97½ per cent should be mixed with the anesthetic vapor.	Air should be excluded largely while administering.
Not more than 3 1-3 per cent with the inhaled air is safe.	Its vapor may be inhaled almost in full strength.
Practically no reduction of temperature.	Reduces temperature several degrees.
More apt to render the ideas and visions pleasurable, the incoherent talk being of a pleasant and not vulgar character.	More apt to occasion pugnacity, or lascivious or vulgar talk.
Not admissible in weak heart.	Not contraindicated by mere feebleness of heart.
Less irritant to the renal and pulmonary tissues.	More irritant to the kidneys and lungs.
Effects more prompt and more prolonged.	Action less prompt and more transient.
Kills chiefly by cardiac paralysis; and quite often primarily by asphyxia.	Kills chiefly by respiratory paralysis; occasionally by heart failure.
Danger signs, as of pulse, pallor, etc., exhibited as quickly as with ether, but too late to be of value if cardiac paralysis has occurred.	Danger easily detected by color of face and ears, and state of pulse in sufficient time to resort to artificial respiration by which death may be averted.
Death occurs in proportion of about 1 to 4,000.	Death occurs in proportion of about 1 to 17,000.
Undeniably admitted to be dangerous, even by its advocates.	Claimed seldom to be dangerous when properly administered.
Preponderance of opinion in favor of never using where ether may be employed.	Should always be preferred in long operations.
Preferable in obstetric manipulations.	Less used in obstetrics.

NITROUS OXIDE.

Formula—N_2O_2.

Synonyms—Laughing gas, nitrogen monoxide.

Physiological Action—If serious results occur there are short, frequent and shallow respirations, quick pulse, stertorous breathing and cyanosis. But few deaths have ever occurred from its use. It causes cerebral engorgement and a consequent rise of arterial pressure. It is therefore contraindicated with those who are predisposed to apoplexy or those advanced in years who are thought to have atheromatous degeneration of the walls of the blood vessels.

It has no irritant properties. Its peculiar influence in inducing extreme hilarity when inhaled in small quantities has given it the name of laughing gas. When taken in full quantities this effect is not apparent.

Therapy—The method of administration is to close the nostrils and cause the patient to take long, deep inspirations of the gas through a tube in the mouth. The anæsthesia is immediate and complete and consciousness returns suddenly with but few unpleasant effects. It is in general use only by dentists, although serviceable in many minor surgical operations.

Nitrous Oxide gas has been combined with oxygen gas and with ether and chloroform to determine if possible an improved method of anæsthesia.

Its combination with oxygen is advised for anæthesia in anæmic and debilitated patients suffering from heart or lung disease, in elderly patients, in patients suffering from obstruction in the naso-pharynx, in patients that are very susceptible to the nitrous oxide alone. The combination is slower, more permanent, and less depressing in its influence than the nitrous oxide alone.

COCAINE. COCAINE HYDROCHLORATE.

The alkaloid of Erythroxylon coca is a white, bitter, crystalline substance soluble in water, ether and alcohol. When acted upon by hydrochloric acid cocaine hydrochlorate is formed.

This salt in common use is dispensed as cocaine. It is a white, transparent, permanently crystalline powder, odorless and bitter, and produces, first, tingling, then numbness of the tongue. It may be used hypodermically, usually in one, two, four or ten per cent solutions.

Physiological Action—Its internal use produces a sense of exhilaration. It stimulates the brain, the muscular and mental powers are temporarily increased and a sense of power and endurance is experienced. This is followed by lassitude, depression and melancholy. Its local application produces anæmia and coldness of the part to which it is applied, followed by an entire suspension of sensation. Its paralyzing influence upon the nerve terminals is rapid and is conveyed upon the nerve filaments toward the nerve center.

In its application to the eye and exposed nerve endings in decayed teeth, or in the gums for the extraction of teeth—in localities thus near the brain —serious results often occur, and sudden deaths are by no means infrequent even when two per cent solutions are used. Although it has but little influence upon the skin intact, it acts quickly upon the mucous membrane and upon the conjunctiva. It is in common use in ophthalmic practice and by nose and throat specialists. Unpleasant results occur to all who use it, but by experience they learn promptness in combating its influence.

Therapy—It is *par excellence* the great **local anæsthetic.** It is in any dose a dangerous agent, and this fact confines its use to minor operations, where but a small quantity need be used.

If the danger element in the introduction of larger quantities could be eliminated, nearly all of the minor operations and a large per cent of the major operations could be performed with local instead of general anæsthesia.

In all cases where its diffusion can be retarded and its influence confined to the locality in which the operation is to be performed, larger operations are possible with a smaller quantity of the agent.

Corning, of New York, in 1887 and 1888, performed thigh amputations and joint resections and abdominal operations with good results by restricting the diffusion of the agent.

It is used in **amputations** of the fingers and the toes, in **incisions** and small **excisions,** in stricture of the urethra, which is very susceptible to its action, in phymosis, and, although very dangerous, in the extraction of teeth.

There is authority for the belief that many of the unpleasant effects of the hypodermic use of cocaine can be prevented by introducing a drop or two of the one per cent solution of nitro-glycerine with each injection of cocaine. An objection to the use of cocaine is that surgical wounds do not heal quite as readily where it has been used.

Schleich's "Infiltration method" of local anæsthesia has not increased in popularity to any great extent since this work was first published seventeen years ago. It has the confidence of the profession, however, as it is devoid

of danger, and will accomplish good results for those who have patience in conducting the method and are not too anxious for something new or for general anæsthesia.

This method presumes injection *into* not *beneath* the skin. The solutions contain a very small proportion of cocaine and morphine, and the local effect is supposed to be due to compression of the capillaries and nerve filaments by the infiltration. The point of a fine hypodermic needle is inserted into the structure of the skin and a drop or two of the solution injected. It produces a wheal which soon becomes anæsthetic. Into the outside border of this wheal another insertion is made, and this leaves another wheal following on the outer edge of each wheal. In the line of the incision to be made the wheals are formed by frequent injections, until an anæsthetic line, circle or area is produced which retains the anæsthetic for nearly half an hour with the introduction of a minimum amount of cocaine.

Schleich has applied the same method to the periosteum successfully and operated upon the bones. He advises solutions made in three strengths as follows, the first being strong for severe cases and the last being relatively weak for simple operations.

From five to ten or fifteen drops of a twenty per cent aqueous solution of cocaine in a teaspoonful of water will be found of service for severe **acute pain in the stomach.** Its influence is very prompt. Excellent authority advises this in the treatment of **gastralgia.** Cases are cited illustrating immediate benefit. In various forms of neuralgia, its internal use is prompt and satisfactory. In no case should such use be continued without the advice of the physician.

To which a five per cent solution of carbolic acid is added.

Parvin states that in opening abscesses, extracting teeth, ligating hemorrhoids, operating for prolapse of the bowel, phimosis and paraphimosis, operations upon the vagina and uterus, amputation of the breast, removal of vascular tumors, curretting or cauterizing lupus, partial resection of various bones, as the tibia, clavicle, sternum, ulna, humerus or femur—all these and many other operations may be done by Schleich's method with comparatively no danger from the poisonous effects of the drug.

Cocaine is popularly used to relieve **hay fever** by spraying it into the nose, but the danger of its too free use must be kept in mind. In nasal hemorrhage, whether accidental or incidental to the operation, it has restrained the flow of blood in a few moments by its influence in producing anæmia. This effect is obtainable in all hemorrhages from mucous membranes, and has won for the agent a reputation as a hemostatic.

In all cases where cocaine is incorporated in ointments it should be remembered that the salts of cocaine are insoluble in fats, while cocaine proper is fully soluble and makes a superior ointment. In pruritus vulvæ it will give quick relief locally applied; in vaginismus, however severe, it removes the difficulty temporarily. In rigid os in labor, with dry and hot vagina, a suppository of cocaine will often correct the entire condition and relax the os completely. In the urethral spasm after labor, with retention of urine, a few drops of the two per cent solution, although not unattended with danger, will often correct the difficulty.

The danger of establishing a pernicious habit of using the drug is infinitely greater from the use of cocaine than from the use of coca. Notwithstanding this fact it is often prescribed internally.

Samayoa prescribed it in small medicinal doses internally for the treatment of **smallpox,** and made the following observations, which, if true, are important:

"Cocaine, given continuously from the beginning, can completely abort the disease.

"If given after the eruption has appeared, it will transform the confluent or hemorrhagic forms into the discrete.

"Sometimes when the cocaine is given from the beginning of the disease the eruption assumes a corneal aspect, and the pustules collapse before the usual time.

"Cocaine **prevents suppuration,** hence there is no secondary fever and no pitting.

"To obtain these results it is necessary to give the cocaine as soon as the initial symptoms appear, and it must be continued without interruption."

The best preparation is the hydrochlorate, and it should be continued five or six days, and even nine if necessary.

EUCAINE.

Comprising two preparations placed upon the market: Eucaine A and Eucaine B, intended as a substitute for Cocaine.

Synonyms—Eucaine A. (Methylbenzoyl tetramethyl oxypiperidin carbonic acid methylether.) Eucaine B. (Benzoyl vinyl diaceton alkamine.)

Only the latter is now used for local anæsthesia.

It has marked **anæsthetic** properties. It is more of an irritant, as it induces a local hyperæmia, instead of the local capillary contraction and anæmia induced by cocaine.

The agent is applied in two, four and ten per cent solutions, extemporaneously prescribed as ten, twenty or forty-eight grains to an ounce of distilled water. It is somewhat slower in action, and its influence remains longer than that of cocaine. It is used in the eye, in the nose and throat, and for all purposes where cocaine is advised.

MENTHOL.

Formula—$C_{10}H_{19}(HO)$.

Physiological Action—Menthol is said to paralyze the spinal nerve centers, and also the motor and sensory nerve trunks. Its influence upon the terminal nerve filaments is immediate and pronounced, producing a **local anæsthesia.** It produces a sharp, burning sensation followed by coldness and local insensibility. It is also antiseptic. It is a popular headache remedy and relieves many cases of simple neuralgia. The crystals are compressed into the form of pencils, which are frequently rubbed over the painful locality.

Therapy—In simple neuralgia, in **toothache,** in **various headaches** not of organic origin, it will relieve the pain and permit rest and quiet. It has been of service in severe local **neuralgia,** sciatica and rheumatic pains.

About three grains of menthol every three hours in chronic persistent neuralgic pains will serve an excellent purpose. If menthol be vaporized in an atomizer, it frequently relieves asthmatic breathing. It is incorporated in many liniments where an antiseptic and anæsthetic influence is desired.

It is a standard remedy among rhinologists for the treatment of **nose** and **throat disorders,** serving a most excellent purpose in **catarrh** either of an acute or chronic character. In acute **coryza** its frequent inhalation will sometimes quickly terminate all unpleasant symptoms. In **hay fever** it allays the

immediate discomfort and retards the progress of the disease by its continued use. In **asthmatic breathing** of this disorder its inhalation gives satisfactory relief. In fact, any asthmatic breathing may be temporarily benefited by its use with only pleasant results.

Irritable bronchial coughs and laryngeal irritations are also relieved by its inhalation. A spray used with compressed air, and deeply inhaled, produces direct and most satisfactory results in all these conditions named.

It is valuable to allay **itching** and local irritation, especially *pruritus vulvae*, persistent cases yielding to its influence. In the itching of **eczema** and **urticaria** and other skin **disorders** it is of service. It may be incorporated into an ointment for application.

In the early treatment of carbuncles twenty grains of menthol crystals may be rubbed up with an ounce of ointment base, and this thoroughly rubbed into the swelling and applied over the inflamed area every twelve hours. The abortive influence of this is pronounced.

Dr. Hill, of Indiana, dissolves menthol in chloroform, and applies it in all forms of insect bites. It prevents infection.

NOVOCAIN.

Novocain occurs in colorless crystals. It is soluble in one part of water, and may be boiled without chemical change. It is found on the market in tablets, from which the percentage solutions can be readily made.

This substance similar in its action to that of cocaine, is a depressant as cocaine is and as reliable in its influence as a local anæsthetic, but is not quite so irritating in its influence. It paralyzes the sensory nerves. It is much less toxic than cocaine, and is productive of the same active local influences. Many who previously used cocaine are now using novocaine because of the greater safety.

Used in the nose from a one to five per cent solution is sufficiently strong, and in the throat from five to ten per cent is found to be sufficient. It had not been used internally enough to determine its influence when so taken.

CHAPTER VII.

Agents of the Sedative Class That Are Especially Useful in Diseases of Women—Emmenagogues—Ecbolics—Oxytocics.

ERGOT.	PULSATILLA.	ANTHEMIS.
MACROTYS.	HYPERICUM.	ALCRESTA.
ARNICA.	USTILAGO.	MATRICARIA.
	MISTLETOE.	

ERGOT. SECALE CORNUTUM.

Synonym—Spurred Rye.

CONSTITUENTS—Ergotine, Ecbolene, Ergotic acid, fixed oil.

PREPARATIONS—Extractum Ergotæ Fluidum, Fluid Extract of Ergot. Dose, from one-half to one dram.

Specific Ergot. Dose, five to sixty minims.

Ergot is prepared by special processes of purification for hypodermic injection. So used it is immediate in its action and can be so administered when

impossible to give it by the stomach. Ergotine in solution in water and glycerine, is excellent for hypodermic administration.

Physiological Action—Ergot causes both acute and chronic poisoning when taken in toxic doses. Acute ergotism is characterized by vomiting, purging, headache, dizziness, drowsiness, slowing of the pulse, dilatation of the pupils, dyspnœa, pain in the chest and loins, confusion of the senses, formication, coldness, anæsthesia, convulsions, swelling of the face. Chronic ergotism is characterized by neuralgic pains, formication and numbness of the extremities, opisthotonos, violent delirium succeeded by exhaustion, death occurring in coma or in convulsions; or the drug may affect nutrition; muscular weakness is followed by gangrene of the limbs or superficial parts, which become blackened, shriveled and hard—a dry gangrene, generally ending fatally.

Ergot is classed as a motor excitant by most writers, and yet the evidences, as above described, of its depressing influence upon the nervous system and upon the circulation are most conspicuous. In its influence upon the circulation of the brain and spinal cord, it may be given in sufficient doses to produce anæmia, and that it does greatly reduce the excitability of the nervous system, under certain circumstances, none will deny. It acts in perfect harmony with the bromides when there is acute cerebral engorgement with great nervous excitability.

There is no doubt that it produces contraction of the arterioles, although there are many evidences to prove that it may permit the venous capillaries to dilate freely.

In its influence upon unstriped muscular fiber the action of ergot is pronounced. It acts upon the muscular structure of the womb, producing extreme tonic or tetanic spasm of the fibrillæ, causing a marked reduction in the size of the organ if enlarged, and rapid emptying of its blood vessels, and consequent anæmia. Many prominent writers believe the anæmia induced, causes the profound muscular contraction. It is more plainly apparent that a peculiar irritating influence of the agent upon such muscular structure induces its contraction, and that such contraction, assisted by the influence of the agent upon the coats of the arterioles, causes them to become emptied to a marked extent, and thus the anæmia.

Ergot acts upon the heart muscle in much the same manner as upon the muscular structure of the womb, although much less violently. It will surely reduce the size of a hypertrophied or dilated heart.

Because of the profound irritation of muscular fibrillæ and consequent almost immediate contraction induced by Ergot, it is a most active agent in inducing expulsive pains in labor, in overcoming uterine inertia and in controlling uterine hemorrhage.

Specific Symptomatology—Extreme fullness of the circulation of the brain, flushed face, headache, bright, sharp eyes, great restlessness.

The indications for its safe use in **labor** are: first, uterine inertia; muscular relaxation with a more or less general weakness; second, the first stage of labor must be completed, and the *ostium vaginae must be fully dilated.*

There must be no obstacle to the free expulsion of the child.

The contractions induced by this agent are not smooth, spontaneous, natural, rhythmical contractions, but are irregular and extreme, and if an overdose be given it may induce a tetanic contraction and a single, most violent, continuous expulsive effort which does not cease until the entire contents of the womb are expelled.

With such an influence, if there be a rigid, undilated os or perineum, or mal-position of the child, or extreme dryness of the parts, serious results,

as rupture of the womb or extreme laceration of the perineum, are almost unavoidable.

This profound and continuous pressure on the child and placenta arrests hæmatosis, greatly paralyzes the heart's action, and thus impairs the circulation, inducing cyanosis and often death of the infant before its expulsion is complete.

Again, such pronounced action upon the womb structure may result in subsequent muscular paralysis, with great impairment of its contractile power, and if there be no post-partum hemorrhage there may be subinvolution more or less persistent. It will be seen, therefore, that this remedy in parturition is a dangerous one, and if used at all it should be used only when every contraindication is absent, and every indication present.

Therapy—In **labor,** when there is threatened post-partum hemorrhage, or when the history of previous labors shows a tendency to such an accident, a full dose of ergot may be given just at the close of the second stage, or after the head has passed the perineum. No harm can come from such a procedure, and it will serve as a positive safeguard. If there is then free hemorrhage and lack of full uterine contraction, the dose may be repeated in perhaps half an hour, but the attendant must be assured that the womb is entirely empty. If the contractions are not firm and continuous, and hemorrhage at all violent should occur, other measures, such as external irritation and compression of the uterine fundus, or the introduction of hot water into the uterine cavity, must be resorted to in addition. Ergot is in general use in **post-partum hemorrhage.** It must be given in doses of from half a dram to a dram of the fluid extract. If this dose be added to an ounce or two of hot water and drunk, its influence is more immediate and pronounced.

In uterine **hemorrhage** at the **menstrual epoch,** menorrhagia, or in metrorrhagia, it is a most valuable agent.

In patients of relaxed muscular fiber its action is very prompt. The dose can be so measured and timed as to reduce the flow to normal time and quantity, while by the use of other agents, a healthy condition is being secured. Its influence upon the womb structure is at the same time conducive to a sure acting in harmony with other uterine tonics.

In the treatment of uterine **subinvolution** or of **chronic metritis,** ergot is a good remedy. The use of the agent conjointly with the bromide of potassium is especially advised in this condition, and with the further administration of properly selected uterine tonics the cure can be speedily completed.

Polypi are expelled from the uterine cavity by ergot, and the agent having a specific action upon the substance of the womb, is opposed to **hypertrophy** and to the development of abnormal growths within that structure. **Uterine fibroids** are expelled by ergot if possible, and if impossible, the persistent internal use of the agent is advised as a means of limiting their growth. Interstitial or submucous fibroids only, are influenced by it. Sub-peritoneal fibroids are apt to be a little outside of its influence, because outside of the range of the contraction of the muscular fibers.

Mammary tumors, from uterine irritation, are slowly reduced by the action of ergot.

The **hemorrhage** and excessive discharges, purulent or otherwise, occasioned by the growth of **foreign bodies** about the **womb,** will be beneficially influenced by this agent. The growth of a uterine cancer is sometimes retarded a little, and the hemorrhage from the cancer is more or less controlled by ergot.

Dr. Standlee said that ergot would support the patient's heart exceedingly well when the remedy was indicated, especially when there was muscu-

lar fatigue from overwork or from dyscrasia, as in the malarial infections as found in the south, or in malignant malarial hematuria, especially if used hypodermically.

Ergotin so used will control hemorrhage from the lungs. It was administered for this purpose to a drunkard suffering from delirium tremens where it controlled both conditions satisfactorily.

As stated in its physiological action, ergot is a most useful remedy where there is a constant tendency to fullness of the **circulation** of the **brain-hyperæmia,** with flushed condition of the face, with vertigo, nausea, and violent headache. In threatened **apoplexy** in young, full-blooded, active men, with full cerebral circulation, it overcomes the immediate symptoms of an attack, and if properly administered will cure the tendency.

Where apoplexy from acute cerebral hemorrhage has occurred, it is a very useful agent in unloading the distention of the capillaries and assisting in the contraction and removal of the clot.

In children, where there has been a **fall** upon the **head,** or a violent blow, with symptoms of **concussion** of the **brain,** ergot is the most prompt remedy known. It should be given in from five to ten drop doses, and repeated in half an hour if necessary. Spasm should be averted by passiflora, chloral, the bromides, or, a full dose of gelsemium may be given. But the circulation of the brain must be controlled at once by ergot and its influence sustained by smaller doses until inflammation is no longer pending.

In certain forms of **inflammation** of the **brain** and its meninges, where the capillary circulation is very full, ergot is most pronounced and certain in its action.

In **cerebro-spinal** meningitis of an acute endemic or epidemic form, it may be given in the early stages of the attack, but should be withheld in the latter stages. Other directly indicated agents should not, however, be neglected for this. It is especially applicable to children in the early stages of acute cerebral or cerebro-spinal inflammation.

Ergot in doses of five drops three or four times daily for a few days will benefit many severe cases of **typhoid fever,** especially if there be an engorged condition of the cerebral circulation, with tendency to dullness, stupor and mild delirium, with high temperature. It directly influences the intestinal canal, overcoming the relaxed and paralytic condition of its muscular structure, correcting diarrhœa, controlling hemorrhage and improving the circulation. An occasional dose of fifteen or twenty minims will sometimes do much good.

In the treatment of both passive and active **hemorrhage,** ergot is a most excellent remedy. It contracts the walls of the arterioles, shutting off a full supply of blood and immediately restraining the flow from open vessels. It is thus at once useful in hæmoptysis, in hemorrhage from the mouth, gums, throat or pharynx, and from the stomach and intestinal canal. A local astringent in gastric hemorrhage from ulcer is often better, and also in intestinal hemorrhage in typhoid. It is good practice to give a local styptic alternately with ergot, where there is a persistent tendency to hemorrhage in these cases.

In **hæmophilia** ergot is recommended. In this condition in infants it may be used for a short time locally and internally.

Hemorrhages about the eye-ball are controlled from its local application, and acute conjunctivitis and phlyctenular ophthalmia will be benefited, if it be used locally and internally in small quantities.

Occasional large doses of ergot in the treatment of pneumonia are spoken of as highly beneficial by excellent authorities. The remedy exercises its influence upon the capillaries.

In **hæmoptysis** ergot is prompt and efficient. It need not be given in large doses. Three to five drops, four times daily, will usually restrain the tendency to hemorrhage, and in a free discharge of blood, a ten-drop dose is usually sufficient, or it may be repeated.

In hæmaturia ergot is a prompt remedy if from traumatism, or if from active congestion, but gallic acid is usually better in passive conditions, and in conditions due to structural change.

In paralysis of the walls of the bladder after retention of urine, causing over-distention, ergot serves a good purpose. If hemorrhage be present it is quickly controlled and the muscular atonicity of the walls is greatly benefited.

Ergot is given in **urinary incontinence** when the cystic walls are greatly relaxed, or when there is a mild form of local paralysis.

Ergotin in full doses has quite a prompt influence upon **diabetes insipidus.** It is also useful in **diabetes mellitus,** but is not depended upon alone. In children afflicted with the latter disease it may be given in positive doses for a time, but should not be given continuously.

In that form of **spermatorrhœa** where there is a tendency to fullness of the circulation of the parts, with erratic and spasmodic erections, and undue sexual excitement, the emissions quickly occurring after erection, there is no better remedy known than ergot. It should be given in about twenty drop doses at bedtime, and its influence is increased and a soothing influence upon the nervous system induced by giving it with ten grains of the sodium bromide.

In the treatment of **aneurism,** and of enlarged veins, and of varicocele, ergot is much used. Its influence is more positive though upon the arterial than upon the venous coats. It is used with good results in hemorrhoids. Bartholow and others injected it into the dorsum of the penis to contract the veins there and overcome impotency.

MACROTYS. MACROTYS RACEMOSA.

Synonyms—Black Cohosh, Cimicifuga Racemosa.

CONSTITUENTS—Macrotin, a resinoid volatile oil, tannic acid, gallic acid, gum, starch, fat, sugar.

PREPARATIONS—Extractum Cimicifugæ Fluidum, Fluid Extract of Cimicifuga. Dose, five to thirty minims.

Tinctura Cimicifugæ, Tincture of Cimicifuga. Dose, one-half to one dram.

Specific Med. Macrotys. Dose, one-tenth to ten minims.

Macrotin or Cimicifugin, which possesses all the medicinal properties of the root, is a resinous powder of a dark-brown or yellowish color, a bitter, acrid taste, and slight odor. Dose, one-half to three grains.

Physiological Action—Macrotys in large doses produces general relaxation, dimness of vision, dizziness, tremors, slowing of the pulse, fall of arterial pressure, vomiting or gastric irritation; it stimulates expectoration and perspiration, causes intense headache and prostration. These phenomena are caused by the action of the drug on the vasomotor centers and the cardiac ganglia. The headache is chiefly frontal; in some persons the drug causes pain in the joints and limbs similar to rheumatism.

The agent is certainly an efficient nerve sedative, although its most pronounced action is on the unstriped muscles. It acts in very many cases where these muscles are involved, with general nervous irritation, in an immediate

and positive manner. In such cases if the nerve irritation is dominant, its efficiency is greatly increased by combining it with gelsemium.

An overdose is promptly signalled by the appearance of the characteristic headache, which assumes a bursting, tearing character, with injected conjunctivæ and flushed face. This will abate at once upon discontinuance of the agent.

Specific Symptomatology—Muscular aching, local and general, aching pains as from overworked, overstrained muscles, great muscular aching with chilliness and rapidly increasing temperature.

It is the agent for **hysteria** with flushed face and heat in the head, with restless and nervous excitement and general muscular aching.

Therapy—In the premonitory stage of **acute fevers,** or of acute inflammatory troubles of whatever character, a common symptom is a general tired feeling with aching of the muscles. In these cases there is usually a chill or chilliness, with more or less fever with the aching. One drop of the tincture of macrotys every hour will relieve this aching in from six to twelve hours. If given with aconite for the fever and belladonna for the rigors, the time may be reduced to three or four hours. When indicated, its influence upon the nervous system will probably abridge many of the other symptoms.

Through its influence upon the vasomotor centers and upon the nerve ganglia, it has a beneficial influence upon the heart. In **rheumatic carditis** or **pericarditis** it is a sovereign remedy acting directly in the line of its physiological influence. In neuralgia of the heart—**angina pectoris** and functional **irregularity** of the heart from exalted nerve influence, either alone or combined with gelsemium, it is prompt and reliable, and should be by no means neglected.

Prof. King advised this agent in **coughs,** and its value through its influence upon the nerve centers has been confirmed by many practitioners. It soothes the cough of excessive nerve irritation, and the reflex cough; the irritable cough of acute bronchitis is relieved by it, as it increases bronchial secretions to a notable extent.

A homeopathic writer says that in **pleurisy,** there are often strong indications for marcrotys where it works in harmony with aconite and bryonia. This is our own experience.

It is given by many as a **stomachic tonic,** and it improves digestion by relieving excess of nerve influence over the functional operations of the digestive apparatus.

As a remedy for **chorea** it has become widely popular. Given in fifteen-drop doses of the tincture four or five times daily, it is superior to any other known remedy. Its effects are permanent if the anæmia and other concomitant conditions are correctly controlled by proper medication at the same time. Its sedative, tonic and antispasmodic influences are here fully exercised.

It may be combined with scutellaria lateriflora, with valerian or gelsemium, as the indications demand, with superb results. The writer has cured intractable cases by alternating it with minute doses of exalgine.

The characteristic aching pains above described are very constant in **acute rheumatism** and **rheumatic fevers.** Macrotys is certainly a royal remedy in these cases, and has become universally popular. If the condition be absolutely confined to the joint and does not involve muscular structure, it is not of as much value. The direct indications must be present.

The agent, however, has a specific influence in overcoming **lithæmia,** and in preventing and curing conditions resulting from an excess of uric acid—conditions existing in the **uric acid diathesis.** It is therefore of value with auxiliary treatment in acute or subacute **rheumatic arthritis** with lithæmia.

It will be found indicated in **rheumatic neuralgia,** in **sciatica,** in muscular rheumatism of the chest walls, in achings of the deep muscles of the back, in myalgia, in severe colds, in neuralgia from cold, in rheumatic headache, and in neuralgia of the ovaries; also with women in the intense muscular aching preceding the menses.

Macrotys operates directly upon the reproductive functions. In the female it is valuable as above indicated, in **dysmenorrhœa** of a congestive character always, and in **amenorrhœa.** In these cases **aconite** will aid its action greatly, if the condition be induced by sudden cold; and pulsatilla will do likewise if the conditions be caused by nervous shock or functional irregularity extending over a longer period. Helonias may be given with it, if there be weight and dragging in the lower abdominal region. If leucorrhœa be present with the above indications, it is especially valuable. It is valuable to promote uterine contractions, and in subinvolution. In the aggravating rheumatic pains of parturition, or of the later stages of pregnancy, which deceive by closely simulating those of labor in some ladies of rheumatic diathesis, this is positive and prompt.

In **hysterical conditions** of the menstrual epoch, in hypochrondriasis or melancholia at these times, with congestive dysmenorrhœa with the above indications, it is specific. In puerperal hysteria with great nervous excitement and the above conditions, or with excitable mania or incipient puerperal insanity, it is a most efficient remedy, having a desirable sedatve influence on the nerves of the womb.

The agent is excellent in relieving irregular pains and uterine distress occurring during the course of **pregnancy.** It may be given in small doses, and it thus prepares the patient for parturition and undoubtedly contributes largely to a short, easy and uncomplicated labor. The agent, either as the fluid extract, or from two to five grains of the resinoid, is a most efficient **partus accelerator.** It increases the expulsive pains in a regularly intermittent and normal maner, without spasmodic irritation. While the normal pains are increased, all erratic, rheumatic, irregular and nagging pains are relieved. It promotes uterine involution and hastens normal recovery.

Knox observed the action of this remedy as a **partus preparator** in a hundred and sixty cases. His observations, summed up, are that the remedy has a positive sedative influence upon the parturient woman, quieting reflex irritability, nausea, pruritis and insomnia. It has a positive anti-spasmodic effect, correcting neuralgic cramps, and irregular pains of the first stage of labor, sometimes terminating the labor precipitately, if given in too large doses, often without prodomic symptoms.

It relieves undue irritation of the uterine muscular fiber, relaxes the soft parts of the parturient canal, and thus facilitates labor and diminishes the risks of laceration by controlling undue irritability of the muscular fiber.

It maintains a better contraction of the uterus after delivery, but for this purpose he administers a special dose of thirty minims of the fluid extract after the birth of the fetal head. It was his habit in using this remedy for its preparatory effects, to give fifteen minims, at the time of retiring each night, for six weeks prior to confinement.

In six cases where Dr. Coffin used this remedy for the above purpose, there was **postpartem hemorrhage,** and this caused the doctor to question whether or not the agent had such a relaxing influence, as he was not in the habit of giving either this or any other remedy to anticipate such hemorrhage. Others deny this influence. I have never observed it.

Webster claims to have observed a case of **epilepsy,** attended with **amenorrhœa** which was kept under control with macrotys in conjunction with the bromides, when the bromides alone had previously failed.

The elder Adolphus, treated **ophthalmia** with this remedy, especially when there was severe pain. He gave it in from two to five drop doses, every four hours, day and night. He claimed that in one severe epidemic it did not fail to cure. In the severe cases, he applied it externally, as well as administering it internally. In those cases where there was much nervous irritability, he combined it with gelsemium, which he was confident enhanced its influence.

The agent has been advised in the treatment of **smallpox.** One of the old writers claimed that he used it persistently through an entire epidemic, and the results caused him to entertain the highest confidence in this remedy. He believed he had aborted the disease in many cases, in forty-eight hours. If given with the appearance of the premonitory symptoms, the disease was so abridged, that no eruptions appeared. He usually gave it in the form of a decoction, in conjunction with equal parts of asclepias, and a small quantity of ginger. He gave enough of the remedy, to induce the physiological influence, such as aching in the muscles and pain in the head. The agent should have a further trial in this disease, as others have claimed to obtain results similar to those quoted above, and the influence of the remedy should be confirmed or disproved.

In the male it is valuable in **gonorrhœa,** with aching in the bladder and across the kidneys. We prescribe it oftener than any other agent in these cases. It soothes the nervous irritability and materially assists in relieving the active inflammation. We usually find indications for aconite in the acute cases, or gelsemium where there is irritation with a tendency to spasmodic stricture, or hydrangea where there are sharp, cutting pains in urination; and these properly combined have been our "sure cure" treatment for many years, with mild injections of zinc sulphate, hydrastine, or hydrogen peroxide, all warm, or of warm water alone. It is valuable also in **orchitis** with its own indications. In **spermatorrhœa** with irritability and considerable sexual weakness and plethora, it will cure when other agents fail, if given in half-dram doses after meals.

ARNICA. ARNICA MONTANA.

Synonyms—Leopard's Bane.

CONSTITUENTS—Volatile oil, acrid resin, and a nauseous bitter substance, resembling cytisin, with gallic acid. A small quantity of an alkaloid called arnicin.

PREPARATIONS—The tincture of arnica is a common preparation. It is in common use for external application. It may be given internally in doses of from one to ten minims. Specific arnica, dose from one-half to five minims.

Physiological Action—The whole plant has a disagreeable, strong and irritating odor when fresh. The taste is bitter, acrid and permanent. In sufficient dose it causes vomiting and catharsis. It is also diuretic, diaphoretic and emmenagogue. In poisonous doses, it causes a burning sensation in the stomach, intense headache, and violent nervous disturbance, with marked abdominal pain. The pulse is reduced and often fails. There may be convulsions of a bilateral character, and ultimate death.

Specific Symptomatology—The agent is specific to bruised, sore, lacerated, contused, muscular structure. It may be applied diluted externally and should be used internally for the same purpose.

These symptoms may be present from disease, deep muscular soreness—tenderness on pressure in deep muscular structures. In advanced disease, where these symptoms are present with marked general enfeeblement, im-

pairment of innervation, with weak circulation, with a tendency towards permanent prostration, the remedy is specifically indicated.

When there is muscular pain and soreness, which is increased by muscular movement, or soreness in the back, as if from strain, the remedy is useful.

Where there is inflammation of any organ, with general diffused muscular soreness, the agent in small doses is indicated. Where there is inflammation of any organ from traumatic causes—severe injury to the parts, this remedy must be given.

In the **muscular soreness, pain,** and general physical discomfort that follows **confinement,** especially after **difficult labor,** this agent used both externally and internally will produce immediate benefits. Internally from fifteen to thirty drops in four ounces of water, a teaspoonful every hour will quickly relieve the muscular soreness or extreme lameness from the severe protracted muscular strain. Externally one part to five of warm water may be applied on compresses over the lame parts, and as soon as **soreness of the breasts** occur it may be applied over the breasts for a time.

Therapy—In small doses, arnica causes increased perspiration, increased secretion of urine, and an accelerated pulse. Its tonic influence upon the nervous system, and directly upon the heart and circulatory organs, make it a useful remedy indeed. In **adynamic fevers,** we have so few remedies possessing sedative properties, which do not depress, that each should be studied in this line, and arnica is especially available. It must be given in small doses frequently repeated, in the line of its indications. The indications for bryonia, rhus tox, or belladonna, or perhaps cactus, may be present at the same time.

Arnica is selected for internal use when there has been a **severe injury,** with fever, or in **surgical fever,** where there has been **shock** and general prostration. In all cases after severe cutting operations, where there has been destruction of muscular tissue, soreness follows and pain, which is ameliorated to an excellent advantage by the internal use of small doses of arnica.

In **low fevers,** where the nervous system is greatly at fault, it not only controls the temperature, but increases the nerve power, overcoming depression and debility, especially in severe, protracted fevers where the exhaustion results from loss of nerve force and where there is marked depression; if there be excessive **night sweat, colloquative diarrhea, incontinence** of urine or feces, **feeble respiratory** power where difficulty of breathing keeps the patient awake. It may be given in conjunction with other specifically indicated remedies to excellent advantage, where there is **low muttering delirium,** where the tongue is dry and where the mouth and throat seem to be clogged with foul, stringy mucus.

When there are **typhoid conditions** present, with inflammation of the respiratory organs, the influence of this agent is much like phosphorous, stimulating the respiration and encouraging the oxygen carrying power of the blood. Many of the milder forms of acute, or **chronic paralysis,** are benefited by this remedy.

It is useful in those forms where mania or delirium tremens are present.

In any case where it is indicated externally, it may be given internally at the same time. Its influence is greatly enhanced.

Soreness in the small of the back, lame back, general weakness of the muscles of the back, with soreness prevailing, sickening backache in the region of the kidneys, are all benefited by arnica. It not only relieves the soreness and the bruised conditions, when given internally, but quickly overcomes the ecchymosis.

As an external application, to **cuts, bruises, lacerations,** and sores, arnica has long been a popular domestic remedy. It is used in full strength, but the best results are not so attained. It is more serviceable when diluted with from one to six parts of warm water. It is a stimulant to the skin, promoting absorption of nutritive material. It undoubtedly assists in carrying off the broken down tissue, which results from the traumatism, and promotes rapid repair. I have observed its influence to be greatly facilitated by combining it with a nutritional substance. In cases where the **muscles** beneath the skin were severely **lacerated,** torn and bruised, I have applied one part of arnica with five parts of warm fresh sweet milk, keeping the application warm, covered with a protective dressing, and renewed every two or three hours. It is incredible how rapidly the restoration will take place under these circumstances.

In debilitated conditions, where there are **old sores** of long standing or **cold abscesses,** this agent may be applied in conjunction with bovinine and will accomplish excellent results.

It is desirable that the agent should be studied more thoroughly, in the line of its internal use, in surgical fevers with shock, and in conjunction with external applications after general bruising and laceration, and in extreme cases of **adynamia.**

When there are circumscribed sore spots in the muscular structures of the body—**hyperesthetic areas**—without apparent cause, this agent is indicated.

PULSATILLA. ANEMONE PULSATILLA.

Synonyms—Pasque-flower; meadow-anemone; wind flower.

PREPARATIONS—Extractum Pulsatillæ Fluidum, Fluid Extract of Pulsatilla. Dose, from one-half to two minims. Precipitates upon addition to water.

Extractum Pulsatillæ, Extract of Pulsatilla. Dose, one-sixth of a grain.

Tinctura Pulsatillæ, Tincture of Pulsatilla. Dose, from five to thirty minims.

Specific Pulsatillæ, Specific Pulsatilla. Dose, from five to twenty drops in four ounces of water. Teaspoonful every two hours.

Anemonin. A crystallizable camphoraceous body; volatile, easily converted in the presence of alkalies into anemonic acid. Dose, from one-twentieth to one-fourth of a grain.

The medicinal properties must be extracted from the fresh herb, as the volatile character of anemonin permits of the rapid dissipation of these properties on drying.

Physiological Action—The agent has a direct influence upon the brain and spinal cord. In toxic doses it produces mental hebetude, dilated pupils, coma, and in extreme cases, convulsions. It lessens general sensibility.

It paralyzes to a mild degree both sensation and motion. It increases, in proper doses, the cerebral functions and imparts tone to the sympathetic system.

In toxic doses it is a heart depressant; it lowers arterial tension, reduces the pulse rate and temperature.

It exercises an influence upon the heart similar to that of cactus, increasing its power, improving the strength and rate of the pulse and slowing the rapid and feeble pulse of nervous prostration.

The influence of full doses of pulsatilla, taken into the stomach and intestinal canal, is that of an irritant. In the mouth it acts like aconite or xanthoxy-

lum, producing tingling, burning and subsequent numbness. It produces a sensation of rawness, and is followed by acid eructations and unpleasant taste. It produces tightness and constriction of the chest, with congestion, chilliness and great weakness. The agent is seldom given in sufficient doses to produce the physiological effects. It operates much more satisfactorily in doses too small to produce such action. It has long been popular with the homœopathists in minute doses.

In studying its medicinal influence on the circulation, pulsatilla is said to act in much the same manner as aconite during fevers, where there are high nervous manifestations. It equalizes the circulation somewhat like belladonna it is thought. Where catarrhal disorders are present, subacute in character with congestion and a free discharge of thick bland, yellow or yellowish green mucous, it seems to act directly, except in chronic catarrhal conditions. This remedy will act satisfactorily only when the precise indications for which it should be prescribed, are present.

Specific Symptomatology—Homeopathic physicians declare fearfulness as an indication, anticipation and dread of calamity, fear of trouble or death; in male patients suffering from sexual excesses, with spermatorrhœa, threatened impotency, prostatorrhœa, with fear of approaching imbecility. We find it indicated in **amenorrhœa,** with mental perturbation, great apprehension of trouble. **Spermatorrhœa,** with fear of dire results. The remedy is especially efficacious when existing disorders of the reproductive organs are a cause of extreme anxiety.

In addition to the well known indication, I might say that it is of value in disorders of the reproductive organs which depend upon defective innervation, and which are usually accompanied with manifestations of hysteria or melancholia, or which depend upon sexual derangements and menstrual disorders which are accompanied with loss of strength, chilliness, more or less headache, and gastric derangements, such as nausea, eructation of sour water and other nervous manifestations.

Its best influence is exercised in women of blond temperament, particularly of lax muscular fiber, and of mild and yielding disposition, and smaller doses with these patients will produce better results than larger doses with other patients. Some writers claim that it may be given during the progress of inflammation of the mucous membranes, prescribed in much the same manner as aconite would be prescribed, or as cactus is given.

It acts best in the catarrhal stage of inflammation rather than in the initial stage, and in this it differs somewhat from aconite.

Therapy—Its influence is especially directed to that portion of the sympathetic nervous system influencing the **reproductive organs.** It increases the tone and functional power of these organs, and overcomes irregular, **imperfect** or deficient action.

It is prescribed in **uterine disorders** which induce melancholia and hysteria.

It has an apparent antispasmodic or nerve-soothing influence, which renders it valuable in **hysteria** and general nervous irritation with convulsive phenomena, in the absence of acute inflammation, blood determination or fever. A few physicians laud it highly in **hysterical convulsions** and in convulsive conditions due to **uterine disorders.**

In **general nervousness** due to chronic uterine disorder, with or without hysteria, with despondency and nervous irritation, pulsatilla is an excellent remedy. It may be given in doses of one drop, frequently repeated. In deficient, suppressed and **irregular menstruation,** with the above symptoms, it is of rare value. It will quickly promote a normal and regular flow.

It is an excellent agent in small, frequent doses when the mental conditions above named are present **during pregnancy,** with a general relaxed and atonic

condition. Its influence in these cases is enhanced by combination or alternation with macrotys. It certainly improves the general condition and conduces to a normal and easy labor.

It is needed during the pregnant state to correct hysterical manifestations and urinary irregularities. It acts better in the catarrhal stage of inflammation rather, than in the initial stage.

In **nervous exhaustion,** with feeble pulse and deficient capillary circulation, cold extremities and a generally relaxed physicial condition, it will serve an excellent purpose combined with other nerve tonics, or in conjunction with the directly indicated remedies.

Dr. Strauss adds two drams to two ounces of water, and gives a teaspoonful every hour in his irritable cases, especially in low forms of headache, light and dull; restlessness, patient rolling and tossing until worn out; a rambling mind with an occipital headache; mild ovaritis; mild neuralgia with irritation of the brain; dragging headache frequently occurring in women.

Pulsatilla is a remedy for **nervous headaches,** especially if of the anæmic variety, characterized by pallor of the countenance—the headaches of the menstrual epoch, of pregnancy, and also those of gastric origin with this specific character. It relieves the constipation, enuresis and dysuria of hysteria and pregnancy. It is excellent for the **urinary irregularities** of the pregnant condition, with ammoniacal urine, catarrh, pain, tenesmus, burning or sharp shooting pains. Its influence in this is facilitated by hydrangea, gelsemium or the benzoate or salicylate of lithium.

Where there are menstrual disorders of any kind, if there be loss of strength, chilliness, headache, gastric derangements, sour stomach, and melancholia, pulsatilla is directly indicated.

Leucorrheal discharges, attended with pain in the loins, weariness, **depression of spirits,** loss of appetite and general derangement of the nervous system, are also satisfactorily relieved by pulsatilla taken internally in five-drop doses of the tincture three times a day, and continued for a few weeks.

Pulsatilla has been frequently suggested in the treatment of **phlebitis.** Its indications should be looked for. Dr. Halbert of Nashville gives pulsatilla for the **eye complications** of **diabetes.** He finds it a reliable remedy although he does not explain its action.

Our observers in many cases combine pulsatilla with heart remedies and nux for heart trouble, and nervous weakness, especially if there be despondency, or with the alkaline salts in acid stomach. The combinations work very good results if correctly made.

Homeopathists advise pulsatilla in catarrh of the stomach where the patient suffers most when the food is taken, or where the most benefit is derived from taking the food cold. Dr. Huffman prescribed it for the mental symptoms in a patient suffering from **chronic catarrh** of the **stomach.** The tongue was heavily coated. It was dark-brown in the center. The tip and edges were red; there was fullness and pain always after eating. Sometimes there was vomiting of the meals. There was a large quantity of mucus in the vomit. This was followed by a burning sensation from an excess of acids.

This case was not permanently benefited by the ordinary treatment. The administration of pulsatilla and echinacea before meals finally completed the cure. Pulsatilla was given in large doses, from eight to twenty minims.

Another writer cured the **excessive acidity** of these cases with five-drop doses of passiflora, every two hours.

It is given in **bronchial** and **pulmonary** irritation and in **bronchial asthma.**

It is used in **eruptive fevers,** and in those cases of measles in which the eruption produces excessive irritation of the post-nasal cavity, throat and bronchial tubes.

It has been lauded in **rheumatism,** but any specific influence in this condition is not ascribed to it.

In **gonorrheal epididymitis** or in gonorrheal orchitis, the agent may be given with excellent results, especially if there be gleet and stricture. Small and frequent doses are better than large infrequent doses. It speedily relieves the pain and nervous excitability. It is advised for internal use for frost bites.

HYPERICUM. HYPERICUM PERFORATUM.

Synonyms—St. Johns Wort, Millepertuis.

CONSTITUENTS—It contains a volatile oil, red coloring principle, pectin and a resin.

PREPARATIONS—The powder. Dose from one to five grains. The tincture. Dose from one-half to ten minims. Fluid extract. Dose, from one to five minims.

Specific Symptomatology—Muscular bruises, deep soreness, painful parts. A sensation of throbbing in the body, without fever. Burning pain, or deep soreness in the spine upon pressure, spinal irritation, circumscribed areas of intense soreness over the spinal cord or ganglia. Concussion, shock or injury to the spine, lacerated or punctured wounds in any location, accompanied with great pain.

Therapy—This agent by Homeopathic physicians is considered specifically adapted to irritation, soreness, or chronic disease accompanied with **tenderness** of the **spinal column.** It is indicated when symptoms of that disease or of general spinal tenderness are present. If accompanied with fever, which is seldom the case, other indicated remedies should be prescribed. For traumatism of the spinal column, or nerve centers, Homeopathists use it externally and internally, in traumatic conditions of the spinal cord, and where there is shock or where there are contusions or lacerations without shock. They believe that it will prevent **convulsions** from spinal injury, and will prevent **tetanus** from punctured wounds, relieving the pain resulting from injury.

Hypericum in doses of two drops every four hours is suggested as of much value in the treatment of piles. It may induce headache, or a burning pain in the lumbar region. It sometimes induces diarrhea, but these symptoms occurring, the remedy may be reduced in quantity or discontinued for a short time, and then resumed.

Used as a fomentation or ointment it is applied to **tumors, caked breasts, enlarged glands, ecchymosis, bruises, swellings** and painful ulcers.

USTILAGO. USTILAGO MAIDIS.

Synonym—Corn Ergot.

PREPARATIONS—Fluid Extract Corn Ergot, miscible with water. Dose, ten to thirty minims.

Physiological Action—The ergot of maize or common Indian corn is similar in its properties and in its physiological action upon the central nervous system and upon the capillary circulation of these organs, to those of the better known ergot of rye.

It is, however, not so irritating in its influence, for, while possessing power, it works in a smooth, even and pleasant, but positive manner. It produces uterine contractions of a perfectly regular, intermittent and safe character, thus possessing a great advantage over the rye ergot.

Therapy—It is a useful remedy in uterine inertia as it does not exercise the irritating influence of the ergot of rye. Its mild influence prevents any pos-

sible injury to the child, and it possesses a very small percentage of the oil of ergot, which is supposed to poison the infant. It conduces to **normal involution** and tonic and permanent subsequent contractions, with no increase, but rather decrease, of labor pains. It is also an efficient remedy in **post-partum hemorrhage.**

The writer has used it to most excellent advantage in metrorrhagia, and especially in the **hemorrhage** from **cancer** of the **uterus,** holding the entire condition in check for a time relieving the pain.

In the conditions of **chronic uterine hemorrhage** or other disorder in which the ergot of rye is indicated for continued use, this agent will serve all the purposes with few of the dangers of the former remedy.

MISTLETOE. VISCUM ALBUM.

Synonym—Viscum flaviscens.

PREPARATIONS—Tinctura Visci Albi, Tincture of Mistletoe. Dose, from five to sixty minims. Extractum Visci Albi Fluidum, Fluid Extract of Mistletoe. Dose, from five to forty minims. Specific Mistletoe. Dose, from one to ten minims.

Administration—The remedy has failed because the agent used was inert, dried and, perhaps, old. The preparations must be made from the green plant, and the dose must be sufficiently large and frequently repeated. In some cases it may be necessary to repeat the dose every fifteen minutes.

Physiological Action—Several cases of severe poisoning from eating the leaves and berries are on record. It produces vomiting, prostration, coma, contraction of the pupil, with muscular spasm. In other cases it produces tenesmus, bloody stools, convulsions, emesis, catharsis and death.

In its influence both upon the cerebral circulation and upon the womb and reproductive functions it acts similarly to ergot.

In 1880 Dr. Brodnax of Louisiana experimented with this remedy to determine its action on the final pains in labor in animals, especially with cows. The results were so satisfactory that he finally used it instead of ergot almost exclusively.

It has long been known to exercise oxytocic powers. Brodnax believes that it may be given at almost any stage of the labor without harm.

Specific Symptomatology—It is indicated where there is a flow of blood to the brain, and frequent headache and flushing of the face. In hysteria, epilepsy and other nervous diseases; in paroxysms of tearing and rending pains, rheumatic and neuralgic, it is a pain subduer of much power.

With the above conditions it is exceedingly valuable in diseases of women, in **amenorrhœa, dysmenorrhœa** and as an **oxytocic.** Its influence is, perhaps, more marked in **labor** than when prescribed for any other condition.

Therapy—In its action on the **womb** it is in some particulars superior to ergot. It is a drug capable of producing **intermittent uterine action,** as distinguished from the tonic contractions caused by some other oxytocic medicines.

It exerts its full force on the long muscles of the uterus, acting on the fundus mainly, while the cervix remains soft and uncontracted.

It may be given early in labor to give tone to the contractions; does not act spasmodically, but steadily and for a long time; it is not followed by any untoward effect; does not, like ergot, produce hour-glass contractions; has a tendency to keep the womb contracted after the expulsion of the placenta and

attachments; does not act on the circular muscles of the womb; is a safe oxytocic, as the effects can be continued for hours with small doses.

Tascher, in 1892, reported the results of his observations of the action of this agent upon the **heart.** He became convinced that it was an agent of undoubted merit. He has used the fluid extract in doses of from twenty to thirty minims as a remedy for hypertrophy of the heart, with valvular insufficiency, dropsy of the extremities, small weak pulse, dyspnœa, and inability of the patient to rest in a reclining position, and witnessed astonishing relief from this agent when others failed. Under its use in the above named conditions the pulse became full, strong and regular, the cardiac dyspnœa was arrested, and the patient able to obtain rest in a reclining position. In some cases, when given in large doses, it produced marked diaphoresis, increased flow of the urine and serous discharges from the bowels, results desirable in all cases where **dropsy** was associated with the disease, and a combination of therapeutic action not readily obtained in any other cardiac tonic.

Its diaphoretic and cathartic action cannot be relied upon in every case, but as a cardiac tonic it is most efficient.

A recent writer has used this remedy in the treatment of **chorea.** He has treated several cases of long standing and very persistent. He gives five drops of the fluid extract of this remedy every two hours.

In the treatment of several cases of spasm in children, he has used this same remedy as an antispasmodic, and has obtained very good results.

In the latter stages of **typhoid fever,** when the heart's action is weak, rapid and irregular, with a tendency to **collapse,** given in conjunction with strychnia, the condition of the patient rapidly improves.

This remedy is recommended for the **reduction of blood pressure.** A high authority has suggested that one grain of the aqueous extract of this substance be added to ten grains of distilled water and that combined with two ounces of simple syrup, from one to two teaspoonfuls can be given at a dose as indicated in that particular patient. This gives one-fifth of a grain of the extract at a dose, especially recommended where there is **arteriosclerosis.**

ANTHEMIS — ANTHEMIS NOBILIS.

Synonym—Chamomile.

CONSTITUENTS—Volatile oil, Anthemene, Antheminic acid, tannin, resin, wax.

PREPARATIONS—Extractum Anthemidis Fluidum, Fluid Extract of Anthemis. Dose, one-half to one dram.

Administration—This agent seems to exercise but little influence in physiological doses. A few drops of the specific anthemis or the German tincture in a glass of water in teaspoonful doses every few minutes or every hour will accomplish good results when directly indicated.

Specific Symptomatology—Severe pain in infants, from simple causes, extreme susceptibility to pain, general hyperæsthesia, subjective, acute, transient, sharp pains.

The following indications were given in The Medical Century, and can be relied upon:

There is perpetual hyperesthesia; there is starting and jumping. The child is cross, wants to be carried; stool apt to be soft and charged with sulphuretted hydrogen; if there be diarrhea accompanying, the passages will look like the white of an egg mixed with greens. The gums are liable to be tender. Tooker says, "the remedy of all remedies and the one most often called for during the teething period is chamomile. This remedy is to children what pulsatilla is to women, a veritable vade mecum."

Chamomile, acts mildly on the nervous system to subdue irritability and on the gastro-intestinal tract to relieve irritation there. It is adapted to the restless, peevish, irritable, discontented, and impatient infant who insists on being carried in arms constantly. With these there is usually hepatic tenderness with watery or greenish, slimy discharges, yellowish and white lumps of undigested curds, the fecal excordiating the external parts. There is often difficulty and pain in urination, and bloating of the abdomen with flatulence. It prevents convulsions by relieving the irritation, but has not sufficient antispasmodic effect to control the convulsions. It is adapted to irritation of the nervous system, and not atony.

The many conditions with the adult woman it is beneficial, especially to those in the **latter months of pregnancy** where there are present false pains, nervous twitching, reflex cough, explosion of irascibility; where there is fretfulness, peevishness, impatience and discontent; where there is **morbid sensitiveness** to pain; where there are sudden fits of temper during **menstruation** with muscular twitchings.

Therapy—This agent in hot infusion is emetic, a stimulating diaphoretic, and it promotes the **menstrual flow** when suppressed from cold. It is of little importance, in the writer's opinion, as we have so many other agents with wider and more positive action. In suppression of the secretions from **acute cold** it is a useful remedy. If drank during an alcohol sweat or Turkish bath, its influence is greatly increased. In acute **rheumatism** it will prove of service.

It is a mild stomachic and general tonic in half-ounce doses of the cold infusion, and it seems to mildly stimulate digestion.

In acute **colic** in infants, with nervous excitability and tendency to spasm, a few drops may be dropped into a half glass of water and a teaspoonful given every ten minutes with immediate relief. In flatulent colic and in colic accompanying diarrhœa, the discharges of a greenish, feculent character with reflex nervous irritation or increased nervous susceptibility, it is a specific remedy.

In constant worry and fretfulness of very young infants, without apparent cause, it is a soothing remedy of much value. It is excellent during the teething period to allay nervous irritation and soothe pain. In neuralgic pains in children it is useful.

In **hysterical** females its therapeutic influence is similar to that of pulsatilla. It soothes general irritation and quiets imaginary pains, especially if occurring at the menstrual epoch.

It is useful in dysmenorrhœa and in mild cases of ovarian neuralgia. In amenorrhœa with intermittent pains, and sensations of appearing menstrual flow, it is useful. It may be given for the erratic pains and reflex nerve irritations of the last months of pregnancy, the reflex cough and unbearable muscular cramps and twitchings.

MATRICARIA. MATRICARIA CHAMOMILLA.

Synonym—German Chamomile.

While this remedy very closely resembles Anthemis Nobilis or Roman chamomile, there are several distinguishing features in their actions. At the same time these are not sharp. All that has been said of Anthemis Nobilis can be said of this preparation.

Therapy—Matricaria is conspicuously a child's remedy, but not distinctly so. A few drops in half of a glass of water, given every few minutes in dram doses, will quiet extreme restlessness and irritability. The general soothing effect is satisfactory. It especially controls certain forms of colic.

Peevish children and those who are continuously fretting, or crying out and who demand constant care are benefited by this remedy. It influences the membranes of the gastro-intestinal tract. It is advisable when the patient has contracted a cold, or when there is general chilliness; when the symptoms of la grippe in children are present, especially where there is disturbed condition of the digestion, inducing diarrhœa, sour eructations or acid vomiting and colicky pains.

The Homeopathists advise it where there are greenish flocculent particles in the loose watery feces of a patient with diarrhœa. The movements are slimy or yellowish, with an offensive odor, and are acrid, and produce excoriation of the external parts. With these patients there are often muscular twitchings and an inclination to spasm. The remedy has a sedative influence in these, but must not always be depended upon for its active antispasmodic effect. It may be given during dentition, and being continued the irritability can be quite satisfactorily controlled. It is often necessary to give more active anodyne remedies.

DIVISION II.

Stimulants and Excitants.

CHAPTER I.

Special Nerve Stimulants.

NUX VOMICA.	STRYCHNINE PHOSPHATE.	IGNATIA.
STRYCHNINE.	STRYCHNINE ARSENATE.	XANTHOXYLUM.
STRYCHNINE SULPHATE.	CAPSICUM.	SUMBUL.

NUX VOMICA. STRYCHNOS NUX VOMICA.

Synonym—Vomit nut.

CONSTITUENTS—Strychnine, brucine united with igasuric acid and loganin.

PREPARATIONS—Extractum Nucis Vomicæ, Extract of Nux Vomica. Dose, from one-eighth to one grain.

Tinctura Nucis Vomicæ. Dose, from two to fifteen minims.

Extractum Nucis Vomicæ Fluidum, Fluid Extract of Nux Vomica. Dose, from one to five minims.

Specific Medicine Nux Vomica. Dose, from one-tenth to two minims.

Physiological Action—Nux Vomica and its alkaloid, strychnine, act on the spinal cord and the medulla oblongata, a non-poisonous dose stimulating, and a toxic dose paralyzing them. There is contraction of the arterioles, while the heart is stimulated by a moderate dose.

A poisonous dose causes spasm of the muscles of the chest and prevents the respiratory act, with resulting asphyxia. According to the quantity taken, there may be weariness, stiffness in the muscles, soreness and heaviness in the limbs, stiffness of joints and the muscles of the chest and of the lower jaw. A larger dose causes violent tetanic convulsions, with brief intermissions, acute sensibility, and death may result in five minutes and usually within six hours. There is contraction of the muscles, resembling trismus, with constriction in the throat, headache, dizziness, with symptoms of asphyxia. There is a leaden color of the skin; breathing is laborious; the pulse is rapid and fluttering, pupils dilated, while the face has a staring expression, with an appearance of fright.

The spasms grow less violent as the system becomes exhausted. During the intermission in the spasms the slightest stimulus will renew them. In some cases there is pain—a neuralgia of the spinal nerves—when an attack is accompanied with shrieks of pain, or with dizziness, insensibility and convulsions. Small doses in the corpulent may cause slight creeping sensations in the skin like electric shocks, with involuntary contraction of muscles, with headache, a disagreeable sensation in the head and dizziness. The influence of strychnine upon the great sympathetic is shown in many ways. There is an elevation of arterial blood pressure, an increased vigor to the heart's action, increased action of the sudoriparous glands, with dilatation of the pupils.

In some particulars it resembles the action of electricity in its effect upon the nervous system. There is often a sensation of tingling, a temporary stimulation, a sensation of increased nerve force, a renewed energy imparted to both voluntary and involuntary muscles.

Specific Symptomatology—The indications for nux vomica are sallow skin, a sallow circle around the mouth, yellowness of the conjunctivæ. A thick yel-

low, pasty coat on the tongue, fullness, soreness or pain in the region of the liver, suggest the use of **nux vomica** in medicinal doses. It is also suggested by colic due to atonicity characterized by abdominal fullness, *sharp pain at the umbilicus* and a general torpor of the system. These symptoms are more quickly relieved by small doses of specific nux vomica than by powerful anodynes, and the relief by this agent is a cure. The indications are directly in the line of its physiological influence in small doses, especially when there is an impairment of tone of the gastro-intestinal apparatus, a general or local atonicity of the digestive organs or organs concerned in these processes.

Therapy—This condition is sometimes induced by reflex influence, apparent in the persistent **vomiting** of **pregnancy,** the vomiting or **regurgitation** of **food** present in hysteria, and in the **vomiting** of **phthisis pulmonalis,** especially occurring in these latter cases after coughing.

Dr. Perry advises nux vomica, ten drops in four ounces of port wine, giving a teaspoonful every three or four hours when sea-sickness threatens, or when it may be anticipated. He believes it is a very reliable remedy. A small quantity of the mixture may be taken on the tongue every few minutes, sometimes with better results.

The same atonic condition is present with **infantile diarrhœa** of hot weather, in **cholera infantum,** in **cholera morbus** and in **cholera.** In the vomiting of these conditions small doses of nux vomica frequently repeated are specific.

In atonic congestion of the spleen or of the liver, existing from malarial influences, with whatever disease manifested, this agent is directly indicated.

It stimulates the digestion and increases the appetite. It is one of the very best, if indeed it is not the best, of our restorative tonics. In all debilitated conditions, in convalescence from exhausting disease and protracted fevers, wherever there has been depression or exhaustion of nerve force, it is the remedy.

In **chronic stomach disorder,** with deficient digestive power and general malnutrition, this agent arouses the nervous system and increases the functional activity of the digestive and assimilative apparatus more satisfactorily than any other known agent.

Cases of **vomiting** in **pregnancy** have been controlled by frequently repeated doses of the tincture of nux vomica, and the weakness of the stomach in **dipsomaniacs** with vomiting and anorexia are controlled with the agent, which is often rendered more efficient by combination with capsicum.

Strychnine.

Description—This most important of the alkaloids of nux vomica occurs in the form of colorless prismatic crystals, or as a white crystalline powder. It is odorless, but intensely bitter. It can be tasted in 750,000 parts of water. It is permanent in the air, very sparingly soluble in water, soluble in one hundred and ten parts of alcohol and in seven parts of chloroform. Its salts, named below, are in more common use than the uncombined alkaloid, largely because of its insolubility, but it may be given in doses of from one-eightieth to the one-twentieth of a grain. The more soluble salts are in every way preferable.

Strychnine Sulphate. Dose, from 1-120 to 1-15 of a grain.
Strychnine Nitrate. Dose, from 1-120 to 1-20 of a grain.
Strychnine Phosphate. Dose, 1-180 to 1-80 of a grain.
Strychnine Arseniate. Dose 1-200 to 1-50 of a grain.

Specific Symptomatology—In **acute heart failure** from any prostrating cause, **strychnine** is given hypodermically or in conjunction with digitalis. In the prostration following any inflammatory disease of a severe and protracted character this combination is specific, but it seems to be particularly beneficial in the prostration of beginning convalescence **after pneumonia,** especially if there has been abscess or other exhausting complications. Often in these cases there is a tendency to sub-normal temperature and slow pulse; when this is the case there are but few remedies that will act as strychnine, and none will excel it.

Therapy—In **impotence** due to exhaustion, to relaxation or atony of the erectile tissue of the sexual apparatus, strychnine in small doses persistently used is an advantageous remedy. The extract of nux vomica may be given, but will not work as promptly as the alkaloid. In the **incontinence of urine** of the feeble and aged, and in nocturnal enuresis in childhood from atonicity without local irritation, minute doses of strychnia sulphate will often cure after repeated failure with other remedies. These facts are especially true in plethoric and relaxed cases and in inactive patients.

In uterine inertia from exhaustion or lack of nerve force, this agent excels all others. It increases nerve force, restores the normal contractility of the uterine muscular fibrillæ, and increases the power and number of contractions in a normal manner. It also anticipates and prevents **post-partum hemorrhage.** In cases where hemorrhage has previously occurred it should be given in advance and for a short time subsequently to the birth of the child.

The influence of the sulphate or nitrate of strychnia is that of a spinal stimulant, pure and simple, with the power of augmenting nerve force to a most desirable extent by increasing the nutrition of the nervous system entire.

Its effects are not alone upon the motor nervous system and voluntary muscles, but upon the sympathetic nervous system as well. For this influence it is best administered hypodermically in doses of from the one one-hundredth to the one-twentieth of a grain.

In **paralysis** of the **aged,** without active inflammation, it is of value, especially if injected deeply into the paralyzed muscles. Wherever paralysis occurs, without inflammatory action, it may be used if there be no structural changes in the nerve centers.

In the early stage of paralysis where rigidity or muscular spasm is present the agent is contraindicated. In fact, it is not to be administered in paralysis, except where absence of central irritation is evidenced by complete relaxation, flaccidity and perhaps tumidity. The more perfect the relaxation the more satisfactory the action of the agent. In these cases the agent should be injected directly into the paralyzed muscles.

In lead poisoning, with wrist drop and other evidence of suspension of nerve influence, with or without lead colic and constipation, this agent exercises a direct influence.

The influence of strychnine to relieve, modify or cure **alcoholism** is now almost universally acknowledged. It has been but a short time that dipsomania has been considered, as it now is, to be an actual nervous disease of the central nervous system with concomitant phenomena—a long train of disagreeable or dangerous symptoms. But since this fact has been recognized, there has been a universal effort made to discover the most satisfactory method of cure.

In 1891 Yarochewski reported a series of experiments on dogs, conducted to determine the antagonistic power of strychnia over alcohol. He gave them alcohol of a strength of 42 to 65 per cent and produced a staggering gait by the injection of 60 grams and complete intoxication with 90 grams. The alcohol was given for a week and produced considerable emaciation, followed by death. If, however, a hypodermic injection of two milligrams of strychnine was

administered with each dose of 30 grams of alcohol, the latter could be run up to 180 grams without the development of intoxication or symptoms of strychnine poisoning.

On the ground of these experiments the author formulated the following conclusions: Strychnine suppresses the toxic action of alcohol; it enables persons to ingest large quantities of alcohol for a long time without appreciable injurious effects on the organs. The increased doses of alcohol which may be given with impunity, if associated with strychnine, have a limit—i. e., as soon as the quantity of strychnine necessary to counteract the effects of the alcohol commences to give rise to toxic symptoms. Strychnine is applicable as an antidote in all forms of alcoholism.

Portugalow, of Samaria, reported in 1891 that he cured 455 cases of **dipsomania** with hypodermic injections of strychnine nitrate. He knew of reliable and specific remedies for two affections only: strychnine for the various forms of alcoholism and quinine for malarial fever.

He prescribed a solution of the nitrate, two grains to the ounce of distilled water, for subcutaneous injection. He gave one or two injections daily of from four to eight minims of the solution. Usually ten to sixteen injections sufficed for a complete cure. This agent has now become of first importance in the cure of this condition.

Baines investigated the action of the nitrate of strychnine in **surgical shock.** In thirty cases he injected the remedy hypodermically in one-thirtieth grain doses for from two to six days previous to the operation, where its general influence was not contraindicated by irritation of the nerve centers. On the day preceding the operation it was injected every three hours. It was injected before beginning the operation every two hours, and for two or three days afterward. In some of the cases he claimed *an entire absence of shock.* In all others the shock was very mild, and in no case was it severe, and convalescence was short and satisfactory. In all cases there was no collapse from the anæsthesia, and but little reduction of the force and strength of the heart and no respiratory failure.

Hare advises one-twentieth of a grain of the sulphate of strychnia at the time of the operation, just preceding and subsequently every half hour, treating the conditions induced by the agent symptomatically. We believe it to be better to begin earlier, in order to have the system previously braced and not be obliged to administer the agent to toxicity just at the time.

It is a direct antidote to **chloral** and is used to great advantage in the earlier stages of **opium poisoning,** poisoning or asphyxia from gas inhalation and chloroform narcosis, and as a restorative to those apparently drowned.

Antidotes—In the treatment of strychnine poisoning, the stomach should be immediately irrigated. The spasms should be met promptly with inhalations of chloroform or amyl nitrate. A strong infusion of white oak bark or tannic acid in water should be given, or the substances can be used in the irrigating fluid. After the stomach is thoroughly evacuated, chloral in doses of from fifteen to thirty grains, with as much sodium bromide, may be given, or passiflora in from two to four dram doses, or large doses of the fluid extract of gelsemium. We have assurance now that full hypodermic doses, thirty to sixty minims of subculoid lobelia, repeated as needed, will prove to be a most dependable antidote for the action of this agent.

If the patient cannot swallow, the passiflora or chloral in solution may be injected into the rectum, or veratrum may be injected hypodermically in doses of from ten to fifteen minims. If the spasms increase in severity and in frequency, the result will be fatal. If they decrease in severity, are of shorter duration and occur after increasing intervals, the prognosis is hopeful.

Strychnine Phosphate.

Therapy—The phosphate of strychnine given in doses of from one-one-hundred and sixtieth to the one-eightieth of a grain combines the stimulating properties of the strychnine with the nerve building properties of the phosphorus. It is a combination that should be of much value in conditions where it is desired to retain the high point gained by a nerve stimulant, and make the condition thus gained permanent. The use of phosphorus and the phosphates during pregnancy, where anæmia is present or where the nervous system is seriously drawn upon by the nutrition of the fœtus, has been observed by many. The use of the phosphate of strychnine in doses of one one-hundredth of a grain is commented upon by Dorset. (Annals of Gynecology, Nov., 1897.)

He says a good appetite and a good assimilation are obtained in the general weakness and debility of the anæmic; constipation is relieved, and, in short, the patient is built up and placed in a good condition to pass through the ordeal of labor. It improves the appetite and digestion, overcomes despondency, relieves constipation and materially builds the patient up, placing her in an excellent condition to pass through the labor with full strength. The uterus contracts promptly after the second and third stages, and the use of ergot is entirely dispensed with. The often observed chilliness or rigors which, in the majority of cases immediately follow labor, have been noticed in but few cases. These rigors, little account of which can be found in text-books, are nothing more or less than surgical shock. This is obviated by the prophylactic—strychnine. He believes that as phosphorus and strychnine are remedies used in the treatment of rachitis with good results they are indicated during the gestation of the rachitic fœtus.

A wide field of action is open to this compound, as prostration from real deficiency of the nerve elements, prominent among which is phosphorus, is a common condition among very many, especially among brain workers. The strychnia lifts the forces up to the normal point, and the phosphorus permanently holds them there by its restorative influence.

Strychnine Arsenate.

Administration—The dose is from the 1-200 to 1-80 of a grain, usually administered in pill form.

In granules of the 1-120 of a grain the agent is convenient of administration and prompt in its action.

Specific Symptomatology—Hale says arsenic acts upon the glandular system and fluids of the body, while strychnine acts upon the nervous system. He advises it where the nutritive and glandular systems are involved to any great extent, with implication of the nervous system at the same time. This is found in paresis or mild forms of paralysis with œdemic tissues, sodden, relaxed muscular structures, with anæmia and tendency to dropsical conditions; great nervous weakness or prostration, with marked blood dyscrasia, chronic glandular induration, chronic ulceration, and the conditions of the mucous surfaces of the intestinal canal following typhus or typhoid fever and dysentery.

It is specifically indicated in the debility or nerve failure of the aged, and in the prostrating influence of severe disease in children. During severe fevers it will not antagonize the sedative influence of the antipyretics, but will brace the nervous system against the prostration that will follow when the fever is gone.

It antagonizes vasomotor paralysis in all cases. In spasmodic affections it is valuable. The author has given it persistently with sedative remedies in

severe chronic cases of **asthmatic bronchitis,** especially in the aged, and cured them both permanently. It is indicated in a general way where strychnine is demanded, but has a special characteristic tonic influence.

It may be given in the asthenic stage of all prostrating diseases, except during the hours of the day when the temperature is increasing or stationary at its highest point. It strengthens the heart's action, and, like quinine, if given in the intermission of the temperature, or at the time of the greatest remission, it often prevents an increase of the fever and determines a continued lower temperature. It increases or intensifies the action of many stimulating, restorative or antiperiodic remedies.

IGNATIA AMARA. STRYCHNOS IGNATIA.

Synonym—Bean of St. Ignatius.

CONSTITUENTS—Strychnine, brucine.

PREPARATIONS—Specific Medicine Ignatia. Dose, from one-sixth to one-half minim. Prescribed from five to fifteen drops in four ounces of water, a teaspoonful every two hours. Fluid Extract of Ignatia. Dose, from one to ten minims. Tincture of Ignatia. Dose, from five to twelve minims.

Physiological Action—The remedy presents the peculiarities of nux vomica to a great extent. In its therapeutic action it is prescribed under much the same conditions, but is a milder remedy. It seems to have less nerve irritating properties and an efficient nerve tonic influence.

Specific Symptomatology—Ignatia is applicable if there is a tendency to **mental disorder,** with **suffocative hysterical symptoms.** Also where there is present the globus hystericus and nervous headache in feeble women with **sleeplessness.** It is applicable at the age of **puberty** during the establishment of the menses, also at the **menopause,** when the characteristic symptoms of nerve irritation are present. All the nervous symptoms are accompanied with weakness and general inappetence, where the patient considers her condition very serious, and her chances of recovery very slight.

Further symptomatology is dragging pains in the lower bowels, colicky pains with the menstruation, sexual frigidity, sterility, and impotence. Muscular twitchings of the face and eyelids, dullness of hearing depending upon the general weakness, and burning in the bottoms of the feet.

A prominent writer states that nux vomica and ignatia are not interchangeable, though chemically and botanically similar. Ignatia is primarily a spinal remedy. It seems to intensify the impressionability of all the senses. When the excitability is exhibited by anger, vehemence and irascibility, nux vomica is indicated.

When there is melancholy, with a tendency to weep, ignatia is indicated, and with the melancholy the patient hides his or her grief and nurses their sorrows, trying to keep them covered up. The patients sigh and weep, when alone, are very sensitive and easily irritated, but do not disclose their irritation. They have but little appetite, have considerable pressure on the top of the head, and are inclined to renew their grief over causes long passed.

In hysteria, these patients will alternately laugh and cry. The laughing becomes spasmodic, and there is cramping in the hands and chest. These cramps may be mistaken for convulsive paroxysms, especially as they may be followed by unconsciousness. But in these, it will be noticed that the spasms of the hands will be readily relaxed on pressure or the patient will move the hand voluntarily. The patient recovers with long-drawn sighs. When the globus hystericus is alarming in this class of patients, give ignatia.

While it relieves all the above symptoms, it will also relieve the hiccough, the flatulent distention and disorders of the stomach and intestinal tract that are often present, with the above phenomena. It overcomes the pain of **intercostal neuralgia,** and the acute pain in the head common to many of these patients. The remedy has a soothing effect in all cases.

Therapy—Some hysterical women are troubled with **aphonia,** others with **amenorrhœa** and in others the menses are replaced by a severe **leuchorrheal discharge.** All these symptoms are benefited by ignatia. These patients are nearly all out of tone. The remedy is a vitalizer and nerve tonic, a restorer of nerve function. The patients are anemic, they have cold skin and cold extremities, and flabby inelastic tissues. There is lack of power of mental concentration. The patient is usually very forgetful.

Usually twenty drops of specific ignatia, in four ounces of water, a teaspoonful from four to six times a day will be a sufficient dose.

This agent is especially applicable to **hysterical females** with nervous weakness from **persistent uterine disorder.**

In **hysteria** the agent is given in small doses where the following specific conditions are present: Dragging pains in pelvis, dysmenorrhœa with uterine colic, sexual apathy, congestive headache, burning on the soles of the feet, reduced general strength. It will increase sexual desire.

In **nervous depression,** from whatever cause, Ignatia in small doses frequently repeated and persisted in will be found an important remedy.

Ignatia is suggested as an excellent remedy for **sighing respiration.** It acts upon the central nervous forces like nux vomica.

CAPSICUM. CAPSICUM FASTIGIATUM.

Synonym—Cayenne pepper.

CONSTITUENTS—Capsiacin, Capsicin, volatile oil, resin and fixed oil.

PREPARATIONS—Extractum Capsici Fluidum, Fluid Extract of Capsicum. Dose, from five to sixty minims. Oleoresina Capsici, Oleoresin of Capsicum. Dose, from one to five minims. Emplastrum Capsici, Capsicum plaster. Tinctura Capsici, Tincture of Capsicum. Dose, ten to sixty minims.

Physiological Action—Capsicum is a pure stimulant, both local and general. In large doses it causes vomiting, purging and inflammation of the stomach and bowels, with dizziness, intoxication and feebleness of the nervous power. Locally applied, it is a powerful rubefacient. It produces rapid capillary determination of the blood to the part, and if taken into the stomach it promotes its own absorption and thus continues its further influence through the nerve centers. Belonging as it does to the solanaceæ, its influence upon the nerve centers, although insidious and not in all its field of exercise readily distinguishable, is nevertheless active and most important, demanding its classification among the diffusible cerebral stimulants. It produces an increase of tone and a marked and comfortable sensation of warmth in the entire system, and a glow and sensation of increased nerve influence and more active circulation.

The general or systemic influence is better obtained from the tincture or from the hot infusion, while local stomach or intestinal effects follow promptly upon the administration of the powder.

Its influence upon the circulation is more marked in its local than its constitutional or central effects, although it does influence general capillary tone. It increases the action of the heart only in extreme cases and in large doses. It barely increases the pulse beat, although it materially alters its character and it does not influence the appreciable temperature.

Specific Symptomatology—It is directly indicated in general enfeebled conditions, with impairment of nerve influence. In general atonic conditions, with relaxation of muscular fiber; in plethoric conditions and lethargic affections, with general impairment of tone, with deficiency of functional force, energy or activity—in these conditions, because of its local and general effects, it is markedly different from other stimulants.

The indications are **marked nervous depression,** tendency to capillary stasis; dry, harsh tongue, with brown coating; scanty and glutinuous buccal secretion, tendency to tympanitic distension, cool extremities and gastric uneasiness. Furthermore with quinine in **malarial troubles,** with small doses of hydrochloric acid, excellent results have been obtained in **rheumatism** of malarial origin, coming on periodically.

Therapy—Its influence upon the nervous system is shown by the fact that in **general paresis,** and in some cases of **paralysis,** local and general of central origin, it has rapidly promoted cures without the use of other agents. In one case after passive cerebral congestion, it was given in strong infusion, and the tincture applied to the paralyzed arm and muscles, and restoration of nerve influence followed in a few days with a generally improved condition of the nervous system.

It certainly deserves a more extended use in these cases, because of the possibility of its being pushed to the extreme without danger of disturbance of function or structure, or impairment or derangement of any organ. It is a harmless agent, however used; if concentrated, local irritation should be avoided.

It has long been combined with tonics, stimulants and general restoratives in seriously impaired nerve tone of the **dipsomaniac,** with results which were ascribed to other agents used. It has an influence in these cases which resembles that of strychnine, and yet is quite unlike it although fully as important.

In **delirium tremens** it produces a sedative influence which results in quiet, rest, and frequently in deep sleep.

In these cases it is best in hot infusion combined with warm beef-tea or other hot nutritious liquid food. If its use be continued it will replace the alcohol, and in its satisfaction of the unnatural demands of the stomach, will enable the patient, with proper adjuvants, to permanently overcome the taste for liquor. It must be given in conjunction with persistent and concentrated nutrition, and may be combined with hydrastine or strychnine or other nerve stimulants and tonics.

It is also of much service in the treatment of the **opium** and morphine **habits,** and also that of cocaine. It must be pushed to the extreme limit and any local irritant influence avoided.

In **languid** and **enfeebled** states of the **stomach,** with inactivity of the peptic and other glands, whatever the cause, it is an immediate and direct stimulant. In **atonic dyspepsia** and flatulent colic, in atonic inactivity of the liver and other glandular organs which have a part in the stomach and intestinal digestion, its influence is immediate and most important.

It is a common ingredient of pills and laxative granules, and it certainly improves the capillary circulation and nerve tone of the entire intestinal tract.

In the stage of collapse of **prostrating diarrhœas** and of exhausting fevers and in **cholera,** no agent is more efficient. It is useful in yellow fever, in typhus and in some cases of typhoid where there are great relaxation and muscular weakness, where there are slugglishness of the nervous system, torpor and insensibility, low **muttering delirium** and tendency to coma.

In relaxed and **enfeebled** conditions of the **pharynx** and post-nasal membranes, in engorged sore throats not always accompanied with active inflamma-

tory symptoms, it will sometimes cure when other agents have signally failed. This is especially true if there be a granular condition, with dark colored membranes, or if there be a purple or discolored hue to the mucous membranes, common in some long continued sore throats. It is a valuable adjuvant in the treatment of **diphtheria** and in **phlegmonous tonsilitis,** with sluggish circulation, and also in the sore throat of **scarlet fever.** In these cases it may be used as a gargle and taken internally also. A most serviceable general gargle is made by combining in strong infusion, capsicum and white oak bark—quercus alba—and adding to it an active antiseptic, as boric acid or echinacea. This can be given for sore throats when no opportunity for specific diagnosis is afforded.

In its general stimulant effect this agent is a valuable one in combination with quinine in intermittents, and also when the latter agent is given as a tonic and restorative. They act most harmoniously in conjunction, and the influence of the quinine is greatly intensified. It is safe to say that one grain of capsicum, combined with three grains of quinine, will produce better **antiperiodic** effects than ten grains of quinine would accomplish uncombined in extreme cases of ague, especially if accompanied with general torpor and inactivity of the liver and of the nervous system, as in **malignant intermittents** and pernicious fever.

The **old Thompsonian No. 6** is made by combining myrrh two ounces, capsicum half an ounce, and dilute alcohol two pints. Of this, from five drops to a dram may be given at a dose, and it produces a most profoundly stimulating influence. It was the main dependence of Samuel Thompson.

The old antispasmodic combination known as the **Compound Tincture of Lobelia and Capsicum,** unfailing with many of the old doctors as an antispasmodic and general relaxant, is made of lobelia, capsicum and skunk cabbage root two ounces, alcohol two pints. It may be made extemporaneously by combining equal parts of the tinctures of the remedies. It is given in from ten drops to one dram, and was relied upon in all **spasmodic affections,** including puerperal eclampsia and tetanus.

Capsicum is advised in chronic **parenchymatous nephritis,** in pyelonephritis and in pyelitis. Also in **spermatorrhœa,** with general relaxation of muscular fiber and in impotence. It is an aphrodisiac of some power. It may be combined with phosphorus or nux vomica in the treatment of **impotency.** It is eliminated from the system through the medium of the kidneys, which it stimulates to increased action. It may produce urinary irritation and tenesmus.

It is used somewhat, externally, in the form of plasters, embrocations or in liniments, but it is rather slow in its action upon the skin and is replaced by more active agents. It is a valuable agent, however, in the treatment of chilblains, exceeding other better known remedies.

XANTHOXYLUM. XANTHOXYLUM AMERICANUM. XANTHOXYLUM CLAVA-HERCULIS.

Synonym—Prickly ash.

CONSTITUENTS—Xanthoxylin, volatile oil, resin, bitter principle, tannin, sugar.

PREPARATIONS—Extractum Xanthoxyli Fluidum, Fluid Extract of Xanthoxylum. Dose, from half a dram to one dram. Specific Medicine Xanthoxylum. Dose, from five to six minims.

Physiological Action—This agent is a stimulant to the nerve centers, and through these centers it increases the tonicity and functional activity of the

different organs. It is diffusible, producing a warm glow throughout the system and nervous tingling, as if a mild current of electricity was being administered.

It has a direct tonic effect upon the heart, and it mildly stimulates the capillary circulation throughout the entire body, overcoming blood stasis and congestion. In diseases of an exanthematous character it causes the rash to appear promptly and prevents its recession. It will sustain the vital forces through any crises that may occur.

Xanthoxylum in certain lines acts similarly to strychnine; in others it is superior to strychnine, having a wider action. In its effects on the capillary circulation it resembles belladonna or atropia, without the toxic properties. It must be well known to be thoroughly appreciated.

Specific Symptomatology—It is a specific when there is lack of tone in the nervous system—a general torpidity with sluggish circulation; in enervation and relaxation of mucous membranes, with imperfect circulation, or hypersecretion. It is thus valuable in catarrhal conditions of any mucous surface, as it restores the tone and normal functional activity.

In all conditions of the bowels where tympanites is present it is specific, quickly relieving this condition. King used it extensively in the cholera epidemic of 1849 with excellent results.

Therapy—It is a remedy for **catarrhal gastritis.** In general atonic conditions of the digestive apparatus, combined with hydrastis canadensis, it has no superior. It has a powerfully tonic influence upon the stomach and digestion, and improves the general nutritive functions of the system. Whitford gives it as a **tonic** in all conditions of **weakness,** depending upon malnutrition, accompanied with **chronic dyspepsia,** especially if catarrhal gastritis be present. The following is his method of combining the remedy:

℞—Powdered hydrastis, two drams; precipitated carbonate of iron, one dram; tincture of xanthoxylum, one-half ounce; simple elixir, sufficient quantity to make four ounces. Take a teaspoonful after meals and at bedtime. The writer has used a similar combination, the active constituents in a capsule, every three hours with most excellent results. This formula is especially applicable as a restorative after **debilitating fevers** and after prostrating diarrhœas, or after dysentery. It works promptly and satisfactorily with children. The alkaloid hydrastine may be substituted for the powdered hydrastis, where prescribed in capsules.

This agent, with the older practitioners, was considered a most valuable remedy in **rheumatism.** Its stimulating diaphoretic action, with its restorative and tonic influence, placed it high in the estimation of many as a remedy in this condition. It is valuable in combination with such remedies as colchicum and macrotys.

As an alterative it had a wide use at one time. It was usually combined with stillingia, yellow dock or phytolacca, and often the iodide or acetate of potassium was added. It serves an excellent purpose in **scrofula,** and in some cases of chronic skin disorder, from disordered blood.

SUMBUL. FERULA SUMBUL.

Synonyms—Sumbulus moschatus. Musk root. Jatamansi.

CONSTITUENTS—It contains an aromatic resin, a volatile oil and angelic acid.

PREPARATIONS—Fluid extract, dose ten to sixty minims. Tincture, dose one to thirty minims.

Therapy—This remedy is a pure, stimulating nerve tonic. It seems to invigorate the nutritive functions of the system. It has been recommended dur-

ing the progress of **low fevers,** where the nervous system is greatly debilitated, as in **typhus, typhoid** and **typho-pneumonia.** Wherever the nervous system has received the effect of a protracted prostrating disease, it can be given with advantage. Murawieff advised it in both acute and chronic **pulmonary disease,** through its influence upon the nervous system. Probably it influences the circulatory and respiratory functions, supporting them under the strain of protracted inflammation. The remedy has been used in stomach disease, **diarrhœa,** in **dysentery,** and in **cholera.** When the nervous system is enfeebled in **hysteria,** and in **delirium tremens,** it is a good remedy. In **chlorosis, anæmia,** with nervous phenomena, in **leucorrhœa** and **gleet,** it is to be advised.

CHAPTER II.

Alcoholic and Anti-malarial Stimulants.

THE ALCOHOLS. CINCHONA. ALSTONIA.
WINES AND MALT PRODUCTS. QUININE. EUCALYPTUS.

THE ALCOHOLS.

Alcohols chemically considered, are a class of substances of organic origin, known as hydrocarbons, isomeric in character, belonging to a simple homologous series. They are the hydrates of the methyl group of organic radicals. Those best known and in common use are constructed as follows:

CH_3HO. Methylic Alcohol. Synonym: Wood Alcohol.
C_2H_5HO. Ethylic Alcohol. Synonym: Rectified Spirit of Wine.
C_3H_7HO. Propylic Alcohol.
C_4H_9HO. Butylic Alcohol.
$C_5H_{11}HO$. Amylic Alcohol. Synonym: Fusel Oil.

Alcohol.

Alcohol proper, as commonly understood, is the second in the series—Ethylic Alcohol.

Synonyms—Spiritus Vini Rectificatus, Rectified Spirit of Wine. Alcohol Ethylicum, Ethylic Alcohol. Ethyl Hydrate. Vinic Alcohol, Spirit of Wine.

Under this head all substances containing alcohol are treated in a general sense. Specific substances will receive specific mention. The common forms of alcohol and of spirituous and malt liquors come under the following general or specific heads:

Absolute Alcohol, Dilute Alcohol, Deodorized Alcohol, Whisky. Synonym: Spiritus Frumenti. Brandy. Synonym : Spiritus Vini Gallici. White Wine. Synonym: Vinum Album. Sherry Wine. Red Wine. Synonym: Vinum Rubrum. Port Wine. Rum, Gin, Porter, Cider, Kumyss.

Description—Alcohol is a light, colorless, transparent, volatile liquid, with a sharp irritating taste and a spirituous odor. It is lighter than water, its specific gravity being only 0.80. It boils at 173 deg. Fah., and will freeze at 203 deg. Fah. It has a great affinity for water, mixing with it in all proportions.

Alcohol is an active solvent, dissolving solids of many kinds—alkaloids, resins, gums, oils, liquids, gases, etc. It destroys vegetable and animal tissues.

It preserves animal tissue from decomposition by hardening, condensing and contracting its structure. It coagulates its albuminoids.

Alcohol Absolutum—Absolute alcohol is the pure alcohol, without water or other foreign substance. It is rarely obtained. That which is purchased for absolute alcohol contains at least two per cent of water. Alcohol U. S. P. contains ninety-four per cent of the absolute.

It has a specific gravity of 0.82. The rectified spirit of wine—spiritus rectificatus, Br. P., contains eighty-four per cent of the absolute alcohol.

Alcohol Dilutum—Dilute alcohol, U. S. P., contains fifty-four per cent of the absolute. This is about the same as the proof spirit of commerce. In its official form it is made by combining equal volumes of water and absolute alcohol.

It is an excellent solvent, dissolving many substances insoluble in water. Medicinal substances dissolved in alcohol are called tinctures. Gaseous and volatile substances so dissolved are called spirits.

Alcohol Deodoratum—Deodorized alcohol contains about 92.5 per cent of alcohol and 7.5 per cent of water. It is free from methyl or amyl alcohol, other foreign odors or organic impurities.

Physiological Action—Because of its immediate and profound influence upon animal tissues, alcohol undiluted is not used internally. A small quantity taken in this form has produced immediate death. It is a powerful irritant and produces a shock from overstimulation to which the nervous system speedily succumbs. There are profound muscular relaxation, a sudden fall in the temperature, and diminished respiration. There is central vaso-motor paralysis, which influences these functions, with direct depression of the action of the heart.

In small doses it acts as a prompt and general stimulant to every function of the body. There is an exalted sensation, a feeling of exhilaration, and a rise in the temperature and pulse rate that is not merely subjective, but actual and appreciable.

Its direct influence is upon the nervous system. It increases at first the normal functional operations of the brain, inducing a free flow of thought and expression, and a clearness and freedom of mental action without depth. This condition is rapidly increased until the harmony of action is lost and an extreme or exaggerated condition follows, which soon becomes a pronounced disorder of mental action, with incoherent and incoordinate irregular action of the mind and body.

These effects are more pronounced in one not habituated to its use. Its continued use produces a toleration which often becomes extreme, but it induces a permanently debilitated and diseased condition of the nervous system, with a long train of symptoms known as alcoholism or dipsomania.

Acute Intoxication—In the first stage there is a want of mental balance, perversion of intellect, hallucinations, emotional excitement and incoordination.

In the second stage there are dilated pupils, stertorous breathing, more or less complete insensibility, a condition of coma, slow full pulse, complete muscular relaxation and great depression of the mental and physical faculties, with headache, nausea and vomiting. Recovery of the normal functions is in reverse order of their perversion.

Chronic Alcoholism—In this condition the power to resist fatigue or the results of injury, or to recuperate from prostrating diseases, is greatly lessened. There is established a gastro-intestinal catarrh of a chronic character, with dilatation of the stomach often, which results in nausea, vomiting, anorexia and a confirmed dyspepsia. The integrity of the liver, kidneys and heart become greatly impaired, and fatty degeneration of these organs is common.

The nervous system suffers greatly. There are serious lesions of the structure of the spinal cord, brain, and also of the neural structure in its distribution, resulting in faults of vision, neuralgias, paralysis agitans and milder forms of muscular tremor and muscular incoordination. The heart and circulatory apparatus are seriously involved. There are palpitation, dilatation with valvular incompetency, and atheroma of the blood vessels. The arterial tension is so influenced that the functional action of all organs, especially that of the kidneys, is greatly impaired.

Its continued use fixes a habit or demand upon the individual which is imperative, and the satisfaction of which induces a mental and moral degradation exceeded by the use of no other agent with the one exception, perhaps, of cocaine alone.

There is anorexia in many cases, complete dyspepsia and mal-assimilation of food. Ultimately there is atony and permanent dilatation of the stomach. There is disordered liver which in time becomes organic, resulting in atrophy or hypertrophy, induration, fatty or amyloid degeneration, or at least extreme torpor with jaundice.

Cancerous conditions and other blood dyscrasias readily find a nidus in these depraved tissues. Permanent structural intractable kidney change occurs more often with this class of patients than in any other. There is diabetes mellitus, parenchymatous or interstitial nephritis, or amyloid degeneration. It quickly produces alteration of function of the nervous system—a form of neurasthenia, structural change, and in some cases paralysis and locomotor ataxia and general incoordination.

The most lamentable condition, however, is the paralysis of the will, and the inevitable moral degradation and intellectual failure, which results finally in imbecility.

Alcohol interferes with the elimination of carbonic acid, and lessens the amount of nitrogenous tissue waste in the system. It is impossible to accept the theory of Wood, that because of the stimulating influence of this agent upon the digestion of the nitrogenous products, there is better assimilation and less nitrogenous waste. The nitrogen, if received, must at some time be eliminated, if not as a food, then certainly as tissue waste. Alcohol, doubtless, interferes with the secretory function of the epithelium of the renal tubules and also materially alters blood pressure in the kidneys, and thus prevents the elimination of urea which remains in the blood.

Dr. Winfield Scott Hall says: "Alcohol is an **excretion toxic** to the organism that produces it. An excretion of this type is also toxic to higher organisms, and this is the case with alcohol.

"Admitting that it is oxidized in the liver and produces heat, and that it may lead to decrease in the catabolism of carbonaceous foods, the heat produced is not a normal catabolism, but is simply the result of an insufficient protective oxidation, the toxic action showing in its narcotic effects.

"The decreased matabolism of carbonaceous and nitrogenous foods following the ingestion of a narcotic is a universal fact depending on the drug effect and giving to the oxidized narcotic **no significance as a food.** Ethyl alcohol **is not a food** in the scientific significance of the word."

Alcohol is appropriated to a certain extent within the system, the atoms within its molecule are rearranged or appropriated by different chemical substances in different combinations. This appropriation, however, is not great, especially in health, but in extreme prostration it is much greater, and there has seemed to be a gain in weight from its use. It is absorbed to a certain extent by all absorbents, and is eliminated by the skin, kidneys and lungs. In confirmed alcoholics the ingestion exceeds the elimination to such an extent,

that it is found in the fluids of the brain and of the cord, and its odor is perceptible in other fluids and tissues of the body.

When applied to the skin there is a sensation of coolness because of the rapidity of its evaporation and absorption of heat. If it be retained in contact with the skin and the air excluded it produces heat, irritation, redness and consequent inflammation.

Its hardening influence on the integument is induced by its ability to coagulate albuminoids, abstract water and dissolve fats.

Therapy—Alcohol is introduced into the system through the medium of wines, brandy, whisky, beers, etc., as the diluted alcohol is not used to any extent as a beverage. In its therapeutic range the field is an important one, although many of the very best known physicians—Dr. N. S. Davis and others—believe that it is not needed as a medical agent, but can be substituted to even a better advantage by agents which do not induce the alcohol habit. We believe that it is entirely unnecessary to prescribe as tonics or restoratives, wines, beer or any alcoholic beverages, or the alcoholic beverages under fashionable names, as malt tonics manufactured by brewers, or the fashionable tipple—beef, iron and wine. It will act as follows, but can be readily substituted.

As an emergency remedy, alcohol, as an immediate stimulant, exercises an important function. In **heart failure** from **sudden shock,** in acute **prostration** of any character evidenced by weak heart, slow pulse and failing respiration, it is used. In **asphyxia,** either from the inhalation of noxious gases, or from the use of anæsthetics or from drowning, hypodermics of brandy or whisky will enforce the heart's action, restore respiration and improve the general condition. It is of common use in shock after surgical operations, but is best used in conjunction with heart supporters and strychnine. It is given **preceding** the administration of **anæsthetics** to prevent shock. It promotes the action of the anæsthetic. In **poisoning** with depressing agents of a non-caustic or non-irritating character, and in the **bites** of **venomous snakes** and insects, it is of value and has been in common use.

With the aged and feeble, in the convalescence of **prostrating diseases** of all characters, and especially after inflammation of the lungs, the agent was in the past in common use as a restorative. It is a stimulant to the digestion and to the secretion of the digestive ferments. Its influence upon absorption and nutrition is not, we think, as desirable as that of other tonics non-alcoholic in character.

As a restorative to adynamic conditions it is given to best advantage in conjunction with concentrated nutritious foods, as in egg-nog, with eggs and milk, with albuminoids, and with beef juices and meat extracts.

In some cases of prostration with distress and even pain, great restlessness and wakefulness, small, frequent doses, by building up the forces temporarily more nearly to the normal point, produce quiet restfulness and promote sleep. In **cerebral anæmia** its influence in temporarily re-enforcing the cerebral circulation will promote sleep, but the results of the sleep usually are not rest and are unsatisfactory.

Alcohol, externally, is an antiseptic. It is especially useful in suppurating **wounds,** and especially in preventing and curing **bed sores.** It is cleansing and stimulating, and promotes granulating and healing. In preparing for surgical operations it is used in full strength as an application to the skin to render it aseptic in the field of the operation.

In bruised and swollen parts, in inflamed joints and glands, it serves a good purpose. It hardens the skin and contracts the tissue, promoting healing by resolution and preventing abrasion, ulceration or suppuration.

It is prescribed in **vomiting from atony,** in the **vomiting of pregnancy,** in **seasickness** and in the vomiting of extreme prostration. It is even thought

necessary to administer it to allay the uncontrollable **vomiting** of **delirium tremens.** It is advised in disorders of the stomach and bowels, in atonic, gastric and intestinal indigestion.

An excellent use for alcohol is in the **sudden hoarseness** or **croupal cough** of children, as an external application, mixed with an equal part of water and kept moist and warm. It is surprising how quickly the child will breathe more easily, and the hoarseness will have disappeared. It is of immediate benefit in sudden attacks of the croup.

During the past few years much use has been made of hypodermic injections of alcohol into the structure surrounding **cancer** and malignant growths, and into the immediate substance of the growth itself, with the result that in many cases the abnormal growth has at least been retarded and in some cases removed. The method is considered one worthy of trial in a certain class of cases.

Wines and Malt Products.

Therapy—While wines are consumed in all civilized countries, they are seriously detrimental to health. They induce plethora, gout, lithæmia and apoplexy, dropsy, unsteady nerves and enfeebled and disordered mental action. In the consideration of wines as medicinal agents, their action is fully covered under the subject of alcohol, as their medicinal effect in the main is due to the amount of alcohol they contain. It is true, however, that there is considerable difference in the action of different wines. They have more of a sedative influence upon the stomach, and probably possess greater nutritive properties. They are less stimulating than the liquors, but containing a larger quantity of sugar, their free ingestion induces greater disorders of the stomach, and is apt in some cases to produce constipation and fever.

In their application, however, to specific disease conditions, they must be adapted with regard to the percentage of alcoholic strength, and with consideration to the percentage of nutritive properties.

Beer, ale and porter are malt products, and as stomachic tonics, as restorative agents, especially in pulmonary diseases, as stimulating nutritive agents for administration during recovery from protracted illness, they are considered as of much value.

CINCHONA. CINCHONA CALISAYA.

Synonyms—Peruvian bark.

CONSTITUENTS—Quinine, Quinidine, Cinchonine, Chinchonidine, Quinamine, tannic acid; thirty-two natural and eight artificial alkaloids, resinoid, volatile oil, gum, sugar and wax.

PREPARATIONS—Extractum Cinchonæ, Extract of Cinchona. Dose, one to five grains. Extractum Cinchonæ Fluidum, Fluid Extract of Cinchona. Dose, ten to sixty minims. Specific Medicine Cinchona. Dose, one to thirty minims.

Quinine.

The pure alkaloids of cinchona are not employed in medicine, but their salts, formed from acid and basic combinations, are in common use.

In the consideration of the therapeutic properties of the various alkaloids of cinchona there is but little difference observed in their action. There is almost no influence exercised by any one of them that is not exercised to

an equal extent by quinine, and except where otherwise specified, the Sulphate of Quinine is the agent here considered.

Quinine Sulphate.

Dose, one to twenty grains.

Physiological Action—In doses of five grains three or four times a day for a few days, it produces fullness of the capillary circulation of the brain, throbbing in the head, suffusion of the face, ringing in the ears, with dullness of hearing, headache, mental confusion and nervous excitement. If the above doses be given every three hours continuously there is muscular feebleness, with general impairment of motility, increasing debility, great restlessness, with wakefulness, dilated pupils and partial loss of sight.

A single dose of sixty grains of quinine sulphate given to an adult male caused extreme depression, with feeble circulation, coldness of the surface and extremities, respiration slow and sighing; pulse slow and almost imperceptible, pupils widely dilated, sight and hearing almost extinct, voice very feeble; thirst great, tongue pale and moist, breath cold. While in some cases blindness from quinine has continued for some time in no case has it been permanent. Quinine has produced deafness also, which in many cases has been permanent. In some cases death has followed the administration of the remedy in disease, a result fairly attributed to the drug. In small doses it is tonic, in large doses stimulant, and in still larger doses sedative, acting on the cerebro-spinal nervous system and through the ganglionic nervous system on the heart. Besides the above named effects, large and repeated doses may cause gastric irritation, eructations, chill and fever paroxysms, headache, perspiration, vertigo, staggering and delirium—the condition known as cinchonism.

Specific Symptomatology—Quinine will act favorably upon the system if the skin be soft, if the mucous membranes of the mouth are moist, and if the tongue is moist and inclined to clean, if the pulse is full and soft and the temperature declining or at normal. In other words, when the secretory functions of the body are in a working condition, quinine will produce no unpleasant results.

Quinine is specifically an antiperiodic. It will overcome malarial periodicity, especially if the above named conditions are present when the agent is administered.

It is profoundly tonic; under limited conditions it is antipyretic and also antiseptic. It has specific oxytocic powers over the parturient uterus.

Quinine destroys the **plasmodium malariæ** readily, even in the minute quantity of one part to twenty thousand of water. Its influence upon malarial conditions can thus be readily understood.

Therapy—In the administration of quinine as an antiperiodic, the beneficial influences are not altogether in proportion to the size of the dose. Enormous doses may abort a chill if given during its course, or during the course of the fever. They are very likely, however, to increase the nervous erethism and the temperature; whereas, if proper doses be given **during the intermission,** from one to three hours preceding the anticipated attack, or at the time when the temperature has reached **its lowest point,** small doses will accomplish positive results.

In **continued fever,** with a sufficiently marked remission occurring at a given time each day, or on each alternate day, the agent should be given during the remission, provided the temperature declines to a point sufficiently low to admit of a temporary restoration of the suspended secretions. This point is usually not above 100½ degrees. If the remission be short, a single

dose may be given. As a result the temperature does not run quite as high as on the previous day, and the next remission is more marked and of longer duration. At this time, perhaps, two full doses, two hours apart, may be given. The fever is still lower and the remission so marked by the third day that the agent, in reasonable doses, may be continued through the exacerbation, the temperature at no time, probably, rising above 101 degrees and not increasing above normal after the third day.

The writer has adopted this course for so many years, with perfectly satisfactory results, that the method is confirmed in his mind as the proper one in all cases where malaria is the cause.

Where continued fever exists, quinine is of no benefit if there is no marked remission or other evidence of malaria. It is thus of no use during the progress of typhus, typhoid and other protracted fevers. In such cases it causes nerve irritation and increased temperature, especially if there is deficient secretion.

When the fever is broken and there is a tendency toward a restoration of secretion, and the temperature is normal or subnormal, then this agent is a vitally important one. Here the bisulphate, being readily absorbed, produces the happiest results.

In **intermittent fevers** it is excellent practice to give the remedy in broken doses during the intermission. The absorption of the sulphate of quinine takes place so slowly that a period of between four and six hours is required, under favorable circumstances, to develop the full effect of the remedy. A dose of from three to five grains, given five hours before the expected paroxysm, will exercise its full influence upon the paroxysm when it should appear.

If another dose of two and one-half grains be given two hours after the first dose, and a third dose of the same size be administered after another period of two hours, or one hour before the chill will occur, the effect of the agent will be uniformly continued during the time in which both the chill and the fever would have reached their highest point. The repetition of this course on the second and third days will usually be sufficient to overcome the most severe cases. It is well to adopt the same course on the seventh, fourteenth and twenty-first days following the attack.

The following formula is of excellent service in those cases in which the liver and other glandular organs have been profoundly influenced by the disease, and where the nervous system shows considerable depression:

℞—Quiniæ Sulphat, ...gr. xl.
Leptandrin, ...gr. iv.
Capsici pulv, ...gr. vi.
M. Ft. Capsulæ, ...no. xii.

Sig. One capsule in the manner above specified every two hours until three are taken. When the paroxysms no longer appear, two or three grains of quinine may be given regularly every three hours during the day.

In the treatment of **congestive chill,** and in malignant conditions of malarial origin, quinine is specific, but should be given in much larger doses, and usually with some direct stimulant and in conjunction with the use of external heat. It may be given in doses of twenty grains preceding the attack, or with stimulants during the attack. If a severe attack is fully anticipated, large doses should be repeated every two or three hours during the entire remission.

As an **antipyretic** quinine is no longer used. It was once considered of essential importance in the reduction of high temperatures, but the conditions and character of its action were so imperfectly understood that it often did harm, and caused an increase in the temperature instead of a reduction.

In the regular school the coal tar antipyretics have replaced it. With our own school it has been at no time depended upon to allay fever.

As a restorative after **pneumonia,** where hepatization has been extensive, this agent is an important one. Two grains of the bisulphate of quinine, with one-fourth of a grain of ipecac, and perhaps the one-fourth of a grain of nux vomica, will rapidly improve the function of the nervous system and of the circulation, and as rapidly overcome the hepatization and other results of inflammatory action. The influence upon the stomach and intestinal canal, and thus upon the digestion and assimilation of food, is marked and immediate.

Quinine is a stimulant tonic of great value. Its influence is exercised to the best possible advantage when there is impaired or deficient nerve force.

It is indicated as a restorative after prostrating disease, especially after continued and inflammatory fevers. It strengthens the action of the heart, improving the character of the circulation of every organ. It arouses the digestive organs and encourages assimilation and nutrition. It stimulates the liver and kidneys, and thus assists in the rapid elimination of the waste products of the disease. It stimulates the respiratory function, promoting oxygenation of the blood, thus assisting in the restoration of the character of that fluid.

These results are accomplished largely through its profoundly stimulating influence upon the cerebral and spinal centers.

It has been the writer's custom to use the bisulphate of quinine as a tonic instead of the sulphate, because of its free solution and rapid absorption. It is milder in its effects upon the nerve centers and fully as efficacious in its tonic influence. It is combined to excellent advantage with hydrastine, nux vomica or the salts of iron.

Or it may be given with strychnine or picrotoxin or ignatia with excellent results, and if liver complications exist, it may be combined with leptandrin, podophyllin or iris.

In chronic **congestion** of the **liver,** or **splenitis,** quinine dissolved in the tincture of the chloride of iron, and combined with syrup of orange or simple elixir, produces satisfactory results.

In the prostrating **night sweats** following malarial fever this agent, in the above combination, is a fine tonic, quickly overcoming the sweating and other results of the disease.

Where **paludal miasm** is the cause of various indefinite disorders, or of general malaise, the phenomena occurring periodically, quinine should be given to anticipate the unpleasant symptoms. **Dumb ague, hemicrania** and severe general headaches, **neuralgias** of various kinds and **asthmatic attacks** occur from this cause and are satisfactorily treated with this remedy. It may be afterward given as a tonic, in combination with any other tonic agent which may be specifically indicated.

Quinine has a direct power in inducing **contraction** of the parturient **womb,** especially if from inefficient strength the labor has been prolonged until the nervous force of the patient is well nigh exhausted. If fifteen grains be given in one dose, it may overcome all undesirable conditions at once and prove sufficient. The contractions are normal in frequency and of regular character and force.

It thus overcomes inertia and will prevent post-partum hemorrhage. It is a good remedy for this latter condition when it has occurred, acting also as a stimulant to the heart and nervous system. It is a dangerous remedy in large doses during pregnancy, as it may bring on premature labor.

In **amenorrhœa** from cold it is useful and may be prescribed alternately with aconite, after a hot bath has started secretion from the skin.

As a stimulating antiseptic it has been used as a wash in very many conditions. In sluggish ulcers and old sores, where there is no activity to the capillary circulation, it may be applied with good results. It is useful in threatened gangrene and in chilblain. It was at one time extensively used as a throat wash in diphtheria, and to its antiseptic character is credited its beneficial influence upon whooping cough, having been much depended on for the cure of that disease.

A douche made by dissolving six or eight grains in a pint of hot water will be found of service in chronic catarrh, with fetid discharge, and in hay fever. In the latter condition, full doses internally, three times a day, will materially improve its local influence.

In the administration of quinine to children in all but the severest of malarial conditions, it may be given by inunction, and all of the results of internal use will be thus obtained. The soft skin of the chest, axillæ, abdomen or groins is bathed with hot water and quickly dried, and the ointment immediately applied. From three to five grains of the sulphate is thoroughly rubbed into two drams of lard, and the whole applied during the early part of a remission or intermission. The course must be repeated on consecutive days for four or five days. If the fever is then broken or the chill does not occur, the application can be made regularly once in eight or twelve hours, using less quinine, and continued as a tonic as long as a tonic is needed. No one will administer quinine per os to infants who has used this method successfully.

ALSTONIA. ALSTONIA CONSTRICTA.

Synonyms—Australian fever bark, Bitter bark, Alstonia bark.

CONSTITUENTS—Several analyses have been published, which vary somewhat. Alstonine, an amorphous alkaloid, is present in all. Alstonidine and porphyrine are also found.

PREPARATIONS—The powdered bark, dose from two to ten grains. The tincture, dose from ten to sixty minims. Specific alstonia from two to twenty minims.

Specific Symptomatology—General malarial cachexia, periodicity, fever with marked intermissions or remissions. Malarial fever, with exacerbations. General atony of the glandular organs, with sallow skin, heavily coated tongue and constipation.

Therapy—This remedy was brought to the notice of the profession by Dr. John M. Scudder. He regarded it superior in its tonic and restorative properties to calisaya bark in certain specific conditions. His indications were as follows: The tongue inclined to be dirty, skin dark and sallow, the urine depositing a sediment, with a general lack of tone.

When the above conditions are present from malaria, it is directly indicated.

It is an antiperiodic, when persisted in, in chronic cases, but for immediate effects, in acute cases, it does not replace quinine. Dr. John Fearn advises it where there are **gastro-intestinal** disorders, depending upon chronic malaria, such as **atonic dyspepsia, lienteric diarrhœa,** and **dysentery.** In these chronic cases, it will sometimes succeed when quinine fails. It is well to prepare the patient for its use by a hot bath, and a diaphoretic. It is a cerebro-spinal stimulant and tonic. It acts directly upon the great sympathetic nervous system and stimulates the vital forces, through the improvement of every organic function. It improves the blood-making processes and assists in more perfect elimination by increased tonicity. Dr. King reported the cure of

obstinate cases of **tertian fever,** attended with attacks of severe **gastric pain,** and irritability, with **neuralgia,** in the upper extremities. It seems to antagonize the malarial influences and to so completely destroy the malarial plasmodium that the condition is permanently cured.

EUCALYPTUS. EUCALYPTUS GLOBULUS.

Synonym—Blue-gum tree of Tasmania.

CONSTITUENTS—A volatile oil, Chlorophyll Eucalyptol, resin, tannin, etc.

PREPARATIONS—Extractum Eucalypti Fluidum, Fluid Extract of Eucalyptus. Dose, ten to sixty minims. Specific Medicine Eucalyptus. Dose, five to thirty minims. Oleum Eucalypti, Oil of Eucalyptus. Dose, two to twenty minims.

Eucalyptol is the product of the distillation of the oil of Eucalyptus at a high temperature (347 degrees Fah.). It is identical with a substance found in cajuput, mentha, rosemary, curcuma, santonica and some others. It is a colorless liquid, crystallizes, when reduced to a low temperature, in long needle-shaped crystals. It has an aromatic, camphoraceous odor and a cooling, pungent taste. It is soluble in alcohol and in glacial acetic acid, and should be kept in dark-colored glass bottle with ground-glass stoppers in a cool place. The dose is six to ten minims, in a capsule or emulsion, four times daily.

Physiological Action—In overdoses **Eucalyptus** produces drowsiness with a loss of muscular power, cold skin, pale lips and cheeks, feeble pulse, short and irregular breathing and contracted pupils. It produces increased action of the kidneys, pain in the stomach and bowels, indigestion and diarrhea. It is eliminated through all the emunctories. The inhalation of the vapor of too large a quantity of the oil has produced the nervous phenomena above described in children, but this result is rare.

After a moderate dose of the **oil of Eucalyptus,** in which its chief virtues reside, there is a feeling of exhilaration and buoyancy, while after very large doses there is depression, with drowsiness, loss of power in the limbs, skin pale, cold, insensible; pupils contracted, pulse imperceptible, breathing short, jerking and interrupted.

Poisoning by eucalyptus from taking a dram of the oil exhibited the following symptoms which developed very slowly: There was vomiting, and abdominal pain, which occurred in about four hours; diarrhea became marked, and in an hour later the boy became drowsy, semi-comatose, pale, collapsed, with small pulse, muscles generally relaxed, pupils medium sized and equal to some response to light; breathing shallow. Other than these the symptoms resembled opium poisoning, and the coma persisted several hours. There was an absence of nervous irritation, but the gastro-intestinal symptoms were marked. The agent seemed to inhibit the influence of the cerebrum. There was the odor of oil on the breath for three days.

The poisonous effects should be treated with the usual diffusible stimulants strychnia, alcohol and atropine.

Therapy—In therapeutic action this agent closely resembles cinchona. It is antimalarial, antiperiodic, febrifuge and tonic. The tree has been planted in malarial sections, and wherever planted the malarial conditions have been changed, the disease germs destroyed and the atmosphere purified, the locality becoming healthful and sanitary.

While acting similarly to quinine it may be prescribed where quinine is contraindicated. Its stimulating and antiperiodic influence is not so immediately marked, but its antimalarial influence is persistent, and satisfactory results are ultimately obtained, which can be said also of its antiseptic influence.

It may be given in **low forms** of **fever** where the stimulating influence of quinine is too great, increasing the fever. In these cases eucalyptus will reduce the fever.

In the condition known as **dumb ague** and masked intermittent fever, it will sometimes accomplish very satisfactory results. In all conditions where there may be malarial infection, especially where other disease is present which shows a marked increase at a given time each day, where there is much malaise and muscular aching or distress of a distinctly periodical character, this agent is directly indicated in doses of one-half dram of the tincture.

It is of much service in malarial neuralgia, in malarial headache and in vague intermittent conditions of an indefinable character.

Where night sweats follow malarial disorder, where an enlarged liver and spleen remain after the periodicity is broken, where jaundice has been a more or less persistent complication, this agent has been of much value, combined with other indicated measures.

The antimalarial and distinctly antiseptic properties of eucalyptus give it a prominent place in the therapeutics of **typhoid fever;** while it has many of the essential tonic and restorative properties, it is most active as an intestinal antiseptic. It has been used in epidemics of typhoid where there could be no possibility of a mistaken diagnosis, and when given from the first all the symptoms showed positive amelioration. The temperature especially was kept under control, while the disease symptoms were markedly controlled. It has been especially noted by those who have used this agent persistently, that the attendants are not likely to contract the disease. This is attributed to the fact that the agent destroys the germ within the intestinal canal.

Eucalyptus is a valuable remedy in **scarlet fever** given in conjunction or alternation with aconite and belladonna. It answers an excellent purpose in many cases. It prevents the symptoms developing in a severe form by destroying the germs and assisting in the control of the temperature. It cures the throat symptoms quickly. It stimulates a normal action in the glands of the skin, and by encouraging elimination through these glands, prevents **post-scarlatinal nephritis.** Five drops in lard thoroughly rubbed together and applied to the skin daily, is one of the most efficient of applications. When nephritis is present it has a positively curative influence.

In the treatment of **diphtheria,** eucalyptus is an excellent remedy. It may be used as a gargle diluted, and when the membrane has formed in the larnyx or in the nasal passages, if fifteen drops of a mixture of equal parts of the oil of eucalyptus and turpentine be dropped upon the surface of hot water in a close-mouthed vessel, and the vapor inhaled by the patient for a few minutes every two hours, there is nothing that will more speedily destroy the membrane and assist in its removal.

The writer has been successful in completely clearing the nasal passages within thirty-six hours by this measure when the occlusion was nearly complete. This course is almost equally applicable in **membranous croup.** A specific measure in this disease is to give internally every two hours five drops of a mixture of equal parts of the tinctures of eucalyptus and jaborandi. If the membrane has formed extensively, this course loosens it and permits it to be thrown off. If it is in the early forming stage, the growth ceases and the membrane disappears. These facts have all been confirmed in a multitude of cases.

Eucalyptus if further used in tonsillitis in chronic **post-nasal** and bronchial **catarrhs** in **asthma,** in which case the vapor either alone or with that of stramonium is very useful, and in those conditions of the lungs and bronchi where there is offensive expectoration, pus or a suggestion of gangrene. In

the constitutional treatment of **phthisis** it is of value, and if a few drops of the oil be added to cod liver oil, it will remove the disagreeable flavor of the latter agent.

This agent has been used with excellent results in the treatment of **chronic ulceration** of the stomach. It stimulates the mucous surface to normal action, destroys the germs of the disease, prevents putrefaction and corrects excessive acidity. The ulcers heal rapidly under the influence of this remedy. It is equally efficacious in chronic diarrhœa and dysentery with offensive discharges.

The agent has been extensively used in the treatment of **catarrh** of the **bladder, nephritis, pyelo-nephritis** and **pyelitis,** especially if the urine be decomposed and offensive. It is useful also in **gonorrhœa** and in **gleet** and as a wash in specific vaginitis.

In uterine catarrh this agent is valuable used as a douche in the proportion of two drams of the tincture to a pint of water. Whenever offensive discharges from these parts are present, it is useful in ulceration of the cervix. It may be made into a suppository with cocoa butter and white wax, in the proportion of one part of the oil to three parts of the other mixed constituents. This suppository is of great service after labor, either where the douche cannot be used or to be inserted after the douche where there is traumatism. This suppository is of value in uterine cancer. It relieves pain and corrects the odor of the discharges.

BONDUC. CÆSALPINIA BONDUCELLA.

A new substitute for quinine is brought forward by Keshav Lal J. Dholakia, Delhi, India, in Practical Medicine. He recommends the powdered kernels from roasted bonduc nuts. These are derived from a legume-bearing climbing plant, Cæsalpinia bonducella, found almost throughout India.

The drug is antiperiodic, febrifuge, tonic and anthelmintic. It is given in doses of from ten to fifteen grains every four hours. It is described as closely resembling quinine in action, as harmless to pregnant women, as not being contraindicated during fever, and as well borne by patients with quinine idiosyncrasy.

As an anthelmintic the action is weak. The drug is comparatively harmless in large doses.

CHAPTER III.

Stimulants Which Directly Influence the Circulation.

BELLADONNA.	HOMATROPINE HYDROBROMATE.	DUBOISIA.
ATROPINE.	STRAMONIUM.	PHYSOSTIGMA.

BELLADONNA. ATROPA BELLADONNA.

Synonym—Deadly nightshade.

CONSTITUENTS—Atropine, Atropamine, Belladonine, Atrosin, Hyoscyamine, Cholin, Asparagin, Chrysatropic and Succinic Acids.

PREPARATIONS—Atropine Sulphæ, Atropine Sulphate. Dose, 1-120 to 1-60 of a grain. Extractum Belladonnæ Foliorum Alcoholicum, Alcoholic Extract

of Belladonna Leaves. Dose, one quarter to one-half of a grain. Tinctura Belladonnæ Foliorum, Tincture of Belladonna Leaves. Dose, from one to thirty minims. Extractum Belladonnæ Radicis Fluidum, Fluid Extract of Belladonna Root. Dose, from one to five minims. Specific Medicine Belladonna. Dose, from one-twentieth to one minim.

Administration—The official fluid preparations in most part of Belladonna vary so much in strength that they cannot be relied upon for activity as compared with each other. Using the product of a single reliable manufacturer one ultimately learns the strength of that product and is thus able to adjust it accurately. The normal tincture of The Merrell Company, the Homeopathic mother tincture, and the specific medicine are all reliable preparations, but vary greatly in comparative strength. The specific medicine is very active, and I would advise that each prescriber dilute a given quantity with four parts of alcohol and prescribe this as a strong tincture. Ten drops of this in a four-ounce mixture given in dram doses will be found uniformly active for children. A good U. S. P. tincture will answer in many cases in drop doses in adults.

Physiologic Influence—In its full primary influence, belladonna is an excitant to the cerebrum, promoting active hyperemia—a profoundly full, active condition of the cerebral capillary circulation. I will show later on that this influence of dilating the capillaries, combined with the stimulating influence of the agent upon the heart, with a characteristic influence in contracting the capillaries of the splanchnic area, makes this the most powerful agent known, in its direct influence upon pathologic hyperemia or a tendency to stagnation in any of the capillaries, whatever organ they may be distributed to. I will also show that this influence can serve as a guide in the prescribing of this remedy in a rational manner, more profoundly than any other influence the remedy exercises.

When given in full doses the fulness of the capillary circulation induced produces a flushing of the face, a bright redness of the skin, which in sufficient dose is general over the entire body. This resembles very closely the erythematous rash of scarlet-fever, and from this fact the Homeopathists have one of their guides in prescribing this agent for that disease. It suppresses the secretions of all the organs, especially of the mucous membranes, inducing dryness of the throat and mouth and a tendency toward constipation.

The evidences of **cerebral fulness** are: restless excitation, mental exhilaration, headache, dilated pupils, intolerance of light, impairment of vision, uncertainty of muscular movement, the latter finally amounting to incoordination, with motor paralysis. There is delirium of a talkative character, in some cases violent or furious, with illusions and hallucinations. In extreme delirious excitement, if the dose is a fatal one, there is feeble pulse, cold skin, shallow respiration, and paralysis of the inhibitory nerves of the heart and heart-muscle, resulting in death.

In the influence of this remedy upon the capillaries of the skin, loading them up so actively, there is a contributory influence upon the capillaries of the spinal cord, which decreases the amount of blood in this locality, exercising often an exceedingly beneficial influence, especially when the patient suffering from spinal or cerebral congestion has cold skin, cold extremities, a cold, clammy sweat, dilated pupils, and great sluggishness of action. In this case, the remedy is absolutely specific and invariable in its influence.

Belladonna acts directly upon the heart. It is a pure stimulant to this organ, through its influence on the cardiac muscle and accelerator nerves. Previously it was thought that this drug increased arterial pressure. This now is considered doubtful, as positive proof is lacking. Notwithstanding

the lack of proof in the laboratory, in the individual there is more force in the pulse, and there is extreme activity, as stated above, in the capillary circulation, especially when there is **profound congestion,** with cold relaxed skin, difficult breathing from **pulmonary hyperemia,** with a small compressible pulse and a deathlike pallor, followed, in extreme cases, by cyanosis. Then the stimulating influence of 1-80 or 1-60 of a grain of atropine will show itself unquestionably in a very few moments. This influence is very general. Strychnine expends its influence upon the nerve-centers, but the influence of atropine is upon the peripheries in an unquestionable manner, making it probably the most active of the diffusible stimulants. In this rapidity in removing the blood from the lung-cells it increases oxidation. It thus relieves the pulmonary hyperemia, overcomes cyanosis and promotes free, deep breathing.

Specific Symptomatology—There is a characteristic syndrome present in congestive types of many diseases which rationally indicates the need for belladonna. **Preliminary congestion** is a common condition in very many diseases and the influence of this drug, in antagonizing congestion and in producing a normal and effective equalization of the circulation brings it first to the mind of those who are studying actual conditions, in an endeavor to decide upon the needed remedy.

The syndrome referred to consists in chilliness, mental dulness, and inactivity; dull eyes with dilated pupils, eyes partly open when asleep; skin cool and relaxed, with occasional free sweating; cool extremities; general sluggish capillary circulation.

The Homeopathists claim that belladonna is especially indicated where the patients are full-blooded; seldom in anæmic patients. Children, very active and with big brains, who are disturbed nights by night-terrors or dreams or show other evidences of restlessness are relieved by belladonna. The remedy acts best in full-blooded patients, where there is active localized heat, pain, redness, and swelling, evidences of local inflammation. That is a very common indication—local engorgement. When there are a full, bounding pulse, dull flushed face, dull eyes, dilated pupils, and throbbing carotids, the remedy is beneficial. Negroes, and those in warm climates, are especially susceptible to the action of belladonna.

Belladonna is not a specific fever-remedy, but in a febrile disorder there is some local engorgement somewhere; there is local capillary hyperemia and, if the remedy is not contraindicated by an already too active condition of the capillary circulation, it will be found of service in all acute congestive disorders with temperature. I have made it a practice for thirty-five years to combine this remedy with the directly indicated fever-remedy, until the symptoms of local engorgement were overcome, then to continue with the fever-remedy alone. When so prescribed, the influence of the remedy to restrain secretion need not be considered, as this influence is usually antagonized by the agent that is used to control the temperature. This is especially true of aconite administered in conjunction with it, which makes a most reliable combination.

Therapy—Belladonna is indicated at the onset of inflammatory conditions. Given early with aconite, when fever alone is present, hyperemia does not occur and the inflammation is aborted. If the disease is localized in any organ, displaying the phenomena named above, its influence often is quickly apparent.

In **diphtheritis, tonsillitis, croup, bronchitis, pneumonia, pleuritis** and **peritonitis,** belladonna stimulates the capillary circulation in the engorged organs, thus quickly preventing the local effects of the acute congestion or inflammation. At the same time it has a marked influence upon the fever

when used in conjunction with the other indicated measures. In **chronic soreness of the chest,** belladonna is a valuable remedy. It is one of our best remedies in **whooping-cough.** If half a drop of the tincture of belladonna be given every two hours, alternated with one grain of alum in syrup, excellent results often are obtained.

In the therapeutics of all **continued fevers** this agent has an essential place in some stage of the fever. In fevers of **malarial** origin, there is no other remedy that will replace it. In the sthenic stage of these fevers, combined with aconite, it is sufficient for many of the indications. If there is an intermission or a marked remission, it may be continued alone during the period.

In **typhoid fever,** it is an important auxiliary during almost the entire duration of the fever. Contraindications may arise, when it must be discontinued. It prevents congestion of the intestinal mucous membrane, and of the glands. This is indeed, an important function. It stimulates the heart to diffuse the blood uniformly throughout the entire capillary circulation, and thus prevents cerebral engorgement. The brain symptoms exhibit many of the belladonna indications and are quickly relieved by it. It may not convince the prescriber of its beneficial influence in only a single case, but its continued use, in many cases, is most convincing, as compared with those in which it is not used.

In **meningeal inflammation,** both of adults and children, it is often sharply indicated. This is especially true in subacute cases, where there is slowly increasing dulness, with a cold, moist skin, although there is an excess of two or three degrees of temperature. The pupils are dilated widely, the eyes are dull, the head is drawn back and crowded into the pillow, slowly and constantly rotated from side to side, the eyes are partly, if not widely, opened when the patient is asleep, and the urine passes involuntarily. These cases are sometimes exceedingly stubborn. Belladonna or its alkaloid in frequent doses is the most directly indicated remedy.

In the milder forms of **insanity** or other forms of **mental disease,** the Homeopathist prescribes belladonna where there is **violent delirium,** with livid face, dilated pupils, protruding eyes, fury, striking or biting, spitting, inclination to throw off the clothing or tear them, intolerance of light, extreme arterial tension; but he gives in high dilutions.

One physician says that in certain forms of **obesity,** with plethora and an inclination for general stasis, belladonna will assist in reducing the amount of fat.

Erysipelas will yield promptly to belladonna or atropine in small doses. It is given with aconite or alternated with rhus. It should not be omitted. It acts most promptly if the tissues are smooth, dark, and deep-red, with sluggish circulation and burning, the inflammation being confined to the structure of the integument, and not in the areolar tissues, there being no pustulation or vesicles present.

In **eruptive fevers,** it is a most essential remedy. It quickly determines the eruption to the skin, and retroeession is almost impossible if it is used early. If retrocession has occurred, belladonna is the most prompt remedy known for restoration of the eruption.

In **scarlet-fever,** it has a salutary influence also upon the fever. It promotes exfoliation and assists in the general elimination of the products of the disease. It is directly opposed to the **renal hyperemia** or the **nephritis** so common as a result of scarlet-fever and diphtheria, and is our most reliable remedy with which to overcome this condition when it occurs. For the **nephritis,** a drop of the tincture may be given to a child ten years of age every two hours, alternated every hour with 1-2 grain of santonin. If there be a

large quantity of albumin present, two grains of gallic acid every two hours will facilitate a cure.

Given in small doses after an infectious exposure and before the occurrence of scarlet-fever this agent will act as a prophylactic of the disease. The writer has administered the remedy to the other exposed children when a single case has appeared in a large family, none of whom had an attack. It must be given in small doses: ten drops of the tincture of belladonna in four ounces of water, a teaspoonful every two or three hours to a child of six years. Some of our writers have claimed that belladonna is just as effective in preventing the development of **diphtheria** and **measles** as it is in preventing **scarlet-fever.** They think they have excellent reasons for this conclusion, and I am inclined to believe with them.

Belladonna is of value in **congestive neuralgias.** Full doses should be given. It will cure some exceedingly stubborn cases. It is an excellent plan to give it with ammonium chloride in stubborn chronic cases.

In **prostrating night sweats,** with enfeebled circulation and cool relaxed skin, belladonna or atropine is advised. The 1-100 of a grain of atropine at bedtime will accomplish excellent results. It may be given hypodermically. Medicinal doses of belladonna during the day will accomplish similar results.

In **headache** from fulness of the circulation of the brain dull frontal headache, with indisposition, malaise, and cool skin, with mental torpor and a tendency to unpleasant dreams, this remedy is of value; 1-2 drop every hour or two.

The influence of this drug as an antispasmodic against involuntary muscular action gives it some value in **spasmodic colic** and **obstinate constipation.** It is in common use in laxative pills, to facilitate the action of the purgatives. In lead-colic, it is advised.

Belladonna in physiological doses is an excellent remedy for the treatment of the conditions present during the passing of **biliary calculi.** It very materially facilitates the passage of the stone, prevents chronic change occurring in the structure of the duct, relaxes the duct by a paralyzing effect upon the circular muscular fibers, and renders subsequent attacks less frequent and less severe.

It is a remedy of service in the treatment of **nephritis. Albuminuria** is the result of greatly increased renal blood pressure and capillary engorgement. Belladonna antagonizes all the pathological processes in a direct manner. In acute cases, its influence is apparent from the first. In subacute or chronic cases, its use must be persisted in, but the results are equally satisfactory where structural change has not taken place in too great a degree. Other indicated measures are not to be neglected.

In **incontinence of urine,** where there is a plethoric tendency, a stagnant capillary circulation or the tissues are relaxed, belladonna is a prompt remedy. It is useful in **diabetes insipidus,** with cold extremities. In these cases, it should be given in full doses.

Professor Whitford long advised belladonna for **painful menstruation.** There is an extreme form of this difficulty, in which the patient becomes very cold; the skin is cold and clammy, the pain is extreme, the hands and feet are icy cold, and the temperature subnormal. Belladonna in full doses to its physiological effect is directly indicated here. The patient can be put into a hot bath, with only good results if this is not overdone, but the equalization of the circulation can be accomplished well with belladonna. Occasionally a hypodermic of atropine will accomplish the results more readily.

By stimulating the capillary circulation in the ovaries this agent is directly useful in the milder forms of **congestive dysmenorrhea.** The direct indications for the agent are nearly always present in the cool skin, cool ex-

tremities, dulness, chilliness, and inactivity. It may be given in drop-doses preceding, during or subsequent to the period.

Its influence in stimulating the capillary circulation of the ovaries in stasis renders it of value in the treatment of sterility from inactivity of those organs. If there are hysterical manifestations at the menstrual epoch, with deficient menstruation, pulsatilla may be used in conjunction with it.

The agent will **retard** the **secretion of milk** in the lacteal glands, and is of service when, from the death of the child or from acute inflammation, as in severe mastitis, where abscess is threatened, or from other causes, it is necessary to suppress the secretion. It may be given both internally and applied externally, with good results. Its influence is wide and salutary. When restoration of the secretion is desired, it should be promptly discontinued.

Externally, belladonna is used in **spinal tenderness,** with congestion, also in congestive **occipital headaches** and **lumbago.** It is applied in all conditions inducing a **lame back** and in **neuralgia** of the **spinal** and **sacral nerves.** In violent acute inflammation, it acts as a sedative and anodyne while it exercises its healing properties. It is used in **rheumatism,** in sprained and painful joints, and in boils and carbuncles.

The extract of belladonna is used in **relaxing a rigid os uteri.** An ointment is made and applied directly to the os. In this form, it is of value in spasmodic urethral stricture and in painful congestive conditions of the rectum. A prepared belladonna-plaster may be applied over inflamed organs while the agent is being given internally.

In the treatment of **phlebitis,** for which we have very few specific remedies, the late Professor Clark, because of its power in overcoming hyperemia of the venous capillaries and venous walls, claimed that belladonna, in the form of a strong ointment made from the concentrated extract and kept hot, would produce very prompt results. He invariably used it, and claimed to have had no failures. He would watch for the physiological effect—the dryness of the mouth, dilatation of the pupils, and dry throat; he would then remove it for a while, subsequently to reapply it in the same manner.

Atropine.

Atropine is the essential alkaloid of belladonna. It is difficult to obtain entirely free from hyoscyamine.

Description—It occurs as a white crystalline body, usually in minute acicular crystals, or as an amphorous white powder of a bitter, acrid, nauseous taste and odorless. Upon exposure to the air it assumes a yellowish color. It is soluble in 130 parts of water and three parts of alcohol, fifty parts of glycerine and quite freely in ether and chloroform.

Atropine Sulphate.

Description—This salt is perhaps more commonly used in medicine than the unsaturated alkaloid, atropine. It is a white crystalline powder, odorless and permanent. It is freely soluble in water and in alcohol, nearly insoluble in ether and chloroform.

Therapy—The uses of atropine and atropine sulphate are those of belladonna. Their concentrated form greatly increases the violence of their action. Belladonna is preferable for constant daily prescribing. These alka-

loids are of much advantage in narcotic poisoning and as stimulants in the recovery of patients from shock. The 1-100 of a grain will produce the physiological symptoms in a healthy patient. This dose is seldom exceeded. From 1-150 to 1-200 is usually sufficient. The 1-50 of a grain is the maximum dose. They are best used hypodermically.

Solutions of atropine for hypodermic use should always be made fresh. Old solutions are to be avoided. The fluid becomes infected, and the alkaloid is partly destroyed.

Atropine is used to **dilate** the **pupil** in examination of the interior of the eye, and it is useful in acute inflammation of that organ. It empties the capillaries of an excess of blood, abating the inflammatory processes. It prevents adhesions in iritis, and assists in breaking up any that may have occurred. Two grains of atropine are dissolved in an ounce of distilled water, or better yet, in an ounce of castor oil deprived of its ricinic acid. From one to five drops of these solutions may be instilled into the eye. The oleaginous solution has advantages over the aqueous solution.

Atropine is of superior advantage, used hypodermically, in certain emergencies; in **narcotic poisoning,** and as a stimulant in the recovery of patients from shock. The 1-100 grain dose will produce the physiological symptoms in a healthy patient. This dose seldom is exceeded, and from 1-200 to 1-150 grain usually is sufficient. The 1-50 of a grain is the maximum dose.

Within recent years, the action of atropine given hypodermically for controlling **hemorrhage** has gained so many advocates that it has now become established as a most reliable remedy for that purpose. Doctor Waugh was among the first to bring this use of it forward. His arguments have been unanswerable until its position is now fairly established. He clearly demonstrates its rational, reliable influence for this purpose. From 1-50 to 1-100 grain is injected, and the doses repeated as needed. It is exceedingly useful in uterine hemorrhages.

Doctor Paulding, writing in The Medical Council, relates some experiments with the hypodermic injection of atropine in **acute alcoholism.** There were eleven boys less than 12 years old playing in a freight-yard, where some highwines in barrels were standing on open cars. A barrel was tapped with a gimlet and through a straw all of the boys drank freely of the spirits. Doctor Paulding was called to treat one of them. He observed the extreme dilatation of the pupils. This is the characteristic indication for atropine, determined its use, and he gave a hypodermic of 1-200 grain. This one dose saved the boy's life. The other ten boys died. The doctor reports two other cases where death seemed imminent, but which were saved by a single hypodermic injection of 1-100 grain of atropine.

Doctor Shadid dissolves 1-60 of a grain of atropine in 2 ounces of water and gives one teaspoonful every ten minutes until there is relief, in certain **headaches** which follow prolonged worry, excessive mental exertion, with more or less exhaustion.

In **acid stomach,** where the hypersecretion of the acids is great, atropine, an occasional dose as needed, has been found to exercise a good influence.

Mild solutions of atropine dropped into the ear will relieve **earache.**

The use of cactus in subnormal temperatures has strong advocates, but its influence is positively enhanced by combining it with atropine, giving the two in comparatively full doses for a time.

The injection of atropine at the constriction, in case of **hernia,** or the application of the extract of belladonna over the enlarged hernia, has caused the **spontaneous reduction** in a number of cases. It is a powerful laxative in spasmodic or other constrictions.

Atropine has been used with excellent advantage in the treatment of **sea-sickness.**

HOMATROPINE HYDROBROMATE.

Formula—$C_{16}H_{21}NO_3HBr$.

Synonym—Hydrobromate of Homatropine.

Description—In the formation of Homatropine the chemical process consists of the decomposition of the amygdalate of tropine by hydrochloric acid. The Hydrobromate is a crystalline powder or minute white crystals. Soluble in six parts of cold water, sparingly soluble in alcohol.

Therapy—The agent is not advised for internal administration, although in doses of 1-20 of a grain it has been given for excessive night sweats. It is used in the **determination** of **refraction,** and in examination, in **ophthalmic practice.** Its advantage is in its promptness of action as a **mydriatic** and its transient influence. It is used in the strength of four grains of the salt to an ounce of distilled water. It is in common use for complete paralysis. In this it is necessary to use a stronger solution—two per cent generally. A few drops instilled into the eye and repeated a few times, a few minutes apart, will in a short time accomplish the desired result. The pupil begins to dilate about ten minutes after it is first introduced. The effects are completely dissipated in the course of about thirty-six hours, while atropine retains its influence for, perhaps, ten days, and hyoscyamine for six or eight days.

The main objection to the use of homatropine is the hyperæmia of the conjunctiva which follows its use. There is seldom, however, any acute inflammation. It does not so readily produce constitutional effects as atropine if absorbed.

In the treatment of inflammations it is not as serviceable as atropine. Because of the increased engorgement of blood in the part, it increases the condition. A further advantage of atropine over this agent in inflammations is its permanency or persistency of action.

STRAMONIUM. DATURA STRAMONIUM.

Synonyms—Jamestown weed, Jimson weed.

CONSTITUENTS—Daturine, which, according to Ladenburg, is a mixture of atropine and hyoscyamine, stramonin, scopolamine.

PREPARATIONS—Extractum Stramonii Seminis, Extract of Stramonium Seed. Dose, from one-sixth to one-half grain. Unguentum Stramonii, Stramonium Ointment. Extractum Stramonii Seminis Fluidum, Fluid Extract of Stramonium Seed. Dose, from one to five minims. Specific Medicine Stramonium. Dose, one-fourth to ten minims.

Physiological Action—The action of stramonium on man is similar to that of belladonna. Moderate doses increase the frequency and fullness of the pulse, with dizziness and perspiration; a larger dose (five grains of the powdered leaves) causes nausea, thirst, dryness of the throat, difficulty of speech, dilatation of the pupils, fever, relaxation of the bowels and increase of urine; a poisonous dose causes delirium, with laughter, loquacity, violent striking and biting, with grotesque hallucinations.

Daturine acts more powerfully than atropine, though its action is regarded as identical. The resemblance between stramonium and belladonna is a very close one.

Stramonium is a narcotic poison, a stimulant to the nerve force in its direct effects, and profoundly so in its influence upon the sympathetic nervous system.

Therapy—In proper doses it acts as a sedative and anodyne in a manner similar to hyoscyamus. It is a remedy for **excitable mania** and **acute delirium,** with violent uncontrollable tendencies. It has been given in **epilepsy** for its soothing and tranquilizing effect, but its antispasmodic influence is not sufficiently great to place it among the agents for this disorder.

It has been given in **neuralgias** wherever located, and in **neuralgic dysmenorrhœa.** In **hysterical mania,** accompanied with **convulsions,** epileptiform or other convulsions, it is an excellent remedy. In small doses it will remove the globus hystericus.

It is credited with controlling the contractions and pain in approaching **miscarriage** and abortion, and preventing those accidents.

In the treatment of that condition usually known as **milk sickness** in malarial localities, Kipley claims to cure all cases with the freshly bruised seeds of stramonium, giving as many as from fifteen to thirty seeds every two hours. To the animals who contract the disease, a teaspoonful of the seeds is given three or four times daily with satisfactory results.

He also gives it in the **painful menstruation** of women with good results, giving fifteen bruised seeds every few minutes until the pain is relieved, then farther apart.

As an ointment it has been long applied to inflamed swellings and to **glandular inflammations** and in painful **hemorrhoids.** It is useful in **mastitis, orchitis, parotitis,** in **rheumatic inflammations,** and as a fomentation in these latter conditions, and in **pleuritis** and **peritonitis,** using caution not to obtain too marked cerebral effects.

In **muscular tremblings** it is indicated, especially if of functional or reflex origin. In the vertigo and unsteadiness from chronic indigestion or disordered stomach from hyperacidity and in headache from this cause it is the remedy.

In spasmodic or paroxysmal **cough,** as whooping cough, and in the violent paroxysms of acute bronchial cough, it is a soothing remedy, as it acts without suppressing secretion as actively as belladonna.

Because of its antispasmodic influence upon **spasmodic asthma,** it has come into general use as an agent in that disease, used principally as an inhalant. The dried leaves are burned and the fumes are inhaled and relief is immediate. The dried root in coarse powder as well as the powdered leaves may be smoked in a common tobacco pipe.

This use of the agent produces excessive expectoration, and also marked nervous phenomena, such as vertigo, nausea, determination of blood to the brain and stupor. In plethoric patients these induced symptoms are sometimes violent and even dangerous. It is sometimes burned in conjunction with potassium nitrate, to enhance its effects.

DUBOISIA. DUBOISIA MYOPOROIDES.

Synonym—Corkwood Elm.

CONSTITUENTS—An alkaloid **Duboisine** similar to hyoscyamine and atropine. Dose, 1-130 to 1-50 grain, usually administered hypodermically.

PREPARATIONS—Extractum Duboisiæ, Extract of Duboisia. Dose, ¼ to ½ grain. Extractum Duboisiæ Fluidum, Fluid Extract of Duboisia. Dose, from two to ten drops.

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Physiological Action—Duboisia is similar in many respects in its influence, to stramonium, hyoscyamus and belladonna. It produces dryness in the mouth and constriction in the throat, with difficult deglutition. It increases the pulse rate and arterial tension, increases the capillary circulation in the skin, with flushed face like belladonna. The pupil dilates, there is a sensation of fullness in the head, with tinnitus aurium, vertigo, nervous excitement and muscular uncertainty. These conditions are followed by mental inactivity and stupor, with general quiet, although the patient may not sleep.

Therapy—The agent has not been extensively used for internal administration. It soothes the respiratory apparatus, increases the action of the heart, like belladonna in congestions, and is given to control excessive night sweats.

It has been given in some cases of **maniacal excitement,** but it must be given in the enfeebled cases and not when there is fullness—engorgement of the circulation of the cerebral organs. It has been used in the treatment of **emotional insanity** and **delirium** with excitement. Duboisine is given in doses of from 1-120 to the 1-60 of a grain in these cases, and is said to be a valuable hypnotic. In a few insane patients, especially those with hysterical manifestations, it has caused regurgitation of the food. It is also used in **muscular tremblings, paralysis agitans** and **epilepsy.**

There are a few patients who are especially susceptible to its use and will experience vertigo, fullness of the head, a feeling of danger and heart pains, even from small doses, or from a single drop of a one per cent solution in the eye.

Duboisia has been used as a **mydriatic.** It has no properties not possessed by atropine, although it is claimed to produce its effects in paralyzing accommodation and dilating the pupil more rapidly, with less conjunctival irritation and with more speedy recovery.

The hypodermic injection of duboisine will antagonize the influence of opium or morphine as effectually as atropine.

PHYSOSTIGMA. PHYSOSTIGMA VENENOSUM.

Synonyms—Calabar bean, Ordeal bean, Chop nut.

CONSTITUENTS—Physostigmine or Eserine, Calabarine, Eseridine, Phytosterin.

PREPARATIONS—Extractum Physostigmatis, Extract of Physostigma. Dose, from one-twentieth to one-eighth of a grain. Tinctura Physostigmatis, Tincture of Physostigma. Dose, from three to ten minims. Specific Medicine Physostigma. Dose, from one-fourth of a drop to five drops. Prescribed, from eight drops to two and one-half drams, in four ounces of water. A teaspoonful every two to four hours.

Physostigmine or Eserine—A crystalline solid, white or pinkish colored, readily soluble in alcohol, sparingly soluble in water. Dose, 1-150 to 1-30 of a grain.

Physostigmine Sulphate—A crystalline powder, whitish or yellowish white, changing on exposure to a pink or reddish color, bitter, odorless, deliquescent; freely soluble in alcohol and water. Kept for preservation in amber-colored vials. Dose, 1-150 to 1-30 of a grain.

Solutions of one grain of physostigmine or its sulphate to the ounce of distilled water is used in the eye, one drop three or four times daily.

Physiological Action—The first effect of calabar bean upon internal administration in overdoses is local—a sense of burning and irritation in the stomach, with nausea, vomiting and purging. The salivary, gastric and in-

testinal secretions are all greatly increased. It stimulates unstriped muscular fiber, producing in the intestinal canal increased peristalsis. There is inactivity, prostration, cold, pallid skin and muscular incapacity.

The evidences of the action of this agent upon the nervous system are not marked. No pain is produced and the consciousness of the patient is usually retained. Probably, from deficient oxygenation of the blood, there is vertigo, which may finally induce narcosis. There are ultimate paralysis and temporary tetanic convulsions. There is abolition of motor reflex.

The arterial tension is at first lowered, then increased, the heart is slowed. There is a reduction in the number and force of the pulsations. The influence seems to be entirely upon the muscles of the heart, through overstimulation of the cardiac ganglia, and not through the central nervous system. The heart finally loses its contractility, is flabby, and fails in diastole. The respiration becomes slower, is shallow and feeble, and finally ceases. The heart continues to pulsate with increasing feebleness for some little time after respiration has ceased. The blood is loaded with carbonic acid gas, and the corpuscles are altered in their character.

The general muscular relaxation from this agent is most marked. Small, long continued doses induce feebleness and indisposition to muscular exertion. By full doses, tremors of the voluntary muscles are induced, and finally complete muscular paralysis. The muscular structure of the walls of the intestines is sometimes affected by tetanic spasm, followed by complete relaxation and paralysis.

The mind may continue clear. The influence, at first stimulant, is finally motor depressant, abolition of reflexes appears, with ultimate paralysis of the motor nerves, more slowly occurring.

It is quickly absorbed and readily eliminated through all the emunctories.

Upon the eye, when locally applied, this agent acts first by contracting the pupil. It afterward decreases intraocular tension, and produces spasm of accommodation and myopia. There is often pain of a severe contractile character produced in the eyeball.

Specific Symptomatology—The remedy is indicated when there is a feeble pulse, tremulous, perhaps slightly irregular, cool extremities and cool surface, breathing more or less difficult, with a sense of constriction. These symptoms are found present in some cases of **cerebro-spinal meningitis.** Administered in minute doses in this disease, it will be found to occupy a place between belladonna and gelsemium. It may be given in conjunction with echinacea with very good results. It overcomes the tendency to mental dullness and **stupor** and wards off impending **coma.** The agent is useful where there is torpor, inactivity, atonicity of the intestinal canal, and of the organs of digestion and appropriation, or where from lack of nerve force there is deficient secretion, dryness of the mucous membranes, deficient glandular secretions with dry and hardened feces.

It increases the contractility of the muscles of the bladder walls, and of the uterus.

Although a motor depressant in large doses, in small medicinal doses it has a contrary influence.

Therapy—The agent may be given internally to allay the tension induced by extreme nervous irritation. Convulsive disorders from irritation are allayed by it, but it is not in general use for this purpose.

It has been used in **tetanus,** in **epilepsy** and in convulsions from all causes, also in **locomotor ataxia,** in **chorea** and in **progressive paralysis** of the **insane.** Its influence has not been such as to justify dependence upon it in these cases.

It stimulates the respiratory function and heart's action where there is great depression with **difficult breathing,** with a sense of compression or constriction of the chest, with soft, feeble pulse, cool, moist skin, and usually dilated pupils. It is the remedy for dyspnœa under such circumstances. It is also advantageous where the **dyspnœa is caused** by a clogging up of the bronchi and air cells without power to expel the thick tenacious mucus. It will liquefy the secretion and increase the power to expel it.

In **emphysema** and in **asthma** with great muscular relaxation, in **bronchitis** with dilatation, it is useful. It restores tone in **phthisis** and overcomes **night sweats** of that disorder.

It may be of advantage in dilatation of the **stomach,** and in atony and extreme inactivity of the intestinal muscular structure. In **intestinal catarrh** from this cause it is of much service. It is also valuable in **catarrh** of the mucous linings of the **kidneys** and **bladder,** and in extreme atony, relaxation and plethora of the abdominal structures. It will assist in overcoming **chronic constipation** and a tendency to **flatulence** in atonic cases.

It is useful in tympanites and **flatulence** present during the **menopause,** where there is atonicity of the intestinal walls and **constipation.** In the condition known as **phantom tumor** it has been used advantageously.

Its chief influence is upon the eye. When **mydriasis** has been induced by atropine or other agent, a solution of the sulphate of eserine will quickly restore the normal condition. Any **adhesions** of the **iris** which may have occurred as the result of inflammation may be broken up by this agent. It is used to reduce intraocular tension, as has been stated, and to increase the power of the muscles of accommodation, being valuable in paralysis of these muscles.

It is useful in **conjunctival inflammations** where **perforating ulcer** threatens to permit prolapse of the iris. It is especially advised when **ulceration** without determination of blood—indolent in character, nonvascularized—is present. It is useful in intermittent **strabismus,** in **glaucoma, asthenopia,** in **photophobia** and in some cases of neuralgia of the eyeball. After injury to the eyeball many conditions may occur which will be promptly relieved by the use of this agent.

Edison of Indiana wrote some years ago an excellent article on the treatment of meningitis, in which he lays great stress upon the action of this remedy. Whether the difficulty be spinal or cerebro-spinal, whether it be acute or chronic in character, he claims to obtain benefit in all cases, and cure in the larger percentage of cases, by the direct influence of calabar bean, especially if there be an underlying primary congestion, plainly apparent. He uses in conjunction, however, counter irritation in all cases.

To an infant he gives of a mixture of from eight to ten drops of the tincture in four ounces, a teaspoonful every half hour. To an adult he would administer two drops every fifteen minutes, until spasms or marked symptoms are under control, then he would give the dose every two or three hours. He lays great stress upon small doses frequently and persistently repeated. I believe it more useful if given in careful combination with gelsemium.

The remedy is useful in the treatment of **spinal irritation,** in one or two drop doses, frequently administered. The doctor has depended upon this remedy for twenty-five years, and the results have established a fixed confidence in its influence.

Co-operatives—It may be combined with xanthoxylum, strychnine, nux-vomica or capsicum with advantage. Belladonna will facilitate its action, also, in its influence upon gastrointestinal structures.

CHAPTER IV.

Inorganic Emergency Excitants.

AMMONIA. AMMONIUM CARBONATE. AMMONIUM PHOSPHATE. AMYL NITRITE. NITROGLYCERINE.

AMMONIA.

Formula—NH_3.

Under pressure of only 6.5 atmospheres, it is reduced to a colorless, mobile, unstable liquid.

Anhydrous Ammonia—This liquid will solidify at 103 Deg. Fah. It volatilizes rapidly with the abstraction of heat.

The compounds of ammonium are formed by the saturation of the ammonium radical NH_4. In its compounds it acts similarly to sodium and potassium.

Aqua Ammoniæ.

Formula—NH_4HO. Ammonium Hydrate.

Synonym—Ammonia water. Formed by the solution of the gas in water. It contains ten per cent, by weight, of the gas.

Aqua Ammoniæ is a transparent mobile liquid, colorless, with a pungent, stimulating odor and an acrid taste. It is positively alkaline in reaction. The gas is volatilized by heat, reducing the strength of the agent.

Physiological Action—In full strength aqua ammoniæ is caustic and irritant, applied to the skin. Internally it is a corrosive poison, producing gastroenteritis. If inhaled in extreme quantity, it produces mental confusion and cerebral congestion.

Therapy—It is used as a stimulant and antacid. It stimulates the action of the heart and the respiration. It has long been in use as an antidote to the poison of venomous insects and reptiles. In extreme collapse, after severe injury, it has been injected diluted into the veins, but this is heroic treatment and is not commonly resorted to.

The agent is in common domestic use for the treatment of syncope. If given internally, from five to fifteen minims, well diluted with water, is the dose.

Externally applied it produces speedy vesication. Closely confined the cuticle may be removed in a few minutes.

As a liniment it has long been used. One part of aqua ammoniæ combined with from two to five parts of olive oil makes an excellent application to enlarged and indurated glands, swollen condition of the muscular tissues without inflammation, strained and sore muscles, and local soreness from any cause. It is probably one of the best applications to the swelled limb in phlegmasia alba dolens. It should be applied very freely, the limb swathed in cotton and a roller bandage applied over all.

Spirit of Ammonia.

Description—Spirit of Ammonia, formerly called ammoniated alcohol, is made by dissolving ten per cent of ammonia gas in alcohol. It is a colorless fluid, with the odor and taste of ammonia. Internally it is but little used, being replaced by the aromatic spirit. It has the alkaline properties of the aqua ammoniæ, and its stimulating properties are enforced by those of the alcohol. Internally it may be given in doses of from five to twenty drops, fully diluted.

Aromatic Spirit of Ammonia.

Occurrence—The aromatic spirit of ammonia is made by dissolving the carbonate of ammonium in water and adding a solution of ammonia, volatile oil of nutmeg, oil of lemon and dilute alcohol, all in proper proportions.

Therapy—It is prescribed wherever there is great weakness or prostration, with feeble action of the heart. It is immediate in its influence and reliable in its action. In **hysterical conditions** accompanied by nervous weakness and in general nervous debility it is in common use. It is of temporary benefit in **cerebral anæmia,** as it is an active stimulant to the capillary circulation of the brain. Internally it stimulates the action of the stomach, neutralizing hyperacidity, overcoming many forms of **sick headache** and relieving gastric and intestinal flatulence. It is given in doses of from five to thirty minims.

Liquor Ammonii Acetatis.

Synonyms—Solution of Ammonium Acetate, Spirit of Mindererus.

Dose, from one to three fluid drams in sweetened water.

Therapy—The agent has the characteristic stimulating effect of ammonium upon the system. If the skin be warm and the capillary vessels dilated, it acts as a diaphoretic, stimulating excretion through the cutaneous glands; but if the skin be cold and the capillaries are contracted, it acts profoundly upon the kidneys as a diuretic. In **eruptive fevers,** where there is imperfect circulation and the eruption fails to appear readily, it is sometimes an excellent remedy. Later, in these fevers, if there is depression of the nervous system, with inactivity of the skin and kidneys, it is valuable. Given in post-scarlatinal nephritis, with dropsy, it is sometimes most efficient. It acts in this condition in perfect harmony with belladonna, digitalis and santonin.

It is given in the convalescent stage of all **protracted** and exhausting **inflammatory diseases,** strengthening the action of the heart and increasing the tone and restoring the functional activity of all the organs of nutrition. It does not produce unpleasant head symptoms. It certainly sustains the powers of life in these cases and conduces to a more rapid recovery.

It has long been in common use among **alcoholics.** If a dram of it be given in a half glass of water it will sober an intoxicated person and produce a temporary steadiness of the nerves. The dose may be repeated every half hour if necessary until its effects are permanent in overcoming the debauch.

This agent is used in **la grippe,** in acute **laryngitis,** and in acute **pharyngitis.** It is especially valuable in acute **coryza,** and if given with aconite or other direct diaphoretics, it quickly overcomes the constitutional effects of a severe cold. It is of value in some cases of **rheumatism,** because of its stimulating influence on excretion.

In passive **menorrhagia** or in **metrorrhagia,** where there is debility with muscular relaxation and nervous weakness, it is a specific remedy. In **ovarian pain** from passive congestion, and in uterine pains at the menstrual epoch, with the conditions above named, it is a useful remedy.

Externally it has long been employed as a discutient to indolent abscesses, glandular swellings, engorgements, and to dissipate incipient abscess in the mammary glands.

AMMONIUM CARBONATE.

Formula—$NH_4\,HCO_3\,NH_2\,CO_2$.

Synonym—Carbonate of Ammonium.

Administration—It is objectionable to the taste and care should be taken to render it palatable by elixirs and flavored syrups. The dose is from two to twelve grains in a proper menstruum.

Therapy—This agent is a quick and sure stimulant for sudden and extreme depression. It arouses the heart's action promptly and supports it in threatened **collapse.** It is common practice to combine ten or fifteen grains with as many minims of the tincture of digitalis when there is **surgical shock,** or severe intestinal **hemorrhage** in **typhoid,** and repeat the dose, or give a smaller one, as soon as the effect of the first one is dissipated, until the reaction occurs. It restores from syncope. It is used in the collapse of **profound anæsthesia,** to overcome the depression of the heart and respiratory functions.

Its alkaline reaction renders it valuable as an antacid, and an excess of gastric acidity should determine its selection for more prolonged use. It is a superb stimulant in cases of greatly **diminished vitality** after prolonged illness, or in chronic disease, where there is hyperacidity of the gastric and intestinal secretions. It is valuable in **hysteria** with acid eructations and frequent sick headache, with a thick tongue, the papillæ of which are greatly elongated and tipped with a whitish coat, and the mucous membranes of a pale color. In nervous, feeble women without ambition, constantly irritated, with inactivity of the vital functions, this stimulant is prompt and reliable.

It is not as useful in **epilepsy** as the bromide of ammonium, nor as a sedative in feeble nervous conditions as the valerianate of ammonium, but it is indicated when greater force, greater stimulation and increased power are demanded. It is more of a stimulant than a sedative, and is especially effective in asthenia.

This agent is one of the most common of the **stimulating expectorants.** It is a restorative to enfeebled conditions of the bronchial membranes when there is an excessive outpour of mucus, which seems to enfeeble the patient, and is therefore indicated in chronic **bronchitis** and in bronchorrhœa. In small, frequent doses it is useful in the later stages of bronchitis, and in **pneumonia** in children it supports the vital powers and restores normal function. If there is obstructed breathing, with deficient oxidation and feeble heart action, it is a useful remedy.

This agent acts in many cases upon the skin. In febrile conditions, with feebleness, it is a very excellent diaphoretic. Dr. Peart, of England, used the carbonate of ammonium in three hundred cases of **scarlet fever,** and claimed success in every case. It is given in small doses every hour, reducing the fever and delirium, inducing sleep and stimulating the action of the skin and kidneys. It developes the rash in all cases, and where there is a retrocession of the eruption it will quickly restore it to the surface. Minger speaks most highly of this remedy in scarlet fever, **measles and erysipelas.** If this agent is depended upon, chemical incompatibles, as acids, must be avoided. The agent is best given with milk, when much of its unpleasant taste is obscured.

The carbonate of ammonium is used to counteract the effects of many poisons which have a depressing action on the system, such as veratrum, gelsemium, aconite, digitalis, hydrocyanic acid and others.

AMMONIUM PHOSPHATE.

Formula—$(NH_4)_2\ HPO_4$.

Synonym—Phosphate of Ammonium.

Administration—The dose is from five to thirty grains dissolved in water and administered every three or four hours.

Therapy—It is, or should be indicated in those cases where, with general nervous prostration, there is **feebleness** of the **heart's action,** and in fact feebleness of all the vital functions due to deficient nerve power. It may be used in these cases with expectation of good results, as it is a stimulant restorative to the nervous system. It promotes elimination, and has been used freely in **gout** and **chronic rheumatism** in enfeebled patients.

AMYL NITRITE.

Formula—$C_5\ H_{11}\ NO_2$.

Synonym—Nitrite of Amyl.

Administration—In its administration, glass pearls containing about three minims of this agent are crushed in a handkerchief and the fumes inhaled. This method prevents overadministration.

The agent should usually be administered with the patient in a recumbent position, because of its immediate and profound impression upon the circulation.

In reducing the dose of this remedy the best plan will be to dissolve five minims in one dram of dilute alcohol. Of this one minim will equal 1-12 of a minim of the nitrite. It can be given then as indicated.

Physiological Action—Because of the extreme volatile character of the agent, its influence upon the system is prompt and violent in proportion to the amount used.

It produces headache, confusion of ideas, vertigo, and relaxation of both voluntary and involuntary muscles. There is dilatation of the retinal vessels with hyperæmia.

It is exceeded in its promptness of action upon the nervous system by hydrocyanic acid alone. It affects the motor side of the spinal cord. Its ingestion induces staggering, loss of co-ordination, flushed face, fullness of the head, roaring in the ears and general muscular relaxation. The heart's action is increased in force and rapidity. There is great dilatation of the arteries by temporary paralysis of the sympathetic. The heart finally becomes weak and the blood assumes a dark hue. The respiration is at first rapid, but increased doses produce slow and labored breathing from depression of the respiratory nerve. The heat of the body is reduced.

In poisonous doses the pulse gradually becomes slower, the heart is greatly weakened, the respiration is slow and shallow, the temperature is sub-normal, the extremities cold, there is great muscular weakness, cyanosis, extreme vertigo, disordered vision and death from failure of heart and respiratory action.

Used for its therapeutic effects the agent is administered by inhalation. A single breath of the vapor of three drops will produce a flushed face and dizziness, throbbing of the carotid arteries, with sensation of fullness in the head and quick pulse.

Therapy—It is a profound restorative in extreme conditions. It was first used to overcome **chloroform asphyxia,** and is exceedingly efficacious where the influence of chloroform has produced profound cerebral anæmia.

It is a popular remedy in the treatment of **angina pectoris.** If the attack is accompanied by high arterial tension, the relaxing influence of this agent will give immediate relief.

Because of its influence in relaxing the muscular system it is used in general and local muscular spasms. It is useful in **epilepsy** to overcome the spasm, and when there is an **aura** its inhalation will abort the attack. It is used in **tetanus** and in the convulsions of strychnine poisoning with excellent results, but it must be given, if possible, preceding the spasm, as the respiration is usually interfered with. It will relax the spasm in puerperal eclampsia, but at the same time it produces relaxation of the unstriped muscular fiber of the womb and permits post-partum hemorrhage.

It is too active for use in the convulsions of childhood, although it is sometimes so advised. It is used in spasmodic **asthma,** in **whooping cough** and in **laryngismus stridulus,** but should not be administered to young children.

This has been advised for occasional administration in **chronic nephritis,** with high arterial tension, and also in cases of extreme cerebral anæmia. In both cases, however, it is replaced to an excellent advantage by nitroglycerine.

It has proved to be of much value in that condition so much complained of by ladies at the **menopause,** or during the child-bearing period, when the menses have been interrupted in their regularity, and at other times with all patients when there are **flushes of heat,** local burnings of the skin, flushed face or burning hands; where the venous capillaries are engorged in certain localities, and are more or less empty in others—an irregularity of distribution of the blood in the capillary circulation. These irregular flushings have been satisfactorily corrected by the internal use of one drop of the nitrite of amyl three or four times daily. If the patient is sensitive to the action of the remedy a small dose may be given. One, two or three minims may be inhaled.

Antidotes—In the treatment of poisoning by this agent, profound diffusible stimulants are necessary, and perhaps artificial respiration, with strychnine, strophanthus or digitalis, hypodermically, is essential to sustain the heart, and cold should be applied to the head.

NITROGLYCERINE.

Formula—$C_3H_5(NO_3)_3$.

Synonyms—Glonoin, Trinitrine.

Administration—The alcoholic solution, the **Spirit** of **Glonoin** or **Spirit** of **Nitroglycerine,** is the preparation used in medicine. It is formed by combining one part of nitroglycerine with ninety-nine parts of the rectified spirits of wine. It is a clear, colorless liquid with the odor and taste of alcohol. It must be handled and tasted with extreme care.

The dose is one or two drops, of the above one per cent solution, graduated according to its rapidity of action. A single overdose will induce a fullness of the head with a feeling of pressure and pain.

Physiological Action—Two drops upon the tongue often produces immediate acute cerebral engorgement, with flushed face and violent headache. The use of this agent as a powerful **brain stimulant** and to induce **cerebral hyperæmia,** is becoming more and more general. Its effects are immediate and more or less violent. It stimulates the heart's action and induces nausea. It induces other phenomena similar to those of the amyl nitrite.

Therapy—In sudden or acute **cerebral anæmia** from any cause, especially that induced by **sunstroke,** it will act in a manner superior to any other agent. It has controlled many cases of **post-partum hemorrhage** by determining the blood to the nerve centers and increasing nerve control.

It has acted nicely in **angina pectoris** and in **cardiac neuralgia.** In anæmic headache it is a specific remedy. It may be continued for some days if necessary, in doses of one minim of the one per cent solution every two or three hours. In exhaustion following prostrating fevers, used hypodermically, it is an emergency remedy for the following conditions; asphyxiation from drowning or from gases; in opium poisoning, especially if there be uremic symptoms; in angina pectoris; in palpitation, and in all forms of asthma. It is useful given before an attack in epilepsy, and in tetanus. It is useful in reflex vomiting; in renal and hepatic colic; in anemia and anemic headaches especially, because it loads the capillaries of the brain. It is also useful in albuminuria, and wherever an agent is needed to reduce arterial tension. It may be given just before a chill in intermittent fever or pernicious malarial attacks, warding off the cold stage.

Dr. Neiderkorn reported excellent results from the use of 1-250 of a grain of glonoin in a case of nephritis with serious complications. There was an enormous quantity of albumin in the urine. The glonoin was given every three or four hours for a patient who was cured.

In the treatment of cocaine poisoning nitroglycerine is given hypodermically with good results. It is claimed that if it be used in advance of the administration of cocaine, the local effect of that medicine would be determined without any constitutional influence. This is an important fact.

DIVISION III.

CHAPTER I.

Agents with Stimulant Properties Involved in Active Trophic or Tonic Properties.

HYDRASTIS.	PHOSPHORUS.	COCA.
GOLD AND SODIUM CHLORIDE.	PHOSPHORIC ACID.	KOLA.
	AVENA.	

HYDRASTIS. HYDRASTIS CANADENSIS.

Synonyms—Golden seal, Yellow puccoon.

PREPARATIONS—Specific Medicine Hydrastis, alcoholic, contains a bitter coloring principle, berberine, and the white alkaloids, hydrastine and canadine, and resinous and oily principles. Dose, from one to ten minims. Colorless Hydrastis, non-alcoholic, contains the colorless alkaloids and the inorganic salts dissolved in glycerine and water.

Extractum Hydrastis Fluidum, Fluid Extract of Hydrastis. Dose, three to twenty minims.

Extractum Hydrastis, Inspissated Extract, Extract of Hydrastis. Dose, one to five grains.

Tincture of Hydrastis. Dose, from twenty minims to two drams.

Hydrastis Pulvis, Powdered Hydrastis. Dose, from three to fifteen grains.

Berberine (Hydrastin, yellow). Dose from one-half to five grains.

Hydrastine (white). Dose, from one-tenth of a grain to three grains.

CONSTITUENTS—Berberine, Hydrastine, Canadine.

Physiological Action—In its influence upon the nervous system, this agent has stimulating properties in part analogous to those of strychnine. Its influence is more slowly developed and more permanent. In extreme doses it blunts the sensibility of the terminal nerve filaments, and convulsions have resulted from its use.

It stimulates the respiration and circulation, imparting tone and increased power to the heart's action, increasing arterial tension and capillary blood pressure. It influences blood stasis similarly to ergot and belladonna.

The tone imparted to the muscular structure of the heart differs from that imparted by strychnine in being permanent and not spasmodic or intermittent in character. It influences muscular structure everywhere in the system in the same manner. It stimulates normal fibrillar contractility and increased tonus, encouraging the nutrition of muscular structure. It inhibits the development of superfluous muscular tissue and abnormal growth within that structure. It is thus most valuable in altered conditions of the heart muscle.

In its influence upon the gastro-intestinal tract it is tonic, restorative and soothing in its action. It promotes the appetite, increases the secretion of the gastric and intestinal juices and conduces to a restoration of the normal condition. It increases peristaltic action and general muscular tonus in the structure of walls of the stomach and intestines.

The alkaloids have been given in sufficient quantities to produce death in the lower animals in experimental investigation, but it cannot be considered toxic in medicinal doses. It produces convulsive action, followed by

decreased irritability of the vagus, the blood pressure is suddenly decreased and the heart fails in diastole.

Its elimination is comparatively active and is largely accomplished through the kidneys.

Therapy—In its therapeutic influence its widest range of action is upon the **stomach,** in **functional disorders** of that organ. It is the most natural of stimulants to the normal function of digestion. Its influence upon the mucous surfaces renders it most important in **catarrhal gastritis** and gastric ulceration. It supersedes all known remedies as a local, and also as a constitutional tonic when this condition is present.

In administering this remedy, if there be irritation, the fluid and less bulky preparations are preferable. If there be marked **atonicity** with inactivity of the **stomach** and lack of nerve sensibility, the powdered drug in five grain doses is the most useful. This increases the tone, reduces abnormal secretion, stimulates normal excretion, promotes the appetite and increases the quantity of the digestive juices, and thus favors the digestion. It is most excellent in indigestion in such cases, acting in a more rational manner than the digestives which have no influence beyond that immediately exercised upon the food within the stomach.

In extremely irritable conditions a solution which contains one or two drops of the specific hydrastis, or the colorless hydrastis, or in extreme cases the one-twelfth to the one-fourth of a grain of the sulphate of hydrastine or of the hydrochlorate of hydrastine is preferable to large doses of hydrastine or the powdered hydrastis. In some cases powders, or the precipitated principle, will irritate the stomach, producing weight, distress or even mild pain if the stomach is empty. In such cases it is best given after a little food has been taken, or in conjunction with the subnitrate, or the oxide of bismuth, or with a digestive if the stomach contains food.

In those cases of **atonic dyspepsia,** where the entire apparatus, including the liver, is stagnant and inoperative, one-fourth of a teaspoonful of the fluid hydrastis or of the colorless hydrastis dissolved in water will restore a normal condition of the glands and of the entire mucous membranes.

The agent relieves the **chronic constipation** of plethora or muscular inactivity in relaxed, inactive, feeble cases. Its influence is encouraged by combination with nux vomica. It overcomes **hepatic congestion** in such cases and catarrh of the gall ducts. It may be combined with podophyllum, leptandra or iris.

It is a most superior remedy in the atonic conditions of these organs in **chronic alcoholism,** and if combined with large doses of capsicum and with forced nutrition, will in great part supply the demand for alcoholics and assist in the cure of the disease. It acts as strychnine does in the cure, and may be most beneficially given in combination with that agent.

The tonic and nerve strengthening properties of this agent have long been utilized by the writer in all cases of **general debility** and nerve prostration, especially if associated with the conditions of the digestive and assimilative organs named. It is an admirable restorative tonic. It is demanded in convalescence from **protracted fevers** and debilitating inflammation, and as a general restorative after overwork, in the condition known as a complete "breaking down."

The usual manner of prescribing it is to give a grain of hydrastine, two grains of the bisulphate of quinine, one grain of the carbonate of iron and one-fourth of a grain of capsicum in a capsule every three hours, after eating something simple, that the stomach may not be entirely empty. The improvement is remarked by the patient usually from the first. It is a simple tonic, but has no superior. In some plainly indicated cases, the quinine

salt may be replaced with one-fourth of a grain of nux vomica.

The influence of the agent is certainly direct upon the central nervous system, promoting a normal circulation and increasing its nutrition. It will yet be found applicable in the treatment of **cerebral engorgements** of a chronic character, and in the treatment of **hyperæmia** of those organs, in the cases in which ergot is used.

It is valuable in from one-fourth to one-half teaspoonful doses of the fluid Hydrastis, or colorless Hydrastis, in water, in **prostrating night sweats.**

In its power over the nutrition of muscular structure, it is a most important remedy in many **disorders** of the **womb.** It produces contraction of the unstriped muscular fibers, slowly but permanently stimulating the removal of excess of growth. In parturition it is not so immediate or forceful as ergot, but acts mildly in the same manner. In **uterine subinvolution,** in **menorrhagia or metrorrhagia** from this cause, it is the best remedy we have.

It is useful also in **post-partum hemorrhage,** but is rather slow in its action when immediate results are demanded. In the incipient stage of the development of tumors within the uterine structure, or fibroid growths, it is not excelled by ergotine. It may be used hypodermically in these cases, and its results are comparatively permanent.

In the treatment of **cancer** or **scirrhus** of the **breast** Dr. Hale has had excellent results from the use of this remedy. He uses the mother tincture in conjunction with conium, giving five drops at a dose three or four times a day, the hydrastis before, the conium after meals. He says: "Sometimes, I mix them and give ten drops of the mixture three times a day."

Hydrastis is directly indicated where the **tumors** are hard and painful; conium where they are small, hard and painless. Where the swelling is soft or undulated and painful on pressure, and pain extending into the axilla, we find phytolacca in the same doses better than either. Sometimes all three remedies are good together, and none of them is valuable in the open cancer. The remedies must be continued a long time to make a decided impression, and their effect is even increased by the same remedies being applied externally in the form of a plaster.

In all **catarrhal conditions,** especially if there be muscular relaxation and general enfeeblement, it is a useful remedy. It may be given internally and used locally. It is used locally in solution and is of much value as an application wash, irrigating fluid or gargle in all such **catarrhal, ulcerating, aphthous, indolent** and otherwise unhealthy conditions of **mucous surfaces.** Its application to **nasal catarrh** has been mentioned. It is a most useful gargle in aphthous or **ulcerated sore mouth,** in conditions where the gums are spongy or loosened from the teeth or bleed easily. In **diphtheria** and in **tonsilitis** as a gargle it is extremely useful.

Ten minims of a fluid preparation, to the ounce, may be used, or a solution of the hydrochlorate of hydrastine in **nasal catarrh,** in **inflammation** of the **eyes** and in **gonorrhœa.** One grain of the hydrochlorate in an ounce of rose water, with or without five grains of the sulphate of zinc, is of superior value in purulent conjunctivitis. The same preparation, diluted, is useful in gonorrhœa. Five drops of the solution in a dram of warm water is the proper strength. The colorless hydrastis in a solution with a small quantity of the potassium chlorate is sometimes superior in nasal catarrh. It is most serviceable in this condition if dilute.

It is the best of washes in **leucorrhœa,** whatever the cause, and it can be used freely without danger and in various strengths—from one dram to three, to the pint of hot water. It is of much service when the discharge is thick, yellow, and the membranes relaxed and feeble. In simple cases half a dram to the pint is beneficial.

It forms an excellent wash in **eczema** of the **anus,** with ulcers or fissures within the rectum. Its use may be followed with the application of a zinc ointment, with twenty-five per cent its weight of bismuth subnitrate. In mild solutions of the hydrochlorate of the alkaloid one-fourth grain to the ounce, it is serviceable in **catarrh** of the **bladder,** as an irrigating fluid.

We find in addition to the tonic influence of this remedy, that it has been used in a number of cases of **gall stone,** with curative results. Professor Farnum claims to have cured a number of cases with the powdered hydrastis. The cases which he regards amenable to this treatment are, first, ordinary cases of **cholelithiasis,** where the symptoms are transient and not severe; second, acute inflammatory cases, usually attended with fever, and **catarrhal conditions of the gall ducts;** third, cases ordinarily called biliary colic. Those, of course, where organic change has not taken place, or where the stones are not impacted, in the gall bladder or in the ducts. He uses it as an efficient remedy in **catarrhal jaundice** where there is no pain to indicate the presence of gall stones in the ducts. This is in harmony with its influence on general catarrhal conditions of the gastro-intestinal tract.

Goss claimed that it had direct catalytic power, and aided the digestion, while it corrected the biliary function. It restores the mucous lining of the gall duct, in the same manner that it influences other mucous surfaces.

Cuthberton gave hydrastis canadensis as a tonic to a pregnant woman who had a **goitre** of recent appearance. The goitre was promptly cured. As a result of this observation, he treated twenty-five other cases of goitre at the time of **puberty,** or **during** the **pregnant state.** At times when interference with the function of the reproductive organs seemed to produce reflex irritation. He claims that every case was cured by this remedy. He gave the agent from six weeks to three months, three times a day after eating. One of the patients had become steadily worse under the use of iodine, the iodides, and thyroid extract. This patient began to improve as soon as hydrastis was given, and was promptly cured with this remedy alone.

Webster calls attention to the influence of hydrastis upon the **mammary gland.** It has been reported as a remedy for **mammary cancer,** but its more satisfactory influence is upon painful fulness of the mammary gland, during the menstrual period, or for the treatment of local enlargements occurring more or less suddenly, of a benign character, either in maiden ladies or at the menopause.

There is an abundance of authority for the use of hydrastis in conjunction with conium maculatum, in the treatment of **non-malignant mammary tumors.** The two agents combined seem to have an influence that neither possesses alone. Two minims each of these two remedies, in the specific form, was given by Webster before meals and at bed time, in these cases, with satisfactory results. The doctor reports in detail quite a number of cases which were relieved or cured by this treatment.

GOLD AND SODIUM CHLORIDE.

Formula—$AuCl_3 + NaCl$.

Synonym—Chloride of gold and sodium.

PREPARATION—Made by adding to a solution of the gold chloride, a solution of an equal amount of the pure sodium chloride. The mixed solutions are thoroughly stirred and evaporated and the double or mixed salt is thus precipitated. The crystals are of a golden yellow color and are permanent in the air. It is soluble in water and partially so in alcohol.

Dose, from one-twentieth to one-fourth of a grain.

Specific Symptomatology—The direct indications for its use in gastric troubles are a red, sleek or glazed tongue, anorexia, pain increased on the ingestion of food, extreme epigastric tenderness with bowel movements apparently induced by the taking of food.

It is indicated also in **general exhaustion** of the nervous system, especially if complicated with an impairment of the blood, or with constitutional dyscrasia, as it is an active alterative, acting much as mercury and its salts are claimed to act.

Therapy—The chloride of gold and sodium is of value in the **hypochondria** and nervous weakness of **tertiary syphilis.** It is of value in all forms of **Bright's disease,** but should be used cautiously, if at all, in the latter stages. It is useful in **tuberculosis,** in **chronic diarrhœa** to sustain the nervous forces, and in **chronic dyspepsia,** and other hindrances to appropriation and assimilation.

In general impairment of the digestion and nutrition it is an excellent stimulant to the stomach and nutritive functions of the intestinal canal. It is a stomachic tonic of much value. In these cases it should be given in doses of not more than the sixteenth of a grain and even down to the one hundred and twentieth or two-hundredth, and repeated every two or three hours. Its influence upon the liver at these times is believed to be most satisfactory, especially if catarrh of the bile duct or duodenum is present.

It seems to exercise a selective action for the genito-urinary organs. It has been commended in chronic irritation and even in chronic inflammation of the uterus and of the ovaries, where this condition has made a profound impression upon the nervous system, and induced nervous exhaustion with a general atonic condition of the system. It has been long used in syphilis and other blood dyscrasias where the results named were marked, and where there was impaired nutrition, also where there were enlarged lymphatic glands and scrofulous swellings or ulcerations. In diabetes mellitus the agent has been spoken well of, and in some cases it is an important addition to the treatment. The chloride and the double chloride are both used in the treatment of **dipsomania,** seldom alone, but usually in conjunction with the sulphate, or the nitrate of strychnine and atropine, and for its moral effect, in some cases with apomorphine.

The results of the combined treatment have been, no doubt, satisfactory, as the statistics of "retreats and reform institutions" show nearly ninety-nine per cent of cures. It would be gratifying indeed if but a fraction of this number could be cured of the deadly habit, and most satisfactory to know that the administration of these agents hypodermically, and other agents, such as capsicum, per os, and strong concentrated nutrition, will cure many cases. A discouraging relapse, from the continued influence of vicious associates, or the entire physical or mental collapse of an occasional patient whose constitution was completely undermined by previous indulgence, should not deter the physician and friends from making a most determined and persistent effort to restore every patient desiring restoration. It is useless to undertake to cure one who does not desire to be cured, as future indulgence will render his physical and mental condition more debased than before.

Some of those who have used mercury in the treatment of **syphilis,** believe that all the alterative effects of that agent are found in this, and in addition the profound nerve tonic and restorative influence of this agent renders it much superior.

PHOSPHORUS.

Symbol—P.

Occurrence—Phosphorus was discovered by Brandt in the product of evaporated urine, in 1669. It does not occur free, but is always found in combination, most often with calcium, sodium and potassium. It is derived from the ashes of bones, in which it exists as the tricalcium phosphate.

Description—An elemental, translucent, wax-like, yellow solid, luminous in the dark, unstable in the air; insoluble in water, but soluble in alcohol, petroleum, ether and the bisulphide of carbon. It melts at 112 degrees, boils at 554 degrees, giving off a colorless vapor.

It may exist in two distinct allotropic states. The first is the form just described, and the second is the variety known as the red phosphorus. The red variety is insoluble in those solvents which will dissolve the other form. It has no odor, does not oxidize in the air and is neither luminous nor poisonous. It is prepared by retaining the ordinary variety at a heat of 500 degrees for thirty-six hours. The heat destroys its affinity for oxygen.

Administration—It should be given in doses of from the one-one hundred and sixtieth to one-eightieth of a grain and repeated according to the indications. Larger doses may be given if its physiological effects are desired.

A tincture is prepared by macerating phosphorus for thirty days in alcohol, with occasional agitation, in the proportion of fifteen grains to the ounce. It is not officinal. One drop of specific medicine phosphorus, carefully increased, may be given as a dose.

Physiological Action—It is violently poisonous, producing its effects by deoxidation of the blood. In overdoses it produces violent inflammation of the stomach and intestines, intense burning pain, prostration, cold skin, clammy perspiration, vomiting and death. There is great anxiety, restlessness, intense headache, vertigo, wild erotic delirium and coma. The vomiting is of a coffee-ground liquid, resembling the black vomit of yellow fever. The urine is scanty and albuminous, and may be finally suppressed.

Its protracted use will in some cases induce a phosphorus habit, very difficult to overcome.

The agent is the most powerful nutritive stimulant to the nervous system, and a valuable nerve tonic—a trophic in the strictest sense, as it supplies a needed constituent. For this effect it is given most often in its combinations, but there are specific effects that can only be obtained when the agent is given in its uncombined form. After a dose of the one-twentieth of a grain there is a peculiar exhilaration experienced, a renewed capacity for mental and physical exertion. There is increased strength and renewed vigor.

The acids of Phosphorus, and the phosphates and hypophosphites, are common restoratives to the osseous and nervous structures of the system.

Specific Symptomatology—Its direct indications are **exhaustion** of the **nerve forces**, more or less complete, of a general character, as that following protracted fevers and malignant disease. **Occipital headache** of nervous exhaustion, especially that following mental strain and over-work. The **insomnia** of nervous prostration is quickly relieved by it.

Therapy—In loss of nerve force of a local character it is reliable, such as **functional impotency, neuralgia** from cerebral anæmia and **weak heart action** from nervous exhaustion. It is valuable in **mental failure**, in **paralysis agitans** and in certain diseases of senility.

The remedy in minute doses acts directly upon the organs of the chest. It overcomes and prevents pulmonary engorgement. It quiets the **cough** of **phthisis,** strengthens the patient, moderates the **diarrhœa** in these cases, and removes **chest pains.** It is a valuable agent in **dyspnœa,** whatever the cause, whether of heart faults or disorders of the lungs. For stitches in the chest of a neuralgic or inflammatory character, it is specific. It is valuable in **bronchitis, pneumonitis** and **pleuritis,** with the indications of increasing weakness, sharp stitchlike pains, and short, dry, hacking cough. For intercostal neuralgia it is very sure.

Beyond these indications it has been used successfully in many cases of malignant jaundice. Its direct influence on the urinary apparatus is to induce **diuresis** with relief of existing irritation. It relieves vesical and prostatic irritability, especially if from sexual excesses. It has been used with good results in psoriasis, lupus, eczema and acne.

Toxicity—The eating of match-heads by children induces poisoning, also an overdose of the agent in medicinal form. The symptoms are a peculiar taste in the mouth and the odor of the substance on the breath. There is burning pain throughout the gastro-intestinal tract. There is vomiting and purging of matter which may be luminous in the dark. Symptoms of gastro-intestinal inflammation rapidly follow, involving the intestinal and glandular organs. The condition of the liver, post-mortem, is similar to that of yellow atrophy, although at first it may be enlarged. There is fatty degeneration of all organs. Jaundice will finally occur, with vomiting of coffee-ground matter. There is obstinate constipation, with clay-colored feces. Muscular twitchings, vertigo, extreme headache, delirium, becoming wild; spasms, unconsciousness and death ultimately follow. The urine becomes dark-colored, scanty and albuminous, with fatty casts.

In parties subjected to constant contact with phosphorus a chronic form of poisoning occurs, as necrosis of bone, beginning with necrosis of the inferior maxilla. It is said none are safe from an attack if they work two years in phosphorus.

Antidotes—If phosphorus has been recently taken, the stomach must be evacuated at once. An old ozonized oil of turpentine is the physiological antidote, but it can seldom be obtained, and the fresh oil or other oils will facilitate the absorption of the agent. The permanganate of potassium is a correct antidote. Dilute solutions of this, or of the peroxide of hydrogen, may be administered.

The after effects must be met with stimulants, tonics and restoratives as are indicated.

In the treatment of **chronic poisoning,** the patient must be entirely removed from the cause, and restoratives as indicated used. Elimination is essential. The kidneys should receive much attention, and if not diseased should be stimulated to free activity. Vegetable alteratives will be of much service.

ACIDUM PHOSPHORICUM.

Formula—H_3PO_4.

Synonym—Phosphoric acid.

Description—This acid is a colorless liquid, almost odorless, and with a strongly acid taste.

Glacial Phosphoric Acid is obtained from calcined bones by the action of sulphuric acid; it occurs as a white uncrystallized fusible solid, with a very sour taste and without odor. Sparingly soluble both in water and in alcohol.

Neither of the above forms of phosphoric acid are used in medicine to any great extent.

Dilute Phosphoric Acid is formed by the addition of three and one-half ounces, by weight, of phosphoric acid, to twenty-six and one-half ounces, by weight, of distilled water. This contains ten per cent of absolute orthophosphoric acid.

This process results in the formation of a colorless liquid, with powerful acid properties. It does not, however, possess the corrosive action of other mineral acids.

Physiological Action—This agent in its physiological action resembles phosphorus only in a general way. It is a stimulant and sedative to depressed irritable nervous conditions when an acid is indicated in the system. It allays pain and distress of a subjective character probably more or less imaginary, present with hysterical conditions, and also in irritable patients suffering from nervous exhaustion.

Therapy—The agent is an excellent remedy for the so-called **nervous dyspepsia.** It adds tone to the nervous structure of the stomach, digestive and assimilative organs, materially aiding these functions. Its influence as a nerve sedative and tonic may be partially due to this stimulating influence over general nutrition.

If the characteristic indications present are those of an excess of acids, the excess is probably that of hydrochloric acid which may be neutralized before the phosphoric acid is given, when the latter agent will at once assist in correcting the gastric fault and will improve the condition of the nervous system.

Von Martinetz writes me that any case of debility, weakness, and lack of vitality may be corrected by this remedy, because the brain and the nervous system are directly influenced.

He says: "In the ulcerative stage of syphilis, I give phosphoric acid, and with the best results. In rheumatism, the acid, in certain cases, is a most excellent remedy, and if its indications are present, it will cure where other remedies fail."

"When I meet cases that require arterial sedatives in high temperatures, I give gelsemium, rhus tox, and bryonia, if these are indicated, and later I give the patient full doses of phosphoric acid. Sometimes I give these two classes of remedies alternately every two hours.

"**In osteomalacia,** or softening of the brain, phosphoric acid has a directly beneficial effect, superior to other treatment because its combinations directly build up the bone structures. I saw in the hospitals of Prague, under Professor Taks, many cases that had been treated with no result, which improved rapidly under phosphoric acid."

"A lady patient had spinal trouble, and became very weak. Finally I placed her on phosphoric acid treatment, and in the shortest time possible she made a permanent recovery."

Phosphoric acid stimulates the **sexual function,** increasing the tone of the ovaries and testicles, overcoming in some cases spermatorrhœa. It corrects certain abnormal urinary sediments, rendering insoluble phosphates soluble, and easy of elimination.

Given in the manner advised for aromatic sulphuric acid in low forms of **fever** or in violent **inflammatory fevers,** with typhoid symptoms, it not only acts as a stimulant to the functions of nutrition, but it apparently increases nerve force. This fact is most important. It thus increases the force of the heart's action, giving strength and volume to the pulse. In none of these effects, however, it is quite equal to phosphorus, properly administered.

AVENA. AVENA SATIVA.

Synonym—Oats.

CONSTITUENTS—Avenin, fixed oil.

PREPARATIONS—Specific Medicine Avena. Dose, from five to sixty minims. Concentrated Tincture Avena. Dose, from five to thirty minims.

As a nerve stimulant and permanent tonic, this valuable agent was comparatively unknown, when the first edition was issued. The writer took the responsibility of introducing it here through the confidence acquired by observing its prompt and satisfactory action during an experience of twenty years in the treatment of nervous diseases. There are many well-known and lauded agents that are hardly to be compared with this for prompt action upon the nervous system.

Administration—Avena Sativa should always be given in appreciable doses. Fifteen drops, three or four times daily, well diluted, will usually meet the case. It may be given in doses of from five to sixty drops in rare instances. It should, however, never be given in larger quantities than twenty minims unless the patient is thoroughly accustomed to the remedy, and has found the usual dose insufficient. Otherwise there is danger of obtaining the physiological effect of the drug, which is announced by pain at the base of the brain. When this symptom makes its appearance the medicine should be discontinued for a day or two, and then given in reduced doses.

If administered in hot water during the day, its action is much quicker, and in cold water at night on retiring it has a more extended influence. When given in hot water, its action at times, is almost instantaneous.

Physiological Action—Its selective influence is directly upon the brain and upon the nutritive functions of the organism, increasing nerve force and improving the nutrition of the entire system. The influence of a single full dose is promptly felt, similar to the influence of any active stimulant, but more permanent. It is a stimulant, sedative and direct nutritive tonic, apparently restoring the wasted elements of nerve force.

Specific Symptomatology—The following indications for the use of this remedy are given by King: Spasmodic and nervous disorders, with exhaustion; the **nervous debility of convalescence, cardiac weakness** from nervous exhaustion; **spermatorrhœa,** with the nervous erythism of debility. In general neurasthenia it promptly relieves the almost unbearable **occipital headache,** so constant, and evidenced by an enormous waste of the phosphates in the urine, common with nervous exhaustion.

It is a remedy of great utility in loss of nerve power and in muscular feebleness from lack of nerve force.

In the overworked conditions of brain workers—ministers, physicians or lawyers—in the **general prostration** from great anxiety and worry, it acts in the same lines as phosphorus and in many cases fully as satisfactorily.

With these, there is so-called **nervous dyspepsia,** atonicity, in fact, of the entire gastrointestinal tract. There is heart feebleness with some irregularity; there is cool skin and cool or cold extremities; there is melancholia, irritability, peevishness, vagaries of thought, morbid desires and fancies, usually accompanied with autotoxemia which demands persistent elimination. With these avena is directly indicated.

In **sexual neurasthenia** it is the remedy par excellence, as it has a selective influence upon the nerve structure of the genito-urinary apparatus.

Therapy—It will be found directly serviceable in paralysis and wasting disease of the aged, in **nerve tremors,** and especially in **chorea** and in **paralysis agitans.** It has been beneficial in **epilepsy.**

In the **convalescence** of **prostrating disease,** and during the **asthenic** or later stages of inflammatory and **exanthematous disease** and **diphtheria,** it is as important as quinine and strychnia, and certainly as reliable.

The local paralysis of diphtheria has no better antidote, and if given in hot infusion during the course of acute exanthematous disease, it quickly determines the eruption to the surface and promotes convalescence.

Because of its selective action upon the nervous structure which supplies the reproductive organs, it will be found to allay nervous excitement, nervous **palpitation** of the **heart,** insomnia and mental weakness, or failure and general debility caused by **masturbation, over sexual indulgence,** or **onanism.** It is a sovereign remedy in **impotency.** This writer has had better satisfaction in the use of this agent in the temporary impotence of young newly married men, than from any other single remedy or combination of remedies. If there be prostatic or other local irritation, a combination of this agent with saw palmetto will cover the field.

In **uterine** or **ovarian disorders** with **hysterical manifestations** it is of much service. The nervous **headaches** of the **menstrual epoch,** especially those accompanied with burning on the top of the head, and sick headaches apparently from disordered stomach at this time, or in fact sick headache at any time if accompanied with nervous weakness, are all promptly benefitted by Avena Sativa, provided gastric acidity is neutralized. In atonic **amenorrhœa** with great feebleness, it is valuable. In neuralgic and congestive dysmenorrhœa, with slow and imperfect circulation and cold skin and extremities, it is an excellent remedy.

Dr. Simmons of Toledo, Ohio, in the Gleaner, mentioned the use of avena in **acute coryza.** His method resulted in a manner highly satisfactory in every case. Those who are subject to colds in the head, he furnishes with a small vial of specific avena. With the first indication he has them take twenty drops of hot water. This may be repeated or increased to thirty or forty drops in two hours, but the third dose is usually sufficient to remove every evidence of coryza if present, and to prevent its occurence. The first evidences of its action may appear in five minutes. If twenty drops do not produce a feeling of warmth in the face and flushing of the skin, the next dose is increased.

This agent exercises a restorative power in overcoming the **habits** of alcohol, tobacco, morphine, and opium. It will enhance the value of other prescribed agents.

In the treatment of the morphine habit, our subsequent experience has not confirmed our early anticipations, and yet it is a useful addition to the treatment. It should be used in conjunction with capsicum, strychnine, xanthoxylum, or hyoscyamine hydrochlorate, and sustained in its action by persistent concentrated nutrition.

In conjunction with cactus, or apocynum, as these remedies are indicated, it will be found of much service in the treatment of **weak heart,** and the resulting complications. Webster lays much stress upon its action as a remedy to prevent the recurrence of **cardiac rheumatism.** This influence would be facilitated by combination with specific alteratives, and remedies that will facilitate the elimination of uric acid, without depressing the action of the heart.

The persistent use of this remedy, especially if conjoined with capsicum or minute doses of strychnine, will be found of great assistance in certain cases of paralysis. Its nerve restorative and persistently tonic properties are exercised fully here.

In a case of cerebral hemorrhage, from which recovery was not to be expected, Dr. French used ergot and avena with bromide as an occasional

sedative, with satisfactory results. He says: "I also give avena for the symptoms of **nervous breakdown** and **exhaustion,** regardless of the name of the special disease from which they may be suffering. Some patients claim to realize almost instantaneous effects on taking it while others are less easily affected. In all well-known cases selected for the indications of paralysis and deficiency of nerve power, it seems to me to be good.

Co-operatives—It works in harmony with strychnine in its stimulating influence, but is more permanent in its effect. It exercises an influence similar to quinine after prostrating fevers and is similar to coca and phosphorus in its restorative powers. Xanthoxylum will enhance its general stimulant influence, and it may be combined with macrotys and scutellaria and gelsemium in chorea. It is antagonized by nerve depressants and nerve sedatives which exercise no stimulant or restorative influence.

There is no danger of forming the habit of taking the drug, as it can be suddenly abandoned at any time without evil consequences, even when given in large quantities.

COCA. ERYTHROXYLON COCA.

CONSTITUENTS—Cocaine, cinnamyl-cocaine, truxil-cocaine, hygrine.

PREPARATIONS—Extractum Cocæ Fluidum, Fluid Extract of Coca. Dose, from one-half to one dram.

Specific Medicine Coca. Dose, from one-half to one dram.

Physiological Action—The natives of South America and laborers in that country use coca, chewing the leaves, much as tobacco is used in other parts of the world. It abolishes the sensation of hunger for a time. This may in part be accounted for by its producing anæsthesia of the nerves of the stomach. It does not take the place of food. It increases the powers of endurance and confers a singular immunity from the suffering incident to privation and excessive physical exertion. These effects are accounted for, in part at least, by the anæsthetic effect of cocaine, which is its pricipal constituent. In large doses it increases the animal heat and quickens the pulse and respiration. By increasing the dose the nervous system is excited, with increase of desire for muscular exertion; while in poisonous doses it causes delirium, hallucinations and congestion of the brain. The general effect of coca is to stimulate the nervous system and retard retrograde metamorphosis. The prolonged use of the drug causes a degeneration of the nervous system characteristic of narcotics, though when used in moderation this effect is not observed.

The influence of coca on the native habitue of the tropics, and its influence upon the civilized inhabitants of the temperate zones are very different influences. Its continued use among the latter is most serious, inducing habits more degrading and pernicious than the use of opium and alcohol, and as fatal to mental and physical integrity.

The effects attributed to the drug are only what might be expected from the action of so powerful an alkaloid as is contained in the coca leaves.

Therapy—There are few cases of **neurasthenia** in which this agent will not be found useful. Taken after dinner, it serves often to facilitate digestion, and even confirmed dyspeptics find their distressing symptoms relieved by it. It is of especial value in cases where exhausting mental labor has led to **morbid depression** of spirits. It is valuable in all cases of despondency. It relieves the **nervous irritability** that follows over-indulgence of any kind, restoring the capacity for work and renewing the energy.

It acts to an extent as an antidote to the effect of opium, alcohol, tobacco or coffee, and judiciously used is said to enable one to overcome the morbid craving for any of these stimulants when they have been used to excess.

It is used by public speakers and singers, who have found themselves in better voice after using it.

As a remedy for **nausea** and **vomiting** from reflex causes, particularly in the vomiting of pregnancy, the cordial proves extremely efficacious. For this purpose it should be taken a few moments before meals, and the dose repeated in an hour or so afterwards. **Gastralgia** is frequently relieved by this remedy, and **nervous headaches** often disappear under its use.

It is of service also in cases of **asthma.** It is an **aphrodisiac** and **emmenagogue.** It is an antiperiodic. Internally and locally it has been used for **hemorrhoids.** As a restorative in feeble heart it is of much value.

KOLA. COLA ACUMINATA.

Synonym—Kola nut.

CONSTITUENTS—Caffeine, Theobromine, tannin, fat, sugar, starch, gum.

PREPARATIONS—Extractum Kolæ Fluidum, Fluid Extract of Kola. Dose, ten to thirty minims.

It is prepared by different manufacturers in the form of wines, cordials or elixirs. A solid extract is also prepared.

Physiological Action—The natives of the western portion of tropical Africa use the seeds of kola most extensively to overcome fatigue, to support the strength on long marches, and to overcome depression of spirits and melancholy. It is most highly esteemed and is in as common use as tea, coffee and cocoa in civilized countries, closely resembling the first two named.

The agent sustains physical strength to a remarkable degree. It is a tonic to the heart, increasing the strength of its impulse; it regulates the pulse, increases arterial tension, induces diuresis, but retards tissue metabolism. It is a stomachic tonic, inducing a normal appetite and good digestion. It restores normal action in debilitated conditions of the intestinal tract.

Therapy—It is used in **neurasthenia** and **hysteria,** characterized by great mental despondency, foreboding, brooding, more of a quiet or silent character. It is especially indicated if the heart is feeble and irregular in its action, with general muscular feebleness. In **cerebral anæmia** it is indicated and is an excellent auxiliary in general anæmia. It is an excellent restorative after prostrating **fevers** and protracted exhausting disease. It is of specific value in **melancholia.**

In **weak** and enfeebled conditions of the **heart** muscle, with valvular weakness, dyspnœa, **irregular action, it is of** benefit, the influence being quickly exhibited on the pulse, and an improved sense of well-being experienced.

It is recommended as a substitute for alcoholic drinks, and has been used to most excellent advantage as a stimulant and restorative in the treatment of the drink habit. Those most enthusiastic claim that it alone will cure **alcoholism.**

It is advised in **chronic diarrhœas,** with great lack of tone. It has been used in **sea sickness,** one ship surgeon claiming that he had used it on many voyages, and had found it to relieve even the most susceptible, in many cases. The agent is without doubt a valuable one in its field.

CHAPTER II.

Stimulants with Sedative Properties.

COFFEE.	CAMPHOR MONOBROMATE.	MUSK.
CAMPHOR.	MYRRH.	OSMUNDA.

COFFEE. COFFEA ARABICA.

CONSTITUENTS—Caffeine, volatile oil, Caffeotannic acid, proteid, dextrin, glucose.

PREPARATIONS—Specific Medicine Coffea. Dose, one to ten minims. Caffeina Citrata, Citrated Caffein. Dose, three to eight grains. Caffein. Dose, one to five grains.

Physiological Action—Poisonous doses of coffee or caffeine cause delirium, semiconsciousness, a slow and irregular pulse, cold extremities and cold, clammy perspiration, lowered temperature, anæsthesia, cramps, tremors, a reeling gait, convulsions, dimness of vision, increase of urine. The habitual and excessive use of coffee as a beverage causes indigestion, with acidity, cardiac irritability, vertigo, headache, irritability of disposition and despondency.

Therapy—The tincture of coffee made from the unroasted berries is a **nerve stimulant** and **antispasmodic.** It increases the heart's action and produces a rise in arterial tension. It is of value in nervous headache, and in vertigo from imperfect circulation in the nerve centers—in cerebral anæmia.

Coffee is used as a **stimulant** to antidote the effects of **narcotic poisons.** In opium poisoning its effects are prompt and immediate. A strong decoction is prepared and injected within the rectum, if impossible to administer it per orem.

The late Dr. Brodnax, beginning in 1876, used coffee as a stimulant in the debility of slow fevers, especially in protracted pneumonia with feebleness. He found it in every way superior to whiskey.

He observed that new born infants that kept up a whining cry for days always succumbed ultimately from some one cause or other. He took raw coffee beans, ground them and made a strong tea with which he succeeded in curing the condition in every case in which he used it.

CAMPHOR. CINNAMOMUM CAMPHORA.

Imported from Japan, China, Formosa.

Occurrence—A concrete volatile oil (stearopten), obtained from the Camphor Laurel, purified by sublimation, found in tough crystalline masses, white and translucent; easily powdered in alcohol or chloroform.

Physiological Action—In its influence there is something of a diversity of opinion concerning the method of action of this agent. It is certainly a sedative with power to increase the tone and improve the functional activity of the nervous system.

Therapy—It has long been used in **hysteria** to control the attacks and to relieve the nervous excitement, restlessness, nervous depression, melancholia and hypochondria. In sudden **depression** from exhaustion and the conditions of depression consequent upon neurasthenia, it serves a good purpose.

In all forms of **nervousness** in women and in children and in the feeble it has long been in common use. In the excitable **mania** of exhausting fevers, it serves a useful purpose. It allays nervous excitement and produces a general tranquillity of feeling.

It is a sovereign remedy for **acute coryza**—"cold in the head," and may be inhaled or taken internally. In acute and chronic catarrh it has a tonic yet soothing effect upon the mucous membranes. It controls hypersecretion and restores normal functional action.

These facts are also true in catarrhal **bronchitis,** in **asthma** and in **whooping cough.** In these spasmodic coughs the anti-spasmodic influence of the agent is of prime importance.

It is of service when added to cough syrups as a stimulating sedative in the persistent coughs of capillary bronchitis.

It has a marked **anaphrodisiac** influence, and has been given freely in nymphomania, satyriasis and erotomania. Its influence in controlling sexual excitement is positive. It cures priapism, chordee, and in a general way reduces the power of erection and the sexual appetite. In sexual weakness and in nocturnal emissions accompanied with erotic excitement from over indulgence, with violent erections, it is of much use and may be combined with ergot to equalize the circulation of the organs.

It is a stimulating diaphoretic in fevers, and in inflammatory disorders with inactivity of the sudoriferous glands. This is especially true in exanthematous fevers, and where there is mania in prostrating fevers. Its influence is marked in adynamic fevers where there is feeble, rapid heart action and irritable pulse, with dry skin and muttering delirium, with subsultus tendinum. It has a diffusive stimulating influence in these cases which is of value.

It is combined with opium and ipecac in the well known **Diaphoretic Powder,** in the proportions of one part each of camphor, opium, and ipecac, with seven parts of the potassium sulphate. The dose is from two to ten grains.

CAMPHOR MONOBROMATE.

Synonym—Monobromated Camphor.

Occurrence—Formed by heating bromine and camphor in a sealed tube on a water bath. The crystalline product is dissolved and recrystallized, first from water, then from alcohol.

Description—Prismatic crystals, colorless, with the odor and taste of camphor, permanent, soluble in alcohol, ether and chloroform, insoluble in water.

Dose, from one-tenth to five grains.

Administration—For children a good preparation is made by taking one part of the crystals and triturating it thoroughly with nine parts of the sugar of milk. Of this one grain may be given every hour to a child of two years.

Physiological Action—The agent has the properties of a stimulating sedative, exalting the nervous functions when depressed, when there is great restlessness, excitability or delirium. It has marked anodyne and hypnotic properties under proper circumstances.

Therapy—It is prescribed in **nervous excitement** or extreme restlessness accompanying inflammatory disease or protracted fevers. It is specific in nervous irritation from reflex causes.

It is an excellent remedy for children with the long train of symptoms resulting from irritation of the dental nerve.

The indications are diarrhœa, nausea, great restlessness, fullness of the circulation of the head, with heat, sleeping with half open eyes, rolling of the head, and tossing, crying out with little sharp cries. These symptoms occur at any time during development of the milk teeth.

In fully developed cases of cholera infantum, with the extreme symptoms of involuntary watery discharges, cold extremities, pinched features, emaciation, apparently uncontrollable vomiting, this agent is given in full doses, and it will often meet alone the whole train of indications.

It is a hypnotic when fever and general distress induce wakefulness.

In **delirium tremens** it has produced good results, and in mild cases of the **delirium** of protracted fevers, with restlessness, it will be found of advantage.

It has been used in **chorea,** and in hysterical manifestations of an excitable character, and in nervous **palpitation,** and irregular heart action from reflex irritation.

MYRRH. COMMIPHORA MYRRHA.

CONSTITUENTS—Volatile oil, Myrrhol, Glucocide, resin, gum.

PREPARATIONS—Tinctura Myrrhæ, Tincture of Myrrh. Dose, from five to thirty minims. Tincture Aloes et Myrrhæ, Tincture of Aloes and Myrrh. Dose, from twenty minims to two drams.

Physiological Action—A stimulant to the nervous system, with tonic properties. A stimulant with local action upon mucous membranes and glands and glandular organs; antiseptic. In overdoses, emetic and actively cathartic, decreasing bronchial secretion.

Specific Symptomatology—Myrrh is specifically indicated in a general sense where there is adynamia or extreme asthenia, with weak, inefficient capillary circulation, cold skin, weak pulse and deficient circulation.

It increases the power and frequency of the heart and respiratory action, and conduces to a general sense of warmth and increased vigor.

Therapy—This agent has always been highly esteemed as a stimulant, although its influence is more of a local than a general character. It exercises the characteristic influence of most of the stimulants upon the excretions and secretions, acting as a diaphoretic, expectorant, sialagogue, and to a certain extent emmenagogue.

It was once popular in the compound tincture of capsicum and myrrh. As a most active general stimulant in ulcerative, engorged, flabby and **atonic conditions** of the **mucous membranes** of the **mouth** and throat this agent acts promptly. It stimulates the capillary circulation, restores tone and normal secretion and causes the healing of ulcerations. It is useful in sore mouths of all kinds, and especially in syphilitic sore mouth and sore throat. It may be combined with other washes or gargles or it will act promptly alone.

It will quickly cure the beginning of **syphilitic ulcerations** in the throat and mouth. In the **spongy gums** and **aphthous sore mouth** of children, in **stomatitis materni** if combined with an alterative and tonic astringent it will assist in the cure of the very worst cases without taking the child from the breast. An infusion made of white oak bark, yellow dock root and myrrh, to which may be added a mild antiseptic, as baptisia, echinacea, or boric acid, will cure the most intractable cases of this latter named disease. Myrrh is excellent in the sore mouth and extreme ulceration of **mercurial ptyalism.**

In its influence upon the **digestive apparatus** Myrrh is direct in its action. It quickly increases the power of the digestive function, stimulating the peptic glands to extreme action. It increases the appetite and promotes the absorption and assimilation of nutrition. It is given in **atonic dyspepsia** in the absence of inflammatory action, especially if there is excessive mucous discharge from the bowels.

It is exceedingly useful in the **apepsia** and extreme inactivity of the stomach in alcoholics, either alone or combined with capsicum.

While it is expectorant, and stimulates the secretion from the mucous membranes when inactive, it influences to a satisfactory extent the restoration of the functions of those membranes when the secretion is excessive, as in **catarrhal conditions.** In deficient or excessive action it restores the normal conditions.

In **debilitating expectoration** of phthisis pulmonalis it suppresses secretion and increases the patient's power to throw it off. In excessive mucous secretion from any organ it has a direct influence. In atonic catarrhal diarrhœs of a subacute or chronic character its influence is specific and satisfactory.

In some cases of **catarrh** of the **bladder** it is used internally, and in the irrigation fluid also. It is valuable in **prostrating leucorrhœa.**

It is an old popular remedy in **amenorrhœa** given in combination with aloes and iron, especially in chlorotic and anæmic patients. It has long been in use in the old school for this purpose. It may be combined also with macrotin to a good advantage.

MOSCHUS. MUSK.

A penetrating, odoriferous, granular substance obtained from the perputial follicles of the musk deer of the Himalaya mountains in Central Asia from China to Tibet.

Tincture Moschi, Tincture Musk. Dose, from twenty minims to two drams.

Therapy—This agent is a powerful diffusible stimulant, anti-spasmodic and aphrodisiac. It produces symptoms similar to those of alcoholic stimulation. It is used to overcome collapse and as a stimulant in all profound depressed conditions. It is useful either in nervous excitement or depression, if induced by exhaustion. It is a remedy for extreme exhaustion following severe **prostrating** fevers at the time of collapse.

As an **antispasmodic** it may be used for **hiccough, whooping cough** and other spasmodic coughs, and in **hysterical convulsions** and in the convulsions of childhood. It is similar in its action to camphor, asafetida, valerian and ammonia.

OSMUNDA. OSMUNDA REGALIS.

Synonyms—Buck thorn brake, Royal flowering fern.

PREPARATIONS—An infusion of the roots is given and taken quite freely. A tincture may be obtained. The substance is very mucilaginous, and an infusion will quickly become jelly-like.

Specific Symptomatology—Diseases of the bones, from malnutrition. Weakness of the osseous structure, rickets, diarrhœa and dysentery from local irritation in poorly nourished patients.

Therapy—With some physicians this agent is very popular in the treatment of the above disorders. It is also useful in weak back, especially in those cases where, with weakness of the muscular structure of the back, there are symptoms of incipient disease of the spinal vertebræ. It has been used also in subluxations.

In the treatment of diarrhœa and dysentery, whether acute or accompanying protracted fevers, the agent is said to be very beneficial, especially if accompanied with great weakness. Also as a tonic during convalescence, when these conditions have prevailed. It has been given in various forms of female weakness, particularly where there was severe leucorrhœa. Its soothing influence upon mucous surfaces seems to be remarkable.

GROUP II.

Agents Acting Upon the Heart.

CHAPTER I.

CACTUS. CRATÆGUS. CONVALLARIA.
DIGITALIS. STROPHANTHUS. LYCOPUS.

CACTUS. CACTUS GRANDIFLORUS.

Synonyms—Cereus Grandiflorus (Haworth); Night-Blooming Cereus; Cactus Grandiflorus (Lin.).

PREPARATIONS—Extractum Cacti Fluidum, Fluid Extract of Cactus. Dose, from one to twenty minims.

Tinctura Cacti, Tincture of Cactus. Dose, from five to thirty minims.

Specific Medicine Cactus Grandiflorus is prepared from the green stem of the true species. The dose is from one-third of a minim to five minims. This is a reliable preparation. Although the medicinal effects may be obtained from two minims, larger doses may be given, no toxic effects having been observed.

The dose of cactus, usually prescribed in the past, has been small, generally not to exceed five minims. A foreign writer has made some observations in **aortic lesions,** with faulty compensation. He believes that cactus is distinctly specific for these lesions, but he advises it in much larger doses. He gives half a dram if necessary three times a day. The patients treated in this manner had great **dyspnœa, arrhythmia,** with edema of the extremities and **ascites.** He demonstrated the recession of the cardiac dilatation in these cases.

Physiological Action—This remedy increases the musculo-motor energy of the heart, elevates arterial tension, increasing the height and force of the pulse wave. This is accomplished by increased heart action, stimulation of the vasomotor center, and stimulation of the spinal-motor centers, increasing their activity and improving the general nerve tone. It is the heart tonic *par excellence,* as it produces stimulation from actually increased nerve tone, through improved nutrition of the entire nervous and muscular structure of the heart. It produces no irritation of the heart muscles like strophanthus, or gastric irritation or cumulation like digitalis.

Cactus exercises a direct influence over the sympathetic nervous system, regulating its action, restoring normal action, whatever the perversion. It acts directly upon the cardiac plexus, regulating the functual activity of the heart.

Investigations have proven that it increases the contractile power and energy of the heart muscle, through the intercardiac ganglia and accelerator nerves. It certainly improves the nutrition of the heart, as we have noticed the entire removal of progressive valvular murmurs after its continued use.

Specific Symptomatology—An irregular pulse, feebleness of the heart's action, dyspnœa, weight, oppression in the chest, violence of the heart's action, depending upon atonicity or enervation, and a sensation of a constriction or band around the heart or around the chest, are the direct indications for its use in heart troubles.

Therapy—This agent is prescribed where the **heart muscle is enfeebled,** where there is **progressive valvular inefficiency,** with irregular or intermit-

tent pulse. It is valuable in **mitral** or **aortic regurgitation** from whatever cause.

It is an exceedingly useful agent in **functional irregularity** of the heart, however evidenced, if due to gastric irritation, as the agent in doses of from one to three minims, soothes gastric irritability and imparts tone and improved function, in wide contrast to digitalis, which irritates the stomach.

The action of cactus with nux vomica and hydrastis in the treatment of functional palpitation, depending upon an atonic condition of the stomach, must be emphasized. If extreme acidity be present, they may be combined with an alkaline agent or with neutralizing cordial (glyconda). A number of our physicians recognize this influence, and my own experience confirms its value.

Those who have used all the heart remedies unite in the belief that for breadth of action, for specific directness, for reliability and smoothness and general trustworthiness, cactus takes preference over all the rest. Its influence is admirable where indicated and it is invaluable in many cases. Other remedies in some cases will do as much in single lines, but none will do more, and none will exercise all of its desirable influences.

The writer has given it in valvular troubles, in weak and irregular conditions, depending upon muscular enervation, and in aortic regurgitation, and has seen cures accomplished that had been thought impossible. It permanently strengthens the muscular action of the heart.

The author's experience with this remedy caused him to come to the conclusion a few years ago that cactus had a **special sedative** influence where indicated. He was convinced of the fact ultimately and now finds excellent authority for his conclusion. Rubini, of Naples, claims that it is almost the counterpart of aconite in its action, differing in that it increases the strength and tone of the nerve centers instead of paralyzing them, as large doses of the latter agent does. Given a condition in which there is a rapid and feeble pulse, weak heart, weak and exhausted nervous system, cactus in small doses, frequently repeated, is a true sedative.

Cactus as a powerful nerve tonic can be relied upon when there is any irregularity of the heart, demanding such a remedy in conjunction with general nervous weakness. It is especially indicated where there is mental depression with despondency and forebodings. It is combined with avena, nux or macrotys as I have often suggested with superb results. The above named combination will act as a tonic in a surpassing number of cases of nervous weakness without regard to the specific indications. It improves the nutrition of the brain by improving the circulation in that organ. In this it is of advantage in some cases of **neurasthenia,** especially in those in which there is a sensation of a band or cord around the body or chest or head, a symptom often spoken of in nervous exhaustion, and in forms of **paralysis.** Where feebleness is the cause of **nervous excitement,** cactus exercises a nerve sedative influence. In oppressive **headache** in the top of the head, causing nervousness, common to ladies at the menopause, resulting from irritation in the pelvic organs, or congestion, or menorrhagia with excessive losses of blood, it is of benefit.

Where there is increased arterial tension, and exaltation of nerve force and excess of strength in the cardiac action, cactus is contraindicated. This is true in prescribing it for heart disease and palpitation. We have had several cases of palpitation, depending on exaltation of nerve energy, increased by cactus, and decreased by gelsemium, cimicifuga or the bromides.

It may be given with excellent results combined with avena sativa in **impotence** accompanied with general nervous exhaustion, or in combination with avena sativa and saw palmetto in the feebleness and impotency of ap-

proaching age, or in the prostration following habits of dissipation, when it will accomplish most excellent results.

It is given in **endocarditis** and in **pericarditis** following exhausting diseases as sequelæ, with the most gratifying results.

In a marked case of endocarditis following measles, with purple and bloated countenance, distressing dyspnœa, and a pulse so rapid, feeble and fluttering that it could not be counted, the dyspnœa was overcome, the heart beats reduced to 120, and regular, and every condition improved in the most satisfactory manner in twenty-four hours, incredible as it may seem, by the use of one drop of the fluid extract of cactus every hour.

It is useful in **valvular incompetency** due to muscular weakness, in the feeble heart action following **pneumonia, typhoid** and other severe and prostrating diseases. In the feeble heart of exophthalmic **goitre,** it will do all that is expected of strophanthus.

Dr. Lydia Ross, of Massachusetts, in the Eclectic Review, reports extensively concerning the action of cactus in the **disorders of women.** She claims it to be specific in that form of **oppressive headache,** occurring upon the top of the head, not uncommon at the menopause, resulting also from uterine malposition, or congestion.

It is especially valuable in the **hot flashes** which are so disagreeable during the climacteric. Small doses of the remedy are advisable at that time, and their influence is often a surprise in controlling this otherwise intractable condition. Helleborus niger is an excellent remedy for this condition and they may sometimes be given in conjunction or in alternation. The melancholia, nervousness, irritability of temper, hypersensitiveness, neuralgia, vague fears and fancies, present during the menopause, are all influenced favorably by cactus. Its direct influence in strengthening the nervous system, and in toning the heart and circulatory organs, underlies its influence upon these conditions.

Other conditions common to women, relieved by this remedy, are **cerebral congestion,** with weight and pain in the occiput, or in the vertex, **numbness** of the **limbs, cough** at the supra sternal notch, pain behind the sternum, **fear of death,** general **plethora** and congestion. Irregularities of the menses, consisting of a flow too early, too dark and thick, too abundant—a flow which ceases upon lying down, with an inability to lie upon the left side, demand its use.

In **cardiac weakness** of a less chronic or more acute character than those conditions affecting the aorta, the agent will be found serviceable, as in the threatened heart failure, due to violent over-exercise, as the **bicycle heart,** a condition not as common as it was when this work was written. It is of great value, as we have previously stated, in the **tobacco heart** of the cigarette fiend or inveterate smoker. Here it is especially useful. We know of no remedy that will take its place. In the treatment of **heart weakness,** common to **masturbators,** and in the feeble heart of the aged, where there are no great organic changes, the remedy is especially advised.

The specific point present in nearly all of these cases indicating the remedy is a vise-like band around the organ affected. It may be the chest, or the stomach, or the heart, bladder, uterus or vagina, or it may be around the body. There is likely in the severe cases to be suffocation, faintness, cold perspiration and great fear of impending danger. If with the above symptoms, there be epistaxis, hematemesis, or hemorrhage from any organ or part, the agent is demanded.

Dr. Lyman Watkins confirms most of the statements made by Dr. Lydia Ross in its use in **hysterical conditions,** and as a remedy to relieve the functional disturbances, which the heart exhibits, from menstrual disorders. He

believes it to be a most valuable remedy in the rapid and feeble heartbeat of anemia and chlorosis, greatly facilitating the influence of other indicated remedies. He reports a case of a gentleman of thirty who was suffering from cardiac irregularity of a mild type, accompanied with a persistent and almost excruciating pain in the deep muscles of the back, over the region of the kidneys. Morphine and opium had been given persistently, for this severe pain. Cactus given for the heart symptoms relieved the pain permanently, in a very short time.

Dr. Coffin, of Indianapolis, uses this remedy to overcome subnormal temperature. He believes that it will prove a satisfactory remedy. I have used it in a few cases with good results, but unless given in large doses it will have to be given in conjunction with strychnine, nux vomica, or ignatia.

Dr. Felter reported in the Gleaner in 1907 a case of **Raynaud's disease** where six drops of specific cactus was given as a nerve sedative with curative results on the real disorder. He was greatly impressed by the action of the agent. It may be combined with macrotys or gelsemium for nervousness, with pulsatilla for hysteria, and may be given with an alkaline remedy in very feeble old ladies who suffer from vertigo and general heart feebleness.

One doctor reports an increase of temperature from ten drops of cactus three times a day. Where there is a nervous hyperesthesia with excitable heart action cactus will aggravate the symptoms, I believe, whatever they may be.

Cactus in the treatment of heart trouble where there is epilepsy as previously referred to, was fully enlarged on by a writer in the Eclectic Medical Journal for April, 1912. While the remedy is not always used alone in the treatment of epilepsy, it was cured. The doctor believes it to be a very important auxiliary.

Cactus has been advised in the treatment of car sickness and in sea sickness. It might be combined with advantage with gelsemium or the bromides. It has also been given in the treatment of morphine habit, but the case reported by Dr. Cox took cactin tablets. Its action in this line should be observed.

Dr. Carey, of Ohio, gives cactus with strophanthus in combination in cases where the circulation from heart fault is very imperfect, three or four drops of each.

DIGITALIS. ♦ DIGITALIS PURPUREA.

Synonym—Foxglove.

CONSTITUENTS—Digitalin, digitoxin, digitonin, digitalacrin, a stearopten digitalosmin, and digitaloic acid.

PREPARATIONS—Extractum Digitalis Fluidum, Fluid Extract of Digitalis. Dose, from one to three minims.

Tincture Digitalis, Tincture of Digitalis. Dose, from five to twenty minims.

Infusum Digitalis, Infusion of Digitalis. Dose, from one dram to one-half ounce.

Specific Medicine Digitalis. Dose, from one-sixth to three minims. Prescribed, from five minims to one and one-half drams, in four ounces of water, a teaspoonful every hour or two.

Physiological Action—Digitalis in full doses produces a great rise in arterial pressure, followed by a marked fall. It acts on the inhibitory nerves and on the heart muscle; the increased action being due to vasomotor spasm and to stimulation of the heart itself. A poisonous dose causes depression

and a dicrotic pulse, while the immediate effect of moderate doses is to stimulate the heart. Its prolonged use weakens the heart muscle by decreasing its normal nutrition.

When given in frequent small doses, where absorption is immediate, it influences all of the organic functions as a depressant; it produces irritation of the stomach and bowels, increased action of the kidneys, and a marked change in the character, regularity and frequency of the pulse beat. The influence upon the heart is not always uniform in all such cases, but variable and often unreliable. The influence is marked and more immediate if a large dose is given and repeated a few times. The gastric and intestinal irritation is greatly increased, there is purging, violent vomiting, great prostration with dicrotic or tumultous, irregular, erratic and uncertain heart action.

In its general irritating influence upon organic function it may cause so marked an impression upon the renal circulation as to result in spasm of the vessel walls and suspension of renal action—suppression of urine with profound albuminuria.

Therapy—Digitalis is the direct heart stimulant. Its influence is sure and plainly apparent in marked sthenic conditions. In **prostration** or profound weakness, in sudden failure from violent injury, from **surgical shock** or from **acute poisoning,** or in the crisis of extreme exhausting or protracted disease, its influence given in conjunction with general stimulants is decisive and satisfactory.

The agent sustains the action of the heart, but does not impart tone as cactus does, by increased nerve force and improved nutrition of the organ. Its sustaining power can be maintained by proper administration until other measures supply deficient power, by encouraging reaction, or by general improved nutrition.

The influence of digitalis in its stimulant effect is nearly diametrically opposed to that of aconite. In therapeutic action the two agents occupy the opposite extremes. For this reason digitalis, within the limits of its stimulant action, is a physiological antidote to aconite.

Digitalis slows a rapid and feeble pulse in **asthenic fever.** It is a sedative in fevers under those circumstances in which aconite is contraindicated. In prolonged cases where asthenic conditions prevail, and where the temperature remains high, with rapid, feeble, easily compressed pulse or irregular heart action, all the evidences of failure of vital force, digitalis is the fever remedy. It controls the pulse, reduces the temperature somewhat, and improves the heart action. Aconite, veratrum and the synthetic antipyretics will all increase the condition under such circumstances and are contraindicated.

In **pneumonia,** when the disease processes have had full sway, and the heart is unable to properly fill the pulmonary capillaries, and is depressed by the influence of the general disorder, and the general effects of the accumulated carbonic acid within the blood, and is labored and overtaxed and apparently slowly failing, this agent is directly useful. It promptly strengthens the heart and the nervous structure of the pulmonary apparatus at the same time.

In minute doses in children, if it be given with belladonna or other heart stimulants, it shows a most desirable influence in this class of cases, but should be stopped as soon as these results are obtained, that no untoward symptoms may occur.

Digitalis is a remedy for **passive congestion** where the blood stasis has occurred from feebleness and failure of the circulatory organs. It exercises a stimulating influence upon the entire apparatus; through its power of increasing heart action it imparts renewed force and an improved capillary

tonus in every part. It such cases its influence resembles that of belladonna, although not so marked nor permanent.

In **valvular diseases** of the heart, with muscular relaxation and feebleness, it is a good remedy, but not always the best. It sustains the power for a time in those cases where there is **stenosis,** and where compensatory dilatation has previously occurred. In feeble, irregular and **intermittent heart** it is frequently prescribed with excellent results.

Like cactus, it is not a remedy for violent heart action from over action of the nervous system, or from sthenic conditions.

Cactus is valuable, indeed, in irritable heart from indigestion; in palpitation and irregular action from gastric irritation, while in this case digitalis exercises no beneficial influences whatever. On the contrary, it is apt to increase the gastric irritation. Cactus soothes the irritable stomach and promotes normal functional operations.

Digitalis is not found in the urine and does not directly influence the secretory or the excretory functions of the kidneys. Its apparent influence upon these organs is due to the improved blood pressure from its direct influence upon the heart, inducing increased heart action. **Renal congestion is** overcome because the increased heart impulse drives the blood through the renal capillaries with renewed vigor, and there is thus a copious flow of the urine from improved renal circulation. Under these circumstances only, is it a valuable remedy in dropsy. In **cardiac dropsy** it acts most promptly if given in infusion in small and frequently repeated doses. Close watch must be kept for cumulative action. In dropsy from **post-scarlatinal nephritis,** a dram or two of the leaves in a pint of water is thoroughly steeped. Of this from a teaspoonful to a tablespoonful may be given every two or three hours.

In general dropsy from heart disease there is deficient capillary circulation, especially when lying down; the pulse is irregular, intermittent and feeble, the urine is small in quantity, with a large percentage of albumen. Its power over the heart influences this entire train of symptoms directly. Patients taking digitalis in full doses for an immediate effect should remain in the recumbent position. This position greatly favors its sedative and tonic action, and patients have died upon being raised to a sitting posture immediately after taking an extreme dose of this agent. Syncope, especially in children, is common at such a time. The profound influence of the remedy prevents the occurrence of the natural change in the action of the heart, from a prone position to the sitting posture. Digitalis may exercise no apparent influence upon the system when proper doses are given regularly for some days, until suddenly violent poisonous effects may appear, with irregular and greatly depressed heart action, vertigo, extreme wakefulness, vomiting, irritation of the bowels, with pain and sometimes violent purging.

The cause or manner of its accumulation is variously explained and is not well understood. Several theories are advanced, none of which are satisfactory. No other heart remedy has these objections. Cumulative action often shows itself first by the influence of the agent upon the kidneys, in suspending or restraining their action. Consequently if desirable results from the use of this agent do not appear, and there is a decrease in the quantity of urine passed, the agent should be suspended, at least for a time.

CRATÆGUS. CRATÆGUS OXYACANTHA.

Synonyms—Hawthorn, Haw, English Hawthorn.

PREPARATIONS—Specific Medicine Oxyacantha; dose, from five to twenty minims. Fluid Extract Oxyacantha; dose, from ten to fifteen minims. Normal Extract; dose, from four to eight minims. It is given in water and may be re-

peated every hour or every two or three hours. In extreme cases it may be given hypodermically.

Therapy—This agent has not yet received much attention from the profession. Dr. Jennings, of Chicago, in October, 1896, published in the New York Medical Journal a letter containing the following statement:

"To this date I have successfully treated with cratægus one hundred and eighteen patients who were suffering with various forms of heart disease, not including fatty degeneration and tachycardia, and of the two latter forms of the disease. I have fourteen still under treatment.

"Of one hundred and fifty-seven reports from other physicians using the drug in their practice, all but nine are commendatory and favorable, and of the nine, eight of them discontinued its use because the medicine made them sick at the stomach, and the ninth, a physician, said it gave him a fullness in the head. If these latter had reduced the dose to five or six drops it would have had full therapeutic effect, and would have obviated the nausea, and they, too, could then have reported favorably.

"From these results my deductions are that **Cratægus Oxyacantha** is superior to any other of the well known and tried remedies at present in use in the treatment of heart disease, because it seems to cure while the other remedies are only palliative at best.

"**Cratægus** may be regarded as specific, or the nearest approach to a specific, in the following cardiac diseases: Angina pectoris, valvular deficiency, with or without enlargement, endo-myo and pericarditis, tachycardia, rheumatism (co-called) of the heart, cardiac neuralgias, from whatever cause, palpitation, vertigo, apoplexy, dropsy, and functional derangements.

"The dose of ten to fifteen drops, heretofore announced, is too much, and a dose of from four to eight drops, four times a day, is to be substituted."

Jennings advises the use of tonics and auxiliary agents to meet the indications in extreme cases of heart disease, where a long train of symptoms has developed from the imperfect circulation and deficiency of oxygenation of the blood. He says in treating heart disease, he was strikingly impressed with the rapidity with which cardiac dropsy disappeared under the influence of cratægus. From this he was naturally led to believe that the same treatment would be equally efficacious in dropsies not of cardiac origin, and he now confirms, clinically, this obvious conclusion. He has also used cratægus with the greatest of success in albuminuria or Bright's disease, and in diabetes mellitus and insipidus.

Dr. Joseph Clements, of Kansas City, Mo., wrote to Dr. Jennings for information concerning the remedy, and began taking it. The report of his case was published in the Kansas City Medical Record in April, 1898.

It was an extreme case of angina pectoris, with regurgitation, edema and a train of symptoms that pointed to immediate dissolution. After using cactus and other well known heart remedies without result, he obtained some of Jennings' fluid extract, and was cured in a few weeks, with permanent relief from the pain.

Dr. Clements believes that his experiments have shown that the drug also has a wonderfully solvent power on crustaceous and calcareous deposits in the lumen of the arteries, resembling the effect of iodide of potassium on the nodes of syphilis.

He says further, "a drug whose physiological action and therapeutic power are solvent and absorptive to the diseased accumulations, and tonic and stimulative to its nutritive nerve supply, must approach the nature of a specific as near as anything can approach it, in the disease under discussion."

Some observers claim that the use of this remedy in aged persons, with

arterio-sclerosis, angina pectoris, etc., will prolong their lives beyond the time when dissolution would have been certain had those conditions remained.

What would be the effect of the medicine in fatty degeneration, atheroma, etc., I am not prepared to say. I think further observation will be necessary before it would be safe to go far with it. In small doses, however, its tonic effect upon the nerve supply, I think, could not be otherwise than helpful.

In beginning heart mischief after attacks of inflammatory rheumatism we will find a promising field of usefulness for this new remedy.

Those who have since used the remedy believe it to be a true heart tonic and restorative and capable of exercising an immediate soothing and strengthening influence upon that organ, thereby improving the circulation, and augmenting oxygenation of the blood. Future experience will determine its merit. I will now say, as I did in 1907, this remedy, although of great service in selected cases, when used in combination with cactus or other heart agents, when used alone has hardly met the anticipations of those who were carrying out the suggestions of the original introducers of this remedy. It will meet a few indications satisfactorily. I have prescribed it in the **heart weakness** with valvular murmurs, great difficulty in breathing, persistent sighing respiration, which accompanies **neurasthenia** or nervous weakness, brought on in young people, from violent overstrain, or prolonged extreme nervous tension. The results of the sudden breakdown, being similar in every way to other cases of neurasthenia.

One case was completely cured in about six weeks, by the use of this remedy, and the arsenate of strychnia. The valvular murmurs showed a progressive decrease until they had disappeared entirely, as did also the extreme sighing and difficult respiration. Other cases complaining of heart irregularity with mild valvular trouble, have been materially benefited by cratægus.

That it has an important place in our therapeutics, we have no doubt, but its exact place is not yet determined.

Dr. Jernigan experimented very extensively with cratægus and believes it is superior to many heart remedies when correctly prescribed. He believed it to have a broader field of action; no accumulative effect; no toxic influence; no contraindications, and acts in harmony with the other remedies.

It has a general curative effect upon the functional action of the central nervous system; upon every part of the circulatory apparatus; upon the urinary organs, and the processes of metabolism. It dispels gloomy forebodings, increases the strength, regulates the action of the heart, causes a general sense of well being. In its mental influence he thinks he sees a resemblance to the action of pulsatilla, and very often prescribed the two remedies in conjunction.

The doctor is sure he has seen excellent results from cratægus in the treatment of **diabetes insipidus,** especially in children, a difficult condition to control. He has used it also in **exophthalmic goiter** with good results. He gave ten drops of the specific medicine every two hours for a while, controlling a form of epilepsy that showed itself with the other symptoms. He believes the remedy given for diabetes influences innervation, improving the circulation, especially in the capillaries when there were cold extremities. All of his cases confirmed his faith in the remedy as an important one for this condition.

Dr. Dwire, of Ohio, in his report confirms all of Dr. Jernigan's statement in its action directly upon the heart.

Dr. Sharp, of Ohio, says that he finds cratægus indicated in the usual diseases of the heart, and gives it in conjunction with the very best possible treatment to put the system into normal condition with proper diet and attention to the action of the skin, kidneys, and bowels. He reports three cases of serious heart disease in patients above 78 where the results were highly satisfactory.

Dr. Stouffer, of Pennsylvania, suffered from a number of mild attacks of **paralysis of the left side.** The heart was directly influenced; oppression heavy; constriction of the throat; all symptoms increasing by exertion. He combined cratægus and scutellaria, two parts of the former to one part of the latter, adding oil of peppermint, a few drops for the flavor. Of this he took a drop or two on his tongue very often, or as needed, obtaining relief, not secured by any other measure.

A greatly **enlarged heart** in a young man of sixteen with the symptoms usually present in older patients with **precordial bulging** was permanently benefited until a permanent cure seemed to be possible, by five drop doses of cratægus every three hours persisted in, over a period of several months.

Dr. Osborne cured himself of a peculiar **asthmatic** difficulty of the spasmodic type. He had enlargement of the right side of the heart, the oppressed breathing at times being very severe. In a paroxysm, he took eight drops of cratægus every fifteen minutes with almost immediate relief. There was no complete cure but much benefit.

Young women, who from any cause suffer from **mitral insufficiency,** especially if rheumatism is present or the conditions that lead to it, may be cured by proper care and the use of five drop doses of cratægus three or four times a day.

STROPHANTHUS. STROPHANTHUS HISPIDUS.

CONSTITUENTS—**Strophanthin.** The active principle of the plant, a glucoside, a white crystalline powder, neutral, bitter, insoluble in water, insoluble in ether and chloroform. Dose, 1/600 to 1/200 of a grain.

Strophanthidin and kombic acid.

PREPARATIONS—Tincture Strophanthus is prepared from the seeds alone. Dose, 1 to 10 minims administered cautiously.

Specific Medicine Strophanthus is made from the seeds, is of full strength, and should be given in smaller doses than the official tincture. The dose is from one-half to five minims.

Granules of Strophanthin containing 1/500 of a grain are prepared and may be given, two or three granules every half-hour in extreme cases, until the force and power of the heart are improved, then every two hours.

Administration—In administering the alcoholic tinctures of strophanthus it should not be prescribed in an aqueous or syrupy menstruum, as the agent precipitates in these solutions. It should be dropped from the bottle into the menstruum at the moment of administration.

Physiological Action—Strophanthus is the Kombe arrow poison, acting vigorously upon all muscular structure and specifically upon the muscular structure of the heart.

Its action on unstriped muscular fiber is similar to that of ergot. In some cases it affects the respiratory muscles so profoundly as to produce respiratory paralysis and death.

Strophanthus, in small doses, renders the pulse stronger and less frequent; arterial tension is increased. In toxic doses the systolic contractions become very frequent and very brief, followed, consequently, by enormous increase

of blood pressure, to which is added sudden cessation of the heart in systole. Respiration ceases last. It exercises an irritating influence directly on the muscle fibers of the heart. Its action on the heart is the same as that of muscarine. It does not act on the vaso-constrictors.

Under physiological conditions, the diuretic action is uncertain. Under pathological conditions, it renders the pulse less frequent, more vigorous and more regular; it promotes diuresis, causes the disappearance of dropsical swellings, and improves the subjective condition of the patient.

Unlike the most of the heart remedies, the effects of strophanthus seem to be caused by the agent being brought into direct contact with the muscular structure of the heart itself, after absorption into the blood. There is excellent authority for the belief that it neither acts through the medulla nor through the inherent ganglionic heart centers. It acts by contact. It causes violent contraction of the heart muscle in extreme cases, being the only one of the heart poisons to leave the heart in systole after death from its use. It does not influence the vascular system.

The **diuretic influence** of the agent, if observed, is quite permanent. It increases the blood pressure in the kidneys to a great degree through its influence on the heart muscles, and thus directly upon the capillary circulation. It is also direct in its action upon the secreting and excreting mechanism of the kidney; by this influence its diuretic action is explained .

Specific Symptomatology—The direct indications for this agent are a weak and rapid heart from muscular weakness, inactivity or lack of contractile power. Apparently strophanthus acts similarly to digitalis, but it is not a cumulative poison. Pius, of Vienna, says in **disturbances** of **compensation,** strophanthus acts well. The pulse becomes stronger and diminishes in frequency, respiration becomes normal and dyspnœa less marked.

Therapy—In **rapid** and **feeble heart** strophanthus reduces the pulse and increases the power. In some cases it also reduces the temperature.

Dyspnœa is relieved in a few minutes after its administration, and the pulse becomes stronger and more regular in less than an hour. Its influence is exceedingly persistent and can be depended upon sometimes for weeks after the agent is discontinued.

In **asthma** the paroxysm is shortened and prevented, diuresis begins, and œdema disappears, not to reappear save in exceptional cases. The patient experiences a general relief.

It has been employed in **fatty degeneration of the heart,** in acute **endocarditis,** in **atheroma** of the arteries, in chronic **Bright's disease,** in **ascites** produced by cirrhosis of the liver, and certain pelvic tumors, in the enfeebled heart after acute and chronic fevers, in acceleration of the pulse, and **reflex palpitation** of neurasthenia, hysteria and chlorosis.

Strophanthus is **contraindicated** in ascites of tumors, hepatic, splenic and pelvic, in respiratory and circulatory troubles of vasomotor origin, in active hyperæmia, and in cases in which there is a tendency to visceral hemorrages.

In its influence upon the stomach it improves the digestion and increases the appetite. Like digitalis it may induce gastric irritation if given too long or too frequently, but this effect rarely occurs. It does not increase nerve tone.

In the Indian Medical Gazette, Dr. Sanders reported seventeen cases of **cholera** treated with tincture of strophanthus, all successfully. The results were quick recovery from collapse and a gradual rise of temperature.

Vacci claimed that in cases of **persistent anæmia** of a chronic character, in acute anæmia from flooding, especially where the heart's action is feeble and imperfect, he has found strophanthus to materially assist the **appropria-**

tion of iron. In some cases where iron had been given a long time, causing insomnia, general nervousness and palpitation with indigestion where it seemed necessary to stop the iron entirely, he has used Blaud's pill with tincture of strophanthus with excellent results. Other forms of iron would probably act equally well.

Strophanthus has been prescribed in many cases of **goitre,** two drops of the tincture three times daily were given with a rapid reduction in the size of the enlargements, and in some cases a cure. In **exophthalmic goitre** it has accomplished marked results and has become a permanent addition to the therapeutics of this disorder. The dose in these cases is from five to ten drops three or four times daily.

Urticaria is reported as having been cured with strophanthus given in full doses. It is credited with the cure of several cases of **tetanus.** Clapp, in the London Lancet, reported a cure of traumatic tetanus after antispasmodics had entirely failed. In this case it had a marked diuretic effect.

Strophanthin is a mild local anæsthetic. It is only of service in operations upon the eye and not of great service here. Its effects are slow in appearing and remain long. In animals a cloudiness of the cornea is apt to appear after its use.

CONVALLARIA. CONVALLARIA MAJALIS.

Synonym—Lily of the Valley.

CONSTITUENTS—Convallarin, Convallamarin, both Glucosides.

PREPARATIONS—Extractum Convallariæ Fluidum, Fluid Extract of Convallaria. Dose, from five to twenty drops.

Tinctura Convallaræ. Dose, from five to thirty minims.

Specific Medicine Convallaria is always made from the fresh root. It may be given in doses of from one to five minims in water, frequently repeated, giving good results, prescribed from one-half to two and one-half drams in four ounces of water.

All the preparations are stable in water except the fluid extract of the root. An infusion of the entire plant was used in the most of the original investigations made. It yields good results.

The Glucoside Convallamarin is given in doses varying from 1-12 of a grain to one grain. The granules of 1-6 grain afford an excellent form, as they may be dissolved in water if a smaller dose is desired, or one or more granules may be given at a dose.

Physiological Action—A poisonous dose to a child produced great restlessness, rolling and tossing, continuous trembling of the arms and legs, and one attack of general convulsions. There was stupor, from which the child was roused by the greatest effort, to immediately relapse into it again on being left quiet. The pupils were moderately dilated, the temperature became subnormal, the pulse rapid and exceedingly irregular. The respiration was very regular but rapid, shallow or superficial. The face was flushed. The agent induced no diuretic or diaphoretic influence in this case and no gastro-intestinal irritation. Bogoyavlenski's extensive observations of the action of convallaria upon warm-blooded animals were as follows: It induces a sudden retardation of the cardiac contractions, with increase of blood pressure. After the period of retardation there follows a strongly pronounced acceleration of the contractions with still greater increase of blood pressure, arrest of heart beat with diminution of blood pressure. When the vagi are previously divided the precursory retardation does not take place. If, during the period of acceleration of the contractions, the peripheral ends of the vagi are irritated, the usual effect on the heart is not observable.

In the left and right ventricles there was found an extravasation of blood under the endocardium. Under its influence the quantity of urine is much increased, and dropsical exudates are promptly absorbed and the weight of the patient lessened. The diuresis induced by the remedy continues long after cessation of its administration. The pulse grows fuller, more regular, and in some cases slower. It is not poisinous and has no cumulative action.

Specific Symptomatology—The direct therapeutic indications are **organic heart weakness** with **valvular inefficiency,** especially if accompanied with **dropsy.** It is probably an efficient remedy for **dropsical infiltration** wherever located, if due to inefficient heart.

Therapy—It strengthens the **heart's action,** slows a rapid and feeble pulse, corrects the rhyme and rhythm, improves the tone and increases the power of the heart, as evidenced by increased tonicity throughout the entire capillary circulation. It may be given for a few days and then discontinued for as many days when its influence remains. Its influence is exercised in a regular, steady and permanent manner.

Its efficiency in **dropsy** is evidenced when there is sluggishness of the general circulation, with extreme inefficiency of the capillary circulation and greatly diminished blood pressure. In these cases, if the kidneys are not seriously diseased, it can be made to induce extreme diuresis and give prompt relief.

It can be given with impunity and small doses should not be relied upon in extreme cases. If prompt effects are desired the tincture in full doses can be given in hot water, or an infusion of the entire herb will yield the best results.

In some cases of chronic nephritis the kidneys will fail to respond to the action of the agent. But these cases are necessarily extreme ones, as in many cases of **Bright's disease** most beneficial results are obtained from the use of this agent.

It overcomes **general depression,** favors elimination, adds power and regularity of action to the heart, overcomes distress of breathing, conduces to rest and sleep, and induces a general sense of improved well-being. It is an excellent remedy with which to improve the tone and vigor of the **heart** after the depressing effects of **protracted fevers** or violent acute inflammation, especially of the lungs and bronchi. It is useful also in the enfeebled heart of **phthisis pulmonalis.**

It is of much value in rheumatism, especially when the heart is involved. In **rheumatic carditis** or **pericarditis** it serves a double purpose. It strengthens and improves the tone of the heart, and favors the elimination of morbific products which cause the inflammation. But few remedies will act more efficiently. If there is effusion within the pericardium its influence will be quickly observed.

To sum up the influences of convallaria: It is used to excellent advantage in the **tobacco heart** from cigarette smoking; in the **bicycle heart** from overstrain; in **asthmatic breathing** from enfeebled heart, especially in **chronic asthma.** It does not, like digitalis, irritate the stomach unpleasantly. On the contrary, it is of much service in that form of dyspepsia in which there is extreme torpor of the stomach, with pale, flabby mucous membranes of the mouth, broad, thick tongue, with a heavy, dirty white coating. In conditions where the tongue is red and thin, with elongated papillæ, redness of the tip and edges, it is contraindicated. It is contraindicated also in fatty degeneration of the heart.

Germain-Sée mentions the following therapeutic indications:

In palpitation resulting from a state of exhaustion of the pneumogastric nerves—**cardiac paresis,** the most frequent source of palpitations.

In simple **cardiac arrhythmia,** with or without hypertrophy of the heart, with or without lesions of the orifices or valves of the heart.

In **mitral constriction,** especially when it is accompanied by failure of compensation on the part of the left auricle and right ventricle, the contractile force augments visibly under the convallaria, as the sphygmograph testifies.

In **mitral insufficiency,** especially where there are pulmonary congestions, and when, as a consequence, there is dyspnœa, with or without nervous trouble of the respiration.

In **dilatation** of the left ventricle, without compensatory hypertrophy, it restores energy of the heart, which tends to become more and more feeble and dilated. In **dilatations** of the heart, with or without fatty degeneration, with or without sclerosis of muscular tissue, the indications for convallaria majalis are clear.

In all **cardiac affections** indifferently, from the moment that watery infiltrations appear, convallaria has an action evident, prompt and certain.

In lesions with **dyspnœa** the effect is less marked. To combat cardiac dyspnœa, convallaria is inferior to Quebracho. The combination of convallaria majalis with iodide of potassium in the treatment of **cardiac asthma** constitutes one of the most useful methods of treatment. One is often obliged to suspend the employment of digitalis on account of vomiting, digestive disturbances, cerebral excitation, the dilatation of the pupil, which it so often produces after prolonged use. No such results obtain from the use of convallaria.

LYCOPUS. LYCOPUS VIRGINICA.

Synonym—Bugleweed.

CONSTITUENTS—Volatile oil, bitter principle, gallic acid, tannin.

PREPARATIONS—Specific Medicine Lycopus. Dose, from one to twenty minims.

The principal therapeutic influence of lycopus seems to be upon the thoracic viscera, and consequently upon all lesions having diseases of these organs for their basis. The use of the lyocpus may be confined to certain fixed indications with better results than follow its indiscriminate use in any general class of cases, regardless of conditions.

Specific Symptomatology—In diseases of the **heart,** either functional or organic, marked by **irritability** and **irregularity** of the organ, **dyspnœa,** feeling of oppression in the cardiac region, its administration is followed by gratifying results. Hypertrophy and dilatation have been known to undergo marked diminution in consequence of its administration.

Therapy—It possesses tonic, sedative, astringent and narcotic properties, and has been successfully used in **incipient phthisis, hæmoptysis,** etc. It acts like digitalis in reducing the velocity of the pulse, but has no cumulative effects. In pericarditis and endocarditis its sedative action lessens the frequency of the pulse, irritability, and its attendant inflammation, in a manner equaled by no other remedy.

Cases of **exopthalmic goitre** are reported as having been cured by lycopus, and it would be well to give it a thorough trial in this most intractable disease.

Goss said that in palpitation and valvular disease of the heart, lycopus is good; in **hæmoptysis** it is so positive in its action that he seldom used any other remedy. He considered it a sedative as well as an astringent in its action, controlling the capillary circulation by diminishing the caliber of the vessels, thereby reducing the flow of the blood.

In diseases of the respiratory apparatus lycopus has been found to be very useful. Hæmoptysis, associated with rapid and tumultuous heart's action, yields readily to its influence, as does **hemorrhage** from any part. Hale lauds lycopus highly for its efficiency when used in cases of **incipient phthisis** and in chronic inflammatory **diseases** of the lungs. By regulating the heart's action and equalizing the circulation in the lungs it mitigates or arrests the local inflammation.

Chronic **irritable cough,** arising from the smouldering inflammation in the lungs, can be cured by its administration. It has been used repeatedly in the high temperature of **typhoid** fever with uniformly good results; it not only effectually reduced the excessive heat, but in so doing, it did not depress in the least the vital forces of the patient.

To a certain extent it acts on the heart as a nerve sedative by lessening its action, also by constringing the blood vessels; hence, diminishing the flow of blood. We have in this valuable remedy much that is expected of aconite or veratrum, antipyrin, antifebrin, as an agent to reduce the heat in high temperature without many of their baleful effects. A dose of from one to five drops may be given every two to four hours. It is not necessary to give it regularly—only as indicated.

It is also good in **hepatitis,** if complicated with pneumonitis, in two-drop doses, once every three hours. In **hæmaturia,** if associated with calculi or catarrh of the bladder, lycopus is of benefit alternated with chimaphila umbellata.

Dr. Halbert and others combine lycopus with chionanthus and perhaps belladonna in the treatment of diabetes.

They claim that it influences patients that are naturally fleshy, previously very heavy, and who lose their excess of weight by this disease.

It is decidedly beneficial in the treatment of **diabetes,** curing a few cases after all other remedies have failed. It has proven beneficial in **chronic diarrhœa** and **dysentery,** inflammatory disease of drunkards and in intermittents. It promotes digestion, invigorates the appetite, allays gastric and enteric irritability.

Dr. Langford says that lycopus will benefit more **gastric difficulties** than any other remedy that he has ever used, but does not specify the most particular indications that would suggest it.

Dr. Eads gives lycopus, fifteen drops every thirty minutes with cold compresses to the nape of the neck, for persistent nose bleeding.

Dr. LeBlanc lays great stress on its action in full doses in any passive hemorrhage.

There are many cases of sealding urine with frequency from vesical irritation that will be overcome by lycopus in full doses.

CHAPTER II.

SPARTEINE. CAFFEINE. APOCYNUM. ANHALONIUM. ADONIS. IBERIS AMARA.

SPARTEINE.

Formula—$C_{15}H_{26}N_2$.

Description—Obtained from the distillation of a concentrated infusion of the tops of the cytisus scoparius, or from the mother liquor after precipating scoparin. It is a colorless liquid of an oily consistence, soluble in alcohol, ether and chloroform.

Sparteine Sulphate.

Description—A crystallized product from the action of sulphuric acid on sparteine. It is crystalline, or a white powder, neutral, odorless, bitter, deliquescent, soluble in water and alcohol. Dose, from one-tenth to one-half of a grain.

Physiological Action—The agent has a profound influence upon the nerve centers, thence upon the heart. It quickens the pulse rate, increases arterial tension, augments the force of the muscular contraction of the ventricles, and increases the movement of the blood through the arterioles. It stimulates the action of the kidneys to a marked degree and produces mild diaphoresis. In overdoses it produces muscular trembling, inco-ordination, emesis, catharsis, and finally paralysis of the respiratory and motor centers. The heart is stopped in systole.

Therapy—Sparteine is a remedy for weak heart with muscular feebleness. It is useful in palpitation from heart strain and exhaustion. It has been used in Graves' disease, and is thought to be of much value in this trouble. Simple goitre also may be benefited by it. It produces its effects quickly, and the influence remains for several hours. It is a diuretic, removing dropsical effusions which result from feebleness of the circulation. It is not a remedy to be depended upon in all cases.

CAFFEINE.

Formula—$C_8 H_{10} N_4 HO_2 O_2$.

Synonym—Methyltheobromine.

Occurrence—The proximate principle obtained from dry tea leaves, coffee, guarana sorbilis, and from some other plants.

Caffeine citrate is formed by the solution of caffeine in citric acid. It is probably a mixture of the two substances and not a chemical compound. It is a white powder, odorless, slightly bitter, and acid in reaction.

Mixed freely with water it is unstable and apt to precipitate. With only three parts of water it forms a syrupy solution, more permanent. When the precipitated liquid is increased by the addition of more than twenty-five parts of water, it will then remain in permanent solution.

Physiological Action—Caffeine acts upon the reflex centers of the spinal cord. It increases the temperature at first, afterwards diminishing it. It stimulates the cerebral functions, causing rapidity and facility of mental action. It produces nervousness and wakefulness. It has no true tonic effect. It raises the blood pressure and increases the pulse rate, acting as a direct stimulant to the muscle of the heart. It increases the solids in the urine by stimulating the epithelium of the tubules.

It actively stimulates the respiratory centers. This influence is required where there has been marked depression of the nervous system, and where motor depressants have been taken as poisons. It is given in conjunction with morphine to prevent any after depressing effect of this agent on the heart's action. It is given in many cases of headache, the effervescent citrate being a popular remedy, one used by the laity almost indiscriminately.

Therapy—Caffeine is a direct **heart stimulant.** It is given to support the heart in extreme feebleness or threatened failure. It is given in conjunction with remedies that are apt to have a depressing effect upon the heart, to sustain it against such depression. In **feeble heart** from dilatation, valvular insufficiency or fatty degeneration, and in **dropsy** resulting from the above conditions, with deficient capillary tonus, this agent is an excellent remedy.

In **exhaustion** from prostrating disease, with weak heart, this agent will exercise a positive influence in the general restoration of the patient, through its strengthening action on the heart.

It is given in some cases of **asthma** where there is exhaustion from feebleness of the respiratory nerves.

It is given to dispel the **drowsiness** common to some individuals after eating a hearty meal. It is a remedy for **melancholia**, hypochondriasis and despondency.

It is a valuable remedy in general **lithæmic** conditions, as it assists in elimination of urea and uric acid.

The main objection to the use of the remedy in these conditions is its inclination to produce persistent wakefulness. In extreme doses it sometimes produces a mild form of delirium, with palpitation, general tremor and tinnitus aurium.

It is important in **uremic coma**, which causes depression of the heart and respiratory functions. It should be given hypodermically, in doses of from one-eighth to one-half a grain. It may be used in conjunction with other active eliminants.

Caffeine Citratis Effervescens—Effervescent citrate of caffeine. This popular combination for the administration of caffeine is made by triturating together a hundred and fifty-four grains each of caffeine and citric acid, eleven and a half ounces of bicarbonate of soda, ten and a half ounces of tartaric acid and twelve ounces of sugar, finely powdered. After thorough trituration, alcohol is added in sufficient quantity to make a soft paste. It is rubbed through a No. 6 galvanized iron sieve, and when dried is reduced to a coarse powder. It contains one per cent of caffeine. It is kept in a cool, dry place, in well-stoppered bottles, and is given in teaspoonful doses dissolved in a glass of water. It is a most pleasant method of administration. It is more commonly prescribed in the treatment of **headaches**, especially if caused by an acid condition of the stomach.

In mild cases of **palpitation** of the **heart** of a functional character, usually depending upon gastric derangement, this agent will be found advantageous.

APOCYNUM. APOCYNUM CANNABINUM.

Synonym—Canadian Hemp.

CONSTITUENTS—Apocynin apocynein, tannin, gallic acid, gum, starch, resin, wax.

PREPARATIONS—Decoctum Apocyni, Decoction of Apocynum. Dose, from half a dram to one dram. Specific Medicine Apocynum. Dose, from half of a minim to twenty minims.

Administration—It may be necessary to vary the form of the remedy in its administration in certain cases before a marked result occurs. The specific apocynum seldom fails. It may act promptly in doses of from one-half to one drop frequently repeated, and it may be necessary to give five drops or more at a dose, but close watch must be kept on its action upon the bowels that it be not too severe and prostrating. The agent has a general tonic influence which so sustains the body forces that considerable violence of cathartic action can be obtained in some cases, without marked depression, but usually this violent action should be avoided.

Fluid extracts are usually unreliable and uncertain in their action, some acting promptly, others producing marked irritation and depression, and still others being inert. If the fresh root of the apocynum can be obtained, an infusion of one ounce to the pint of water may be made, and from a tea-

spoonful to a tablespoonful of this infusion given often and increased or diminished as indicated. In some cases very small doses are very efficient. A tincture carefully prepared from the fresh root sometimes is the superior preparation.

While specific medicine apocynum and the normal tincture of apocynum are both excellent forms of this remedy for administration, there are some cases in which these produce considerable irritation of the stomach and intestinal canal. A distilled extract of apocynum is now supplied, which is nearly tasteless; can be administered in larger doses, and in many cases produces more satisfactory results than any other form, as it has less irritating properties. This fact is indeed important.

Physiological Action—Whether this agent acts most directly upon the heart or upon the kidneys has been an unsettled question except to those who have used it in cases where the heart was greatly enfeebled and relaxed, and when dropsy resulted from that condition.

It is certainly an excellent heart tonic in such cases, improving the strength of the heart muscle, the character and force of the pulse, and increasing to a most marked extent the arterial tonus. We have taken the initiative in introducing it among the specific heart remedies. It strengthens the nerve force, improves the respiration, and facilitates oxidation of the blood. Its influence is similar to convallaria or digitalis, and it acts in harmony with cactus, the influence of both being increased.

This agent is a violent cardiac poison. Given in large doses, it stops the heart in complete systole, and in small doses slows the beats and strengthens their force. It contains an active principle which acts as does digitalis, with, however, these differences, that it is not cumulative, and when administered in a medicinal dose it does not give rise to any inconvenience excepting some headache. Froment has reported ten instances of diverse cardiac disease in which the pulse was slowed, the rhythm was made regular, the arterial tension was raised, and edema disappeared; in certain cases it acted when strophanthus and tincture of convallaria had failed. It seems to be useful in certain febrile conditions where the frequency of the pulse gives rise to anxiety, notably so in pulmonary tuberculosis, although a large dose may increase the diarrhœa if present.

Horatio C. Wood conducted independent experiments to determine the physiological action of this remedy, under the auspices of the National Academy of Science. His observations have confirmed my early and later statements concerning the direct influence of apocynum upon the heart. He states that, notwithstanding all early observations were made with reference to the action of this drug upon the kidneys, his experiments prove that its influence is directly upon the circulation. Injected into the veins of a dog, there was a marked slowing of the pulse with a rise in the blood pressure, usually, but in some cases the slowing of the pulse was so great and so immediate as to prevent any rise of blood pressure. These effects, he asserts, are in every way similar to the action of digitalis, and he is impressed that there is a marked similarity between the action of this drug and digitalis.

His experiments made to determine whether the stimulation was directly upon the heart, or upon the circulation, through the vaso-motor mechanism, convinced him that the drug stimulated the cardiac muscle directly, bringing about a cessation of cardiac action, if persisted in, to over-stimulation, the contractions of the heart ceasing in permanent systolic spasms. He believes the remedy acts also upon the arterial walls. His studies further show that despite the enormous stimulation of the heart, the circulation through the kidneys is diminished rather than increased. This he attributes to a narrowing of the lumen of the blood vessels of the kidney.

He believes that the increased flow of urine under apocynum is due to the regulation of the circulation at large, a condition similar to that induced by digitalis. The pulse is slowed by the action of the remedy through stimulation of the cardiac inhibitory centers of the medulla.

His final conclusions are that apocynum is a powerful stimulant to the circulation, and one of which great practical use can be made. However, because of its irritating action upon the stomach, he thinks its use will be limited, but we do away with this objection entirely, first by the administration of the specific medicine in small doses and, second, by the use of the distilled extract, as stated, which is devoid of irritating properties.

Felix-Kramer of Germany has made the following statements:

"The active principle of apocynum, according to Liebreich and Langaard, is a glucoside called apocynin, the action of which is, like that of digitalis, a cardiac poison. Like strophanthus, nereum oleander, and vinca minor, the plant belongs to the Apocynaceæ family.

The reports on this remedy so far as I have been able to follow them are unanimous in designating it as a cardiac tonic and diuretic. According to Gwovdinski, of Kiev, apocynum cannabinum is known in Virginia as a household remedy and is used by some American physicians by preference as a diuretic. The dose according to this report is 15 drops, t. i. d., and given during the period of compensatory disturbance it caused no unpleasant side-effects.

According to Alesejew the effect of the remedy appears, in proper cases, in two or three days. If no remedial action appeared in five days Alesejew made no further use of the remedy. He prescribed small doses (from three to five drops) three to four times a day. After larger doses he met at times gastric disturbances and pains in the cardiac region. Cumulative effects he did not encounter. The dosage, according to Golubin, is five drops three or four times daily.

In Pawinsky's (of Warsaw) notices about apocynum cannabinum the observations he made of the different effects of this remedy from those of digitalis on the vagus are interesting. He found that apocynum cannabinum acts more readily and energetically on the innervation of the heart than digitalis, but the effect of the latter is a more persistent one. He would, therefore, use the remedy at shorter intervals, especially in cases of arrhythmia.

His dosage is somewhat higher: Eight to ten drops of the fluid extract two to three times a day. However, one should always begin with small doses. Pawinsky rarely met with unfavorable effects on the digestion from this remedy, of which effects some authors speak very extensively. Cumulative effects he found none.

The indications for the remedy, according to the writer mentioned, are valvular lesions and affections of the heart muscle at the time of disturbance of compensation. A. Robin gave thirty drops of this remedy three times daily.

Its influence upon the **kidneys** is exercised, however, when heart symptoms are not conspicuous. It produces a greatly increased flow of limpid urine without irritating the kidneys. There is no hematuria or other evidence of forced action or marked renal congestion. In profound doses it has caused suppression of the urine.

The agent exercises a **hydragogue influence** both upon the **kidneys and bowels.** In large doses it irritates the stomach, producing violent prostrating emesis. As an emetic or cathartic it is too harsh and should not be used. We have more efficient and milder remedies.

Dr. Gregory believes apocynum acts directly on the kidneys and when they are acting insufficiently he uses it as a stimulant, believing that it increases the solid matter thrown off. Dr. Moercke, of Burlington, believes that the remedy will not act when dropsy is induced by malignant diseases, but may perform miracles where the patient is dying from incurable heart lesions with general dropsy. He finds it of great value in articular rheumatism when the tissues are filled with serum, and the heart weak but sound.

The following conclusions were drawn by a writer in the Medical Century:

The drug may be given in large doses for a long time—several years in a few cases—without injury to the patient.

Improvement soon manifests itself in the majority of cases, but if improvement does not appear soon after taking the drug its further administration will be of no avail.

The best way to give the drug is by starting in with small doses of the tincture—three drops—and gradually increasing the dose so that the patient is taking ten drops three times a day within three days.

Curative results have not been seen from its use, but the patient is made comfortable and the amount of dropsy greatly diminished.

The only evil consequence from the use of the drug is a slight amount of gastric irritation which is sometimes the result of its taking. This effect gradually wears off as the patient becomes accustomed to its use.

Many failures have been reported, but the writer is inclined to believe that they are mostly due to the use of poor preparations. Beneficial results have not been obtained from the use of the various homeopathic tinctures; many of them seem to be inert. The best results have been obtained from the use of the eclectic specific medicine.

Specific Symptomatology—Dropsy is the condition for which this agent should be used, with puffiness of the face beginning in the cellular tissues around or under the eyes, puffiness of the hands and feet, followed by general dropsical effusion. Dropsy caused by defective kidney action yields first, provided too much structural change of the kidneys has not occurred.

We would add, as specific symptoms, **local edema**; edema of the feet and lower legs, pitting upon pressure; edema occurring suddenly from unexplained causes, especially when there is general atonicity, with more or less **feebleness** of the **heart's action.**

In **acute inflammation** of the **kidneys,** where dropsy appears before the kidney lesion has been diagnosed, as often occurs in post-scarlatinal nephritis, it is prompt in its action, but the kidney inflammation must be combated with other remedies. In dropsy depending upon **feeble heart,** with impaired blood pressure and deficient capillary action, the influence of apocynum is fully as marked as in the above condition.

Therapy—The statements made in my first editions concerning the therapeutic action of this remedy upon the heart have been more than confirmed by subsequent reports other than those of Wood. It acts in harmony with cactus, which is the superior remedy, however, in its tonic effects upon the nervous control of the heart and in improving its muscular power.

Apocynum improves the functional operation of the heart. Dr. Best reports two cases, where the **heart** was laboring **tumultuously,** with great irregularity. The radial pulse was almost imperceptible, except upon the every third or fourth beat. All other heart remedies had been tried and failed. This remedy accomplished all that could be desired. There was a very great increase in the flow of urine, the pulse became stronger, the **heart**

turbulence and the **dyspnœa** disappeared, and the patient recovered. Another patient, seventy-five years of age, with very **irritable heart** and **constant cough,** was relieved by the action of this remedy, in small, frequent doses.

Apocynum strengthens the heart's action, producing an increased tonicity and a regularity of movement, and stimulates the excretion of the watery portion of the urine, changing this fluid from a scanty, thick, turbid liquid to one normal, clear and free, rapidly reducing œdema.

In the latter stages of heart diseases where **hydropericardium** is present, with other local or general effusions, it is prompt and efficient in its action, as it most materially strengthens the heart and improves the character of the circulation, while it removes the effusion and consequent oppression.

In the later stages of **pneumonia** where cyanosis and difficult breathing, with increased weakness of the heart, are threatening complications, Dr. Wilkenloh depends upon apocynum. It increases the power of the heart, improves capillary circulation, assists in overcoming hepatization, and acts upon the kidneys at the same time. She gives from five to ten drops until it loosens the action of the bowels. Then she reduces it to half a drop every half hour or hour. She has confidence in it in **cardiac dropsy.** She gives it for dropsy from **arteriosclerosis,** giving it in small doses with hypodermics of strychnine. She thinks we have much yet to learn of its influence.

It has been used in all local dropsies. It has cured several cases of **hydrocephalus,** and should be tried in these cases.

Œdema, accompanying a mild form of **asthmatic breathing,** with irregular heart's action, has been cured, with all the symptoms, with this remedy. The recent reports of the action of apocynum include the influence of the remedy upon the heart. Dr. Winter believes that apocynum should be used in **cerebrospinal meningitis,** especially after the stage of effusion. He believes it to be the rational remedy. It may be combined with the other indicated remedies and echinacea. Dr. Shafer and other observers have used it to settle the stomach and strengthen the heart during an attack of **delirium tremens,** or following a **debauch.** Its influence in the cases used was very prompt and satisfactory. Dr. Keys confirms this observation.

In the **nephritis of pregnancy** with albuminuria, apocynum lessens arterial tension while it overcomes the dropsy and assists in the reduction of blood pressure which in itself abates the quantity of albumin. If the pulse is strong and rapid, this influence is enhanced by the careful use of veratrum.

In females where there are greatly relaxed or flabby tissues, **anæmia,** and a tendency to **metrorrhagia** or **menorrhagia,** with some little effusion in the ankles, with feeble kidney action, apocynum influences all the conditions. If iron be added for the anæmia the influence will be prompt and satisfactory. It has considerable reputation in the control of passive **hemorrhage** among certain physicians.

Apocynum has cured many stubborn, intractable and very severe cases of **sciatica.** We do not undertake to explain its action in this disease. Half a dram of the specific apocynum added to four ounces of water, a teaspoonful every half hour, resulted in relief after a few doses. In the treatment of this disorder Webb and others use five drops over the sheath of the nerve, sometimes giving it from four to six times in a day, often with rapid results. Any toxic effect must be watched for.

Harvey Brown adds three drams of apocynum to four ounces of water and gives a teaspoonful every four hours for sciatica.

Trowbridge has used apocynum in doses of two drops four times a day where there is irregular and too **frequent menstruation.** In one case in his special work as an oculist where there was **exophthalmic** goiter with nervous irritability and irritable heart, he gave apocynum and this corrected all the conditions as well as the irregular menstruation, which he thinks is present in every female patient with this disorder. This suggestion should have attention.

From severe injury to the thigh, a patient of Dr. Neiderkorn developed a condition closely resembling dropsy of the extremities, but described by him with symptoms similar to acute **traumatic phlebitis.** The appearances so closely resembled the indications for apocynum that he gave this remedy in drop doses every two hours. There was a gradual reduction in the swelling, and a satisfactory abatement of the inflammatory symptoms with early recovery.

The Removal of Dropsical Accumulations.

In the treatment of dropsy I am convinced that the physiological processes involved have been misunderstood and therefore often wrongly treated. Failures have been attributed to the remedy, when they have been due to its improper administration. That this is too often the case in the use of remedies for other conditions, I am assured.

To illustrate: Cathartics are administered for their hydrogogue action in dropsy, either to directly reduce the quantity of the fluid within the tissues or to reduce the quantity of serum directly from the blood and thus induce a reabsorption, perhaps, of the serum which has been diffused outside the capillaries throughout the tissues.

It is well known that apocynum, elaterium, and hair cap moss, when given in proper dosage, will so influence the process of absorption that the diffused serum will be taken back through the medium of the capillaries, into the circulation and the dropsy will disappear without any active hydrogogue or diuretic action.

I first made this observation in 1882, of the action of hair cap moss. Both my own observations and those of other more recent writers will confirm this influence as being possible from the use of apocynum, elaterium, magnesium sulphate in small and frequently repeated doses, and one or two other remedies to a limited extent. Whether the remedy acts through its direct influence upon the heart, and the circulation of the blood, or upon the secretory or excretory glands of the intestinal canal, as elaterium is supposed to act, or upon both these processes, as apocynum acts, or primarily upon the kidneys, there is no doubt in my mind that an influence is exercised upon the blood pressure—upon arterial tension and perhaps also upon the specific gravity of the blood which influences absorption and the osmotic processes, promoting a reabsorption of the diffused serum into the capillaries without any apparent loss of fluid by increased intestinal, renal, or other eliminative action.

If it were possible to know how this reabsorption could be always induced, it would be of great advantage, as it at once restores the quantity of fluid to the circulation, and prevents the prostration and debilitation of the patient, present, often after the removal of so great a quantity of fluid, which sometimes results in the death of the patient, before the influence of restoratives can be administered. I regret that I cannot give the dosage, exact in each case, but it is small always, usually much less than the commonly prescribed dose, and the dose should be frequently repeated. With apocynum this may be observed with twenty drops of the specific medicine in four ounces of water, a teaspoonful given every hour. With elaterium from one-thirtieth to one-fortieth of a grain should be given every hour. The fact that

A SUMMARY AND COMPARISON OF THE ACTION OF HEART REMEDIES.

ACTION	DIGITALIS	CACTUS	STROPHANTHUS	CONVALLARIA	APOCYNUM
ON THE NERVOUS SYSTEM	Acts on the inhibitory nerves; does not impart nerve tone, or increase nerve force.	Is a true nerve tonic, especially to the sympathetic nervous system; acts on the cardiac plexus; materially improves nutrition.	Does not act upon or through the nervous system.	Influence upon the nerve centers not determined; acts through the vagi.	Action on nervous system not marked. It seems to increase nerve force to a degree.
ON THE HEART	Acts directly on the heart muscle as a stimulant, increasing heart action. Is neither nutritional, nor a tonic; overdoses decrease nutrition; continued too long during heart strain, causes collapse.	Through the inter-cardiac ganglia it gives actual nourishment to the heart muscle. Raises blood pressure through increase of musculo-motor energy. In feebleness, slows the heart, but is never depressant; relieves irritability.	Acts on the heart muscle by irritation of the fibrillæ by direct contact. Imparts no strength; increases force and raises blood pressure, sometimes excessively.	Acts permanently but mildly as a cardiac tonic. Increases heart power and raises blood pressure.	A mild heart tonic; increases muscular power permanently. It acts on the walls of the arteries. It increases arterial tension to a degree.
ON THE PULSE	Changes, at once, the character and frequency of the pulse beat. Influence not always uniform.	Increases the size of the pulse beat, and reduces the number, especially when rapid and feeble.	Lessens the number of beats, but increases their strength; overcomes irregularity. Its influence may be immediate.	Increases the size and strength of the pulse, and slows a rapid, feeble pulse.	Increases the size, strength and force of the beat; regulates the rhythm, slows a feeble pulse, in fevers accompanied with dropsy.
ON THE RESPIRATION	It relieves dyspnea by increasing heart action and overcoming capillary stasis in the lungs.	It relieves cardiac dyspnea, especially if from endocarditis, or from pulmonary congestion, from weak heart.	Increases respiratory power, restores normal respiration. In over-doses the respiration is the last disturbed.	Removes oppression in the chest; causes deep, regular breathing. Overcomes dyspnea from mitral insufficiency.	It gives freedom to the breathing when oppressed from effusions. It facilitates the oxidation of the blood.
ON THE STOMACH AND BOWELS	Is a gastric irritant; does not nauseate nor induce diarrhea.	Exercises a soothing influence on the stomach; relieves palpitation from gastric irritation; induces no gastric, nor intestinal disturbance; imparts functional tonicity to all organs.	But little influence on the gastro-intestinal tract; rarely over-doses induce vomiting and diarrhea.	A mild gastric tonic, increasing the appetite and digestion; induces no irritation.	In active doses, it is a violent prostrating emeto-cathartic, inducing extreme hydragog action, and persistent gastro-intestinal irritation.
ON THE KIDNEYS	Increases the flow of water actively, in proper doses; renal secretion not greatly improved. Over-doses may cause suppression.	Action not marked only as the heart's action is improved.	Acts directly on both secretion and excretion, causing at times marked diuresis. Action not always uniform.	Is secondarily diuretic, stimulates excretion and secretion to a degree; quite active in dropsy, inducing no depression.	Acts directly, most freely; acts indirectly through influence on the heart. Induces large quantities of limpid urine; solids not greatly increased.
THERAPEUTIC USES	Acts at once in shock, and in sudden heart failure, increasing heart action promptly. Used in surgical shock, or shock from injury; in asphyxia and in poisoning; in heart failure from prostrating disease, as in the latter stage of pneumonia. Is of much value in selected cases of valvular incompetency.	Is not so much an emergency remedy, as it requires some time for its action. Used in prolonged or progressive heart weakness; in overstrained heart; in bicycle and cigarette heart; in masturbators' palptation; in sexual and general neurasthenia. Acts best in functional derangements.	Is an emergency remedy in heart failure, but inferior to digitalis. Indicated where heart lacks contractile power. Acts well in cardiac asthma, atheroma, and fatty degeneration; in goitre; in the weak heart of Bright's; and in functional derangements. Its influence continues long after the agent is stopped.	Relieves irritable heart action; restores strength to the heart after failure from shock, or protracting disease; used in cardiac dropsy and in functional derangements.	Is not an emergency heart remedy, except in failure during extreme dropsy and in hydropericardium. Its influence on the heart is slowly induced; is valuable in progressive heart weakness, especially in protracted fevers. It is a most reliable remedy for dropsy.
SYNERGISTS	Action enhanced by strychnin, by glonoin, and occasionally by atropin and alcohol. In chronic heart disease, by general tonics.	Action improved by tonics which improve nutrition, by general upbuilding remedies, and by avena sativa.	Acts well with carefully selected tonics; facilitates the appropriation of iron in anemia accompanied with heart weakness.	Nux vomica, hydrastis, collinsonia, and iron increase its influence, as well as the usual gastric tonics in gastric derangements.	Action enhanced by cactus, by ordinary tonics and iron. Strychnine arsenate assists materially in some cases. For its influence on dropsy, it is given usually alone.

there is no prostration, that the patient's strength and vital forces are retained by this process, is a strong argument in favor of a knowledge of it, and of its adoption. We must look for this influence with other remedies.

ANHALONIUM. ANHALONIUM LEWINI.

This agent, one of the small cacti of Mexico, has been recommended for certain special conditions as an important heart remedy. It seems to act directly upon the nerve centers in a manner much like aconite, reducing the force and frequency of the pulse. If continued too far, its influence is that of a general depressant.

One writer claims that anhalonium resembles aconite in its action first, but immediately the symptoms are similar to the influence of belladonna. There then follows a general soothing influence with an inclination to sleep. It is advised as especially valuable where there is a tendency to nervous debility, or where failure for those who labor under great stress of pain, or those who from extensive stress of business or extravagant use of tobacco are troubled with sleeplessness, or those who are reduced in their mental power, or suffer from loss of memory. No careful, general or exhaustive observation has been made concerning its action. It has been used in **angina pectoris, asthma** or **acute asthmatic dyspnœa** or **dyspnœa** from **cardiac feebleness,** and in **pneumothorax,** it has produced good results. Cactus is a special sedative under certain circumstances, and this agent promises to be as good. It has a direct action on the feeble, irregular and intermittent heart. It deserves careful investigation in those lines in which cactus exercises its therapeutic influence.

A writer in the Medical World suggests five drops of anhalonium three times a day in the treatment of **diabetes.** It produces free, regular, and **deep breathing,** assisting the respiration. It improves the functional activity of the heart by improving its tonicity. It thus acts similar to cactus.

ADONIS. ADONIS VERNALIS.

Synonyms—Adonis Apennina, Pheasant's eye.

PREPARATIONS—Adonidin. Dose, from 1/10 to 1/3 grain.

Fluid Extract of Adonis Vernalis; miscible in water without material precipitation. Dose, one to two minims.

Specific Medicine Adonis. Dose, from one-fourth of a minim to one minim. It is usually prescribed: ten drops in four ounces of water, a teaspoonful every two hours.

Adonidin—The constituents of adonis were studied by Cervello, who obtained from it only one active substance, which he named "Adonidin." This substance is extremely energetic and seems to be present only in small proportion. It is a non-nitrogenous, colorless, odorless and extremely bitter amorphous powder.

Physiological Action—From a careful clinical and physiological study of the effects of adonis vernalis, Dr. Budnow concludes that the active principle excites the inhibitory nerves in the heart at the central end; that its further action is to paralyze the peripheral end of the vagus; that it likewise excites the accelerator nerves, sometimes directly (through the blood pressure), sometimes indirectly; that at the moment of the vagal paralysis, the two systems of cardiac innervation interfere; that at the termination of the

toxic effect, paralysis of the motor nervous apparatus of the heart occurs; that after death there is either complete loss of excitability or the cardiac muscle is very much weakened.

Durand sums up his observations as follows: In doses of 1/3 grain Adonidin increases arterial tension, regulates the heart beat, diminishes the frequency of the pulse, increases the force of the cardiac contractions. Acting with rapidity, its effect being present only during administration increases diuresis, is well tolerated, but increased doses irritate the stomach.

He commends its use especially in mitral insufficiency and interstitial myocarditis, and in palpitation of the heart.

Therapy—Adonis is indicated in chronic weak heart where the venous circulation is engorged, and where there is a tendency to varicosed ulcers. In functional heart disorders with weakness, the agent is contraindicated.

In the treatment of varicosis, one writer advises it in small doses persisted in.

The agent is of value in those conditions which result from imperfect arterial tension, due to **incompetent heart action.** It is useful in many cases of **dropsy,** especially if the kidneys are inefficient in their action. It contracts the enfeebled and dilated heart muscle and improves its tone. In general dropsy its influence is quite as satisfactory as that of the other heart remedies, probably, however, not more so than digitalis, although its diuretic influence is sometimes great. In those cases in which digitalis fails to produce diuresis, the diuretic influence of adonis vernalis is more constant. It is valuable in **irregularity of the heart** and in **dyspnœa from feeble heart.** It is also serviceable in dyspnœa from **asthma** with cardiacal feebleness. It has produced marked results in these cases.

It has been advised by some prominent authorities in the treatment of **epilepsy.** The following formula has been suggested: Forty grains are dissolved in five ounces of water and filtered. To this are added 160 grains of potassium bromide and three grains of caffeine. A teaspoonful of this four times daily has cured some stubborn cases. The agent is often given in infusion.

IBERIS. IBERIS AMARA.

Synonym—Bitter Candytuft.

PREPARATIONS—The powdered plant. Dose from one to three grains. Tinctura Iberis Amaræ. Dose, five drops, increased or decreased as indicated.

CONSTITUENT—Lepiden, a bitter principle.

Therapy—The most direct action of this remedy is upon an **enlarged heart,** where there is functional weakness. It lessens the force of the heart's action, controlling violence and irritability. It overcomes the **dyspnœa** of these cases, the vertigo and general sense of weakness, with other reflex symptoms.

In **bronchitis, asthma, dyspnœa,** and in jaundice or dropsy, all of cardiac origin, it is said to be one of our best agents, in some cases acting magically. Galen used it in rheumatic affections. The agent has not received the attention it is said to deserve.

GROUP III.

Agents Acting Upon the Respiratory Tract.

CHAPTER I.

Nauseating Expectorants and Respiratory Sedatives.

LOBELIA.	IPECAC.	GRINDELIA.
SANGUINARIA.	SQUILLS.	QUEBRACHO.

LOBELIA. LOBELIA INFLATA.

Note—In the early editions of my work on Materia Medica, this agent was classed from our knowledge of its action per os, as a nauseating expectorant and respiratory sedative. Since that time, the very wide observations made of its action hypodermically have changed the most of our ideas concerning it, and have placed it in an entirely different class. Given hypodermically but very few patients are nauseated by it, and almost the whole number, notwithstanding its sedative and anti-spasmodic influence, experience a physical uplift from its action. It would seem therefore to be more properly classed among stimulants. I have thought best, however, to leave this agent in its original class, until laboratory experiments have proven its exact influence upon the nervous and circulatory systems.

Synonym—Indian Tobacco.

Part Employed—The whole plant.

Natural Order—Lobeliacæ.

Locality—North America.

CONSTITUENTS—Lobeline, Lobelachrin, Lobelia acid.

PREPARATIONS—Extractum Lobeliæ Fluidum, Fluid Extract of Lobelia; dose, from one to ten minims.

Tinctura Lobeliæ Tincture of Lobelia; dose, from five to thirty minims.

Specific Medicine Lobelia; dose, from one to twenty minims.

Subculoid (hypodermic) Lobelia; dose, from two to sixty minims; usually from ten or thirty minims repeated as occasion demands.

The preparation of lobelia which is to be used hypodermically, must be selected with great care. If the agent be given internally, any good fluid preparation is effective, but in its hypodermic use, local irritation, nausea, severe vomiting, even general prostration occur more frequently from the ordinary fluid preparations. If depression with the above complications can be properly antagonized, and is not objectional in a sthenic patient. and the case immediately demands the remedy when only these are at hand, much the same results will occur as from the perfected preparations.

Extended and persistent experimentation has been made to secure as nearly as possible a perfect fluid preparation for hypodermic use. The nearest to this at the present time is the so-called **Subculoid lobelia.** This is devoid to a very large extent of the objectionable features of the other preparations, and so nearly devoid of emetic properties that this is now considered a negligible quality. It is always best however to use any preparation hypodermically warmed, the parts aseptic, and to apply a hot compress over the seat of the application immediately for a few minutes. Except for its local effects, there is but little difference between the Subculoid lobelia and the specific medicine lobelia.

Administration—Given by mouth for the various purposes for which it has long been used, the dosage of the specific medicine should be small, and frequently repeated. As an emetic or antispasmodic, the dose is from fifteen to thirty minims. Given hypodermically, from five to fifteen drops is usually sufficient in all children's cases, and from ten to thirty drops in adult cases. If no untoward results occur after the first dose, and the condition demands it, a more or less frequent dose and an increase in the size of the dose is justified by the severity of the symptoms, and by the demand for its influence.

Every prescriber will soon learn to make these adjustments correctly. In an occasional case a very small dose is sufficient.

Physiological Action—Lobelia relieves pain due to spasm of any character. But in its antispasmodic and relaxing influence it is not narcotic in the same sense as opium. It exercises a soothing influence over nerve irritability, and a distinct anodyne result ensues. General relief from pain often follows when other measures have failed. The pain from renal or hepatic stone is more quickly relieved by it and more permanently, often, than by morphine because of the general relaxation.

As used by the mouth, prior to our knowledge of its peculiar action hypodermically, it was determined that lobelia in toxic doses causes extreme prostration, burning pain in the œsophagus, rapid, feeble pulse, fall of temperature, collapse, coma or convulsions and death from respiratory failure. Moderate doses cause dizziness, nausea, vomiting, headache and general tremors. In doses of twenty grains it is a prompt emetic, but emesis is accompanied by excessive prostration, relaxation and a feeble pulse. In small doses it causes increased expectoration and diaphoresis. Like other narcotics, a small dose stimulates, while a large dose depresses the nervous system.

Although usually classed among emetics, lobelia is a nerve sedative of great power, and in this influence as an antispasmodic it is exceeded by but few remedies.

Death has occurred in a very few cases from excessive doses of the remedy, but toxic effects are not apparent where the medicinal dose is prescribed. Where death has occurred, its influence as a nerve depressant has been plainly shown in the profound, general muscular relaxation, with greatly impaired muscular power, general trembling, shallow respiration, cold, clammy skin, feeble and depressed heart action. It acts like tobacco and physostigma upon the respiration, the heart's action continuing after the respiration has ceased. Paralysis of the respiratory nerves is its prominent influence.

The observations made of its physiological action when the remedy is used hypodermically are, that so used, the direct local influence of the agent upon the stomach is avoided and if the remedy is properly prepared, emesis, violent vomiting, profound relaxation, with prostration and depression, which were found present from that local influence are all absent. A total of less than five per cent of the cases will show emesis or even nausea.

Used in a medicinal dose, it softens the pulse, slows the respiration, quiets the nervous system, and produces a freedom of the respiration and circulation. One of our writers claims that he believes that the agent introduced by the stomach acts upon the pneumogastric nerve, while, when introduced hypodermically and absorbed, it acts more directly upon the sympathetic nervous system.

Lobelia acts directly upon the regulating centers of the system; those of heat, of the circulation, of nerve influences, both motor and sensory. It supports the heart; it overcomes excessive blood pressure, and restores normal tension. It is directly indicated in depression as well as in over-stimu-

lation. It also controls **hyperemia.** Whatever the cause of any great depression, we cannot yet define the marvelous improvement observed from this agent. We hardly call it stimulation, and yet the improved condition is such as would ultimately follow the action of the very best, most natural stimulants or tonics.

It is hard indeed to express the apparently contradictory influence exercised on the above named **depression,** which has been overcome in its most extreme form—(in fact, in some cases where the skin was so cold and the process of life so feeble as to cause one to think that death had occurred, and yet the reaction appears very promptly)—between this condition and its influence in **profound heat stroke,** as one doctor reports, where the temperature was 110 degrees, and others have reported from 106 degrees and up. Dr. Jentzsch who is enthusiastic about the action of this remedy in heat stroke, hesitates in claiming that lobelia is a stimulant, pure and simple, as we understand the action of stimulants. Unlike brandy or strychnine or digitalis, the immediate and sharp, stimulating, or whipping-up effects do not appear in the same way to be lost when the effect of the medicine is gone.

The improvement on all conditions is plainly marked, but the restoration is nearly that of a full normal condition obtained in a smooth and satisfactory manner. It is more like an increase of vital force, which remains to a large extent, in the improved condition of all the functions after the remedy has had time to be fully eliminated.

From my own personal observations and from the conclusions I have drawn from the observations of others, I would say that lobelia seems at once to supply a subtle but wholly sufficient force, power, or renewed vital influence, by which the nervous system and the essential vital force within the system again reassert themselves and obtain complete control of the functional action of every organ. From this influence, in a natural and sufficient manner, a complete harmonious operation of the whole combined forces is at once resumed, in some cases in an almost startling manner. Other agents stimulate, prop up, whip up or temporarily increase the force and power of one or another function, while this remedy with this peculiar power at once assumes control of the whole, and succeeds against all the opposing influences.

Specific Symptomatology—This remedy is specific given in irritable, spasmodic and **oppressed breathing,** and in respiratory disorders from exalted nerve force and nerve irritation.

It is contraindicated in general relaxation and in dyspnœa from enlarged or fatty heart, or from hydropericardium, or enfeebled heart, with valvular incompetence. It is specific in threatened **spasm** with exalted nerve action —a high degree of nerve tension with great restlessness and excitability, flushed face and contracted pupils. It is a prompt emetic in full doses. **The following observations** are made almost entirely **from its hypodermic use.**

Therapy—In **spasmodic asthma,** if given in a dose of from thirty minims to one dram during the paroxysm, the benefit is apparent almost immediately. Small doses are of but little or no benefit in such a case. This full dose may be once repeated, but this is seldom necessary, and a single dose seldom produces vomiting. It is useful in asthmatic breathing. When continued with other agents it must be given in doses not to exceed ten minims three or four times a day.

Lobelia is of value in **whooping-cough.** It is a reliable expectorant, and either alone or in combination with other indicated remedies, is useful in all cases of dry, hard, barking cough, or where the expectoration is difficult to raise, in **spasmodic croup,** and in **membranous croup** without depression.

Children are less liable to be unpleasantly affected with Lobelia than adults.

Its action as an **emetic** is most profound. It is not so commonly used at the present time for that purpose as ipecac, as the irritation, nausea and general depression are usually greater than is necessary.

It resembles tobacco in this and in many other particulars, producing a burning sensation in the fauces which is persistent and unpleasant.

Either alone or combined with tincture of capsicum, it has long been used to overcome **spasms** of all characters, from **infantile convulsions** to **puerperal eclampsia** and **epilepsy.**

It has been given in **tetanus** with benefit, and with success in the spasms of **hydrophobia** and of strychnia poisoning.

Because of the great importance placed upon this remedy by Thompson, and the violent opposition which followed his endorsement, it has been openly decried by the profession at large, and denounced because of its inactivity in small doses, and declared to be a profound poison in full doses. If it had been given fearlessly in full, large, single doses, the best of results would have occurred.

As a remedy for hysteria, **hysterical paroxysms** and **hysterical convulsions,** the combined tinctures of this remedy and capsicum have no superior. It will immediately terminate many paroxysms and quickly control convulsive attacks.

This agent has in the past been exceedingly popular as a relaxant in **rigid os uteri.** Very many cases are on record of almost immediate relaxation and rapid termination of labor.

Ten years ago Dr. Ernst Jentzsch, sitting one night at the bedside of his only son in the throes of death, from fulminating diphtheria, after antitoxin to the extreme limit had been used, and all other available measures, claims that in answer to prayer, with a peculiar confidence that he could not account for, gave the boy, without any precedent, a hypodermic injection of one-half dram of specific medicine, lobelia. He made the following statement as to results:

"All the fatal symptoms gave way to those of returning health, the patient passing from a death struggle into a peaceful slumber, from which he awoke after three hours, somewhat weak. Another dose was given, which was followed by a still more pronounced reaction for the better. The patient from that time continued to convalesce, and, with the exception of a post-diphtheritic pharyngeal paralysis, he made a rapid recovery. Later, the paralysis yielded to smaller doses of the same remedy."

"In any case where there is the least suspicion of diphtheria not always waiting for a test, I give a half dram dose of the specific medicine lobelia hypodermically, and repeat it from two to twelve hours once or oftener, as indicated, until reaction sets in, which means a return to health."

In **Diphtheria,** lobelia has now been tested in several thousand cases. At first there was some doubt from the reports received, but later and more recently reports are quite uniformly favorable in encouraging the belief that it will be found to be fully as useful a remedy as the serum antitoxin. It has several advantages. It not only removes the membranes, but it destroys the germs of disease, and at once puts the patient in the best possible physical condition to resist its inroads. It preserves intact the functions of the body, and preserves or restores the functions of the nervous system. It is nontoxic, has not only no anaphylaxis following, but a single dose restores a patient suffering from anaphylaxis from the serum antitoxin. The latest report at this writing received found nine children in a hovel with no care, all with diphtheria and only one with the disease mildly. Using nothing

whatever except lobelia, the physician lost one case out of the nine, putting them, however, into as good condition as possible in their surroundings from the beginning of his treatment.

The dose for diphtheria varies from ten minims to forty, and is administered according to the demands of the patient from one hour at first to six hour intervals, with one or two injections a day for any subsequent paralysis.

Lobelia has long been used in **asthma.** Taken by the mouth severe spasmodic cases are relieved. Hypodermically the same results are obtained. An occasional case however will show unfavorable results, and in some cases where there are serious heart lesions, there has been prostration, depression, and threatened death which were combated only by vigorous measures. The smaller dose should be used in these cases until no evidence of idiosyncrasy or susceptibility are known to occur. In the absence of these indications then the agent can be used fearlessly and in increasing doses if necessary.

This agent is equally satisfactorily in the treatment of **diphtheritic—membranous—croup.** The observations have been universally favorable. **Simple spasmodic croup** yields to it promptly. As yet no undesirable results are reported. The dose is from five to fifteen minims, repeated as needed.

In the treatment of **tonsillitis,** it will not be needed except in the severer forms, in which it will promote satisfactory results.

In the treatment of **coughs,** those due to pneumogastric irritation, are quickly relieved as well as the pain accompanying. It promotes normal expectoration and respiratory freedom.

In the treatment of **whooping cough,** but few cases are reported at this time, but the suggestion is that it be given just preceding the attack of cough and repeated if possible on two or three consecutive attacks.

In the treatment of **bronchial coughs** and **acute bronchitis,** especially if the bronchial tubes are loaded with mucus and there is a sense of tightness with some difficulty in breathing, the agent is directly indicated.

If with **pneumonia** or **broncho-pneumonia,** there should be rapid shallow breathing with anxious expression of the countenance and a tendency to cyanosis, this agent is clearly indicated. It improves the heart's action; relieves the capillary circulation, and dissipates cyanosis, more quickly than any other remedy.

It is well known that in the treatment of **pneumonia** in the later stages, symptoms occur frequently which seem to threaten an almost immediate fatal termination. This group of symptoms is promptly met with a single hypodermic dose of lobelia. This is especially true with children. I have many reports where the agent snatched the little patient as it were, from the grave, just as death's door seemed to be closing upon it.

When from any cause, usually from heart complications, the patient complains of **shortness of breath,** especially if there be any sense of oppression in the chest, or tightness around the chest, a medium dose of lobelia hypodermically will give full freedom and in many cases a careful properly timed repetition of the injection will give permanent relief.

In the treatment of **nausea, persistent vomiting,** and a generally disturbed condition of the stomach, if ten drops of lobelia be added to half a glass of water and a teaspoonful be given by the mouth every ten or fifteen minutes, it will often give prompt relief.

It is also useful adjusted in the same manner as the above for **sick headaches** and given over a period of time with reference to the conditions that induce the disease and also to any possible periodical recurrence of the disease, it will be found curative.

It was used successfully in one case of persistent **hiccough.** One-half dram repeated in half an hour cured the case.

In the treatment of **acute spasm** in the stomach, in the pylorus or cardiospasm, this agent is of immediate benefit. It is exceedingly beneficial in spasms of any kind within the abdomen. Some obstinate cases having been cured with it. It quickly relieves certain cases of chronic constipation, and is positively indicated in obstipation and where the obstruction of the bowels seem certain. It thoroughly relaxes **muscular spasm** and encourages peristalsis.

Used in **acute heart failure** with imminent danger, a full injection is demanded. Many lives have been saved by its peculiar sustaining influence. No depression is observed, no erratic action, even when what would seem to be unnecessarily large doses have been given. One to two drams have been frequently given and repeated with only good results. In these cases indications for other remedies should be looked for and met.

Heart conditions depending upon feebleness or lack of tone or of muscular power should have occasional regular doses of this agent. It can be given with more freedom than any other heart stimulant. A case of **tachycardia** is reported where it was used with temporary benefit only.

In **chronic heart** disease with dilatation—hypertrophy—the consequent valvular deficiency and other structural defects, the agent must be given with caution as in a few cases untoward results have been seen.

The prompt and satisfactory effect of lobelia upon **angina pectoris** has been known for fifty years or more, the old prescribers giving it by the mouth freely and with positiveness for this disorder. Hypodermically the agent is given in about thirty drop doses but in many cases fifteen drops have been sufficient. Usually the larger the dose the more satisfactory the result.

In **precordial oppression,** where the patient complains of a sensation of tightness over the chest with sighing respiration—a sensation of weight, heaviness and tightness, often accompanied with considerable pain, it is indicated.

In the treatment of any form of **hysteria,** especially if there be violent hysterical excitement or convulsions, this agent will be found of immediate benefit.

Its natural antispasmodic properties make it a most reliable remedy for **convulsions** of any form and by proper adjustment, it is the safest probably of our agents for the **convulsions of childhood.** In babes, a small dose only is required and there is little danger of nausea or other unpleasant effects. The dose should be repeated as needed.

Spasm of the glottis has been controlled in several cases promptly with ten drop doses, though a larger dose may be needed.

A case of **tonic spasm** with deep coma following a fifth laparotomy was most satisfactorily cured by dram doses every fifteen or twenty minutes until two ounces were used.

The convulsions of **cerebrospinal meningitis** have no more active antidote than hypodermic lobelia. Given with echinacea, calcium sulphide or hexymethylenamine, it will prove curative, although some doctors will prefer to combine it, for sedative influence with gelsemium.

Dr. Wilkenloh has observed that she gets best results in this disease when the face is ashy pale, when the muscular pains are extremely severe, and where there is some paralysis following the convulsive attack. Even in children with these conditions she gives full doses in most cases though usually smaller doses will accomplish the same result.

Five cases of **epidemic spinal meningitis** were treated with recovery in every case with ten drop doses given every hour.

Epilepsy should be treated with this remedy and careful observations made. If given during the aura in sufficiently large doses and the dose re-

peated as indicated, it will probably be found to exercise an efficient control. It was satisfactory in a few cases that are reported, but observations are insufficient.

In the treatment of **tetanus,** it has controlled the convulsions in a number of cases, especially if an anti-toxic agent was injected at the same time.

In the treatment of **eclampsia,** while our present anti-spasmodics are efficient their influence is enforced by hypodermics of lobelia. It is the most active of this class in promoting dilatation of a rigid os, which is often immediately essential, permitting the completion of the labor. It can be used in conjunction or alternation with veratrum or gelsemium, and dram doses of echinacea should be given by the mouth every two hours to antagonize the toxins. One extreme case is reported with every condition aggravated and these complicated with placenta previæ. The child was removed by Caesarian section. After veratrine, pilocarpine, elaterium, and magnesium sulphate were given fully for the dropsy, the convulsions persisted even in spite of prolonged anesthesia until thirty drop doses of lobelia were repeated, frequently, when the whole was controlled, and the patient saved. Echinacea was given for the extreme infection.

For **rigidity** of the **os uteri** at any time, it may be used. It promotes normal uterine contraction after the os is dilated. A case of persistent absolute rigidity for thirty-six hours was dilated fully in four hours with this agent.

A child thoroughly poisoned with **strychnine** was saved by thirty drop doses repeated every half hour. He had eaten one-third of a grain. Another case is reported where the agent successfully antagonized over-doses of strychnine.

In every case of **ptomaine poisoning,** in which the agent has been used, it has covered all the indications and has proved fully successful. It has been used in many instances.

In one case where **toad stools** were eaten instead of mushrooms seven individuals were thoroughly poisoned. One woman was very near death when the first injection was given. All were saved very promptly by the persistent and repeated use of full doses of this remedy. In many instances when the dose was given, the immediate effect was plainly apparent.

Three or four cases of **cerebral concussion** have been reported where the patients were unconscious. In one case consciousness was restored three consecutive times, the patient and friends refusing an operation which was plainly demanded for the compression made by the broken skull.

A number of cases of **syncope** from apoplexy were satisfactorily relieved and the paralysis when present was benefited, to an extent, by the use of this remedy.

Asphyxia from any cause indicates Subculoid Lobelia. It should prove of excellent benefit in restoring patients **from drowning.** Those who have used it to restore patients from the dangerous effects of anesthetics keep it constantly at hand for this purpose.

Favorable results are reported in two cases where patients were threatened with **hydrophobia.** There was one test case in which the patient bitten treated as above, showed no signs of hydrophobia while all the animals bitten by the same dog, developed the disease in fatal form.

A remarkable case is reported where a patient would indulge in an occasional **alcoholic debauch.** At such a time he became unconscious and remained so for four hours. This case was threatened with heart complications of a serious character. The condition was relieved in half an hour by an injection of lobelia. In another case consciousness was restored by this agent.

In all forms of **calculi** where the pain is extreme, lobelia must be given in full free doses. One or two repetitions will be all that are necessary.

In **strangulated hernia,** it is used with superior results. One case of umbilical hernia yielded to it quickly.

In the treatment of **malaria,** it can be adjusted to assist the antiperiodics if given before the expected paroxysm. Several cases of **pernicious congestive chill** have been restored by its prompt and sufficient use.

In general **uremic poisoning,** it should be given. In **scarlet fever,** especially severe cases, it acts promptly and in line with its indications will meet the expectation of the prescriber.

In cases of **obstinate constipation** or **obstipation,** it has produced such relaxation that the obstacles were quickly removed.

It has been given where there was **extreme albuminuria** in which it supported the strength of the patient until other measures could be used.

Lobelia has been given in full doses in cases of **profound anuria,** three doses of from twenty to forty minims having been sufficient.

SANGUINARIA. SANGUINARIA CANADENSIS.

Synonym—Bloodroot.

CONSTITUENTS—Sanguinarine, chelerythrine, protopine, citric and malic acids. Dose: Its best medicinal influence is obtained from small doses; from ten to twenty drops in a four ounce mixture, a teaspoonful every hour or two.

Physiological Action—In excessive doses bloodroot is a gastric irritant, and a depressant; it produces burning and racking pains in the digestive canal from the mouth to the stomach; insatiable thirst, dilated pupils, nausea, an anxious countenance, coldness of the extremities, cold sweats and more or less diminution of the pulse, with irregularity.

Specific Symptomatology—The influence of sanguinaria is restricted to rather narrow lines. In harsh, dry cough with relaxed tissues of the pharynx, larynx and bronchi, with a sense of constriction and constant irritation and uneasiness or tickling in the throat, this agent is useful.

Therapy—It is a tonic and stimulant to the bronchial membranes. It stimulates the capillaries and overcomes **congestion** of the **lung** structure, after a severe cold in the chest from exposure. An improvised syrup made from adding a dram of the tincture of sanguinaria and two drams of vinegar to two ounces of simple syrup will relieve the chest sensations quickly if taken in teaspoonful doses every half hour or hour.

It is not as useful a remedy in diseases of children as ipecac or lobelia, as the harshness of its action in full doses is not well borne. If combined with either of these agents, and given in small doses for exactly the same purposes for which they are suggested, it will furnish the tonic and stimulant influence of the combination. There will be less nausea from the ipecac and less general relaxation from lobelia. Given with the syrup of ipecac in hoarse **bronchial coughs,** or **stridulous laryngitis,** or in the early stage of croup, it will enhance the expectorant influence of ipecac, and prevent, in part, the cold skin and depressing influence of that agent. It equalizes the circulation of the entire system, inducing warmth in the skin and in the extremities.

In **membranous croup** its use is an excellent auxiliary to the treatment, but it is not to be depended upon alone. It may be given in small doses, not sufficient to produce emesis, until the membrane is separated, then the dose may be increased until the membrane is removed.

It is a good remedy in **atonic conditions** of the lungs or bronchi with imperfect circulation and relaxed mucous membranes, with general inactivity

of the nervous system and lack of nerve force. It should not be prescribed during active inflammation, but will be of service when the more acute symptoms have abated.

It will assist in overcoming **hepatization** of lung structure and restoring normal tone and normal functional action. The powdered drug in small doses in a capsule, may be combined with hydrastis or quinine with excellent effect when those agents are indicated as restoratives.

It is said to act upon the stomach, liver and portal circulation, as a stimulant, and to the glandular organs and structures of the intestinal canal, and to exercise an alterative influence within the blood.

The tincture in full doses, is an **emmenagogue,** restoring the menses when suppressed from cold. It is not to be given if menstrual deficiency is due to anæmia, although it is tonic and stimulant in its influence upon the reproductive organs.

The powdered sanguinaria is applicable to suppurative conditions. It is useful in **otitis media** and in **ozœna.**

The nitrate of sanguinaria is a soluble salt, as useful and less irritating than any other form of sanguinaria. It is valuable as a local application to **indolent ulcerative conditions.** It should be used in small quantity in ointments, or in solution as a lotion. It is serviceable in chronic **nasal catarrh,** in chronic ulcerations of the throat, and in **fissures** and ulcerations of the **anus.** It will act in this concentrated form as an escharotic and is of much service as an application to **epithelioma, lupus** and to other growths of a similar nature.

IPECAC. CEPHAELIS IPECACUANHA.

Synonym—Ipecacuanha.

CONSTITUENTS—Emetine, the emetic principle existing in the stem, leaves and root, cholin and cephaeline in the root, ipecacuanhic acid, and a nauseating ethereal oil.

PREPARATIONS—Extractum Ipecac Fluidum, Fluid Extract of Ipecac; dose, from one to forty minims.

Syrupus Ipecac, Syrup of Ipecac; dose, from ten to sixty minims.

Pulv. Ipecac et Opii, Powder of Ipecac and Opium, composed of Ipecac and opium of each ten parts, Sugar of Milk, eighty parts; dose, from three to ten grains.

Specific Medicine Ipecac; dose, for gastric, intestinal or bronchial irritation, five drops in four ounces of water; a tablespoonful every hour. As an emetic, from five to twenty minims in hot water.

Alcresta Ipecac is prepared by the action of Lloyd's reagent on the solution of the alkaloids of ipecac. It represents the medicinal properties of the ipecac, but will not produce nausea or emesis. It is superior to emetine in its general use because it is not hypodermic. One tablet represents ten grains of the powdered ipecac. It may be given in doses of one, two or three tablets three times per day, before meals.

Physiological Action of Ipecac, (J. U. Lloyd, Ph.D., LL.D., Ph. M., Western Druggist).—Ipecacuanha root, from its first appearance in our materia medica, has been prized as an emetic and anti-dysenteric remedy.

The peculiar effect that the dust of ipecacuanha powder exerts upon the respiratory organs of some persons has been noted by early observers. Lewis, in 1761, makes the following statement: "Geoffroy observed that in pulverizing considerable quantities, the finer powder that flies off, unless great care be taken to avoid it, is apt to afflict the operator with difficulty of breathing, spitting of blood and bleeding at the nose, or swelling and inflammation of the eyes

and face, and sometimes of the throat, adding that these symptoms disappear in a few days, usually spontaneously. Poisoning in this manner may be treated by blood-letting and the taking of a decoction of uva ursi and extract of rhatany; in another more recent instance, relief was afforded by a dose of extract of **quebracho.**

Powdered ipecac applied to the skin produces irritation and redness, followed finally by small isolated pustules, which increase in size to small ulcers.

The powdered ipecac in one-sixth of a grain doses is a stomachic tonic, stimulating the salivary and gastric secretions. In doses of ten grains it will act as a nauseating emetic, but the emesis occurs slowly and is not extreme, persistent nor prostrating like that of lobelia or tartar emetic.

In some cases continued repetition of the emetic dose produces a toleration, when the emetic effect ceases, but there is diarrhœa—an active cathartic influence, with stools characteristic of this agent. In some children the persistent use of the syrup of ipecac will invariably produce diarrhœa often persistent and difficult to cure.

The agent is also diaphoretic and actively expectorant.

Emetine was first isolated as the emetic principle of ipecac in 1867. In 1894 the other alkaloid cephaeline was discovered. In 1912 it was determined that emetine destroyed the ameba which has been known to be the cause of **epidemic amebic dysentery,** of a form of **hepatitis,** and also as the cause of **pyorrhea,** commonly called Rigg's disease, and other conditions of less importance. This important discovery has placed this alkaloid (like the hypodermic use of lobelia has placed that important remedy) in a most conspicuous position, making it at once a specific for the conditions named. Alcresta ipecac is exercising the same specific influence.

Dr. H. Barlow, Chief Surgeon to the Hospital at Cuyamel, Honduras, now using these preparations, says: "My impressions are that while Alcresta ipecac cannot replace emetine in cases which can be seen daily, or in severe cases, it has certain uses in which it is superior to emetine. These are: 1. Cases in which there is an insuperable objection to hypodermic injections; 2. Cases living at such a distance or too poor to make daily visits to a physician; 3. In the after treatment of cases which have been relieved by the treatment of emetine; 4. In the treatment of carriers; and 5. In the treatment of cases of Craigiasis, which indeed cannot be treated so well with emetine alone as with emetine combined with some preparation of ipecac which can be administered orally."

The endameba which is the specific cause of **Pyorrhea Alveolaris** is almost invariably destroyed by Alcresta Ipecac. Bass and Johns found that the germ would disappear from all lesions in from one to three days in ninety per cent of the cases, and in six days from ninety-nine per cent of the cases. They found it as efficient in most cases as emetine. The peculiar combination involved in this substance prevents the alkaloids from being dissolved in acid or neutral solutions. Thus it passes unchanged through the stomach without inducing nausea in any form. The alkaloids are permitted full activity in the intestinal tract. The local influence of this agent upon the endameba in the mouth is very prompt and satisfactory.

In extreme inactive conditions of the stomach and bowels, with or without pain—the inactivity shown by a broad, pallid tongue, covered very thickly with a dirty white coat, which finally becomes sleek on the top, increasing from tip to base in dirtiness, to a brown color—full emetic doses of the common forms of ipecac persisted in for a short time will quickly correct almost the entire train of symptoms.

Specific Symptomatology—Persistent irritation in mucous membranes, with deficient secretion, demand ipecac in small doses.

Persistent nausea and vomiting, with pale, relaxed membranes, white-coated, broad tongue, will often yield most readily to minute doses (1-10 of a drop) frequently repeated.

Bronchial gastric or **intestinal irritations** are benefited by its use. It is indicated also in **croup,** with **sudden dypsnœa** and threatening suffocation, extreme secretion, without ability to dislodge. Half teaspoonful may be given.

Therapy—For its emetic influence ipecac is one of the most satisfactory of the emetics. When there is **undigested** food in the stomach, causing irritation, when mild poisons are taken, when emesis is demanded to relieve **sick headache,** this agent is used in preference to others. If promptness of action be demanded the full dose should be given in a bowl of warm water—not hot—or a single full dose of lobelia may be given with it. This produces immediate emesis without prostration. If powerful **poisons** are taken, and active emesis is demanded, the sulphate of zinc or lobelia in persistent doses, or some other emetic more immediate in its influence, is usually used, although the writer has always been able to adjust ipecac with such adjuvants as warm water, mustard, or tickling of the throat, to every case. In cases where **foreign bodies** are **lodged** in the **æsophagus,** and in the threatened suffocation of **mucous croup,** or in **membranous croup,** ipecac is the remedy, especially in childhood. No emetic more harsh should be used with children. In the developing stage of **malarial fevers** it was once the practice to produce active diaphoresis by a hot pediluvium and hot drinks, the patient being wrapped in warm blankets, and to produce profound emesis with ipecac. Often the most desirable results were obtained, and in some cases where an acute cold had been contracted or where there was a severe chill, in strong, previously healthy patients, the disease, was suddenly terminated by this course. The author has had this experience. In the **bronchitis** of childhood occurring often suddenly, with a dry, hoarse, stridulous or croupal cough, without secretion, ten drops of the syrup of ipecac given every half hour, hour, or two hours until nausea in induced, will sometimes abort the condition in a few hours, the influence of the agent dissipating the conditions essential to the progress of the disease. This form of bronchitis is common in furnace-heated houses, and in close, hot, unventilated apartments, in the beginning of the winter when the furnace fire is first started, and in the spring.

Ipecac in small doses given in conjunction or in alternation with **aconite** or bryonia or belladonna, is of great service in **pneumonia,** especially that of childhood. Five drops in a half glass of water, a teaspoonful every hour, may be given with the best of results. In **acute bronchitis** it may be prescribed in the same manner.

Ipecac is of value also in the after stages of **pneumonia.** In the stage of active inflammation it is useful as stated, but is not given in the same form as in the later stages. It is an excellent remedy to assist in clearing up **hepatization,** and in restoring normal conditions in the lung cells. The author, when the temperature has subsided, gives one-fourth to one-half a grain of powdered ipecac to an adult, every two or three hours in a capsule, with two grains of the bisulphate of quinine. The tonic influence of the quinine assists the influence of the ipecac.

Ipecac is of value in **coughs** when there is a deficient secretion, whatever the cause. Emetic doses are not desirable if the agent is to be continued for a length of time.

It has been beneficial in **spasmodic asthma, whooping cough** and in **laryngismus** stridulus.

This agent is advised in irritation of the bowels resulting in acute inflammation. In small doses it is given with good results in cholera infantum and in diarrhœas, but is of no benefit beyond the acute stage.

While ipecac has been known as a cure for certain forms of **dysentery** for more than a century, the use of its active principle emetine as a cure for **amebic dysentery** is just now coming into prominence. Our writers have always advised ipecac for this disease, but not all have given it in sufficiently large doses. Administered now in the form of alcresta ipecac or emetine hypodermically, the cures are prompt and highly satisfactory. In fact, the remedy is already being classed with quinine for malaria, and antitoxin for diphtheria, as one of the great specifics.

If the **dysenteric tenesmus** is relieved with prompt doses of gelsemium—and we have a no more efficient remedy in the materia medica for this condition than that agent—the beneficial effects of the ipecac upon the local inflammatory processes will be more plainly marked.

Recent observers in the general hospital in Calcutta, India, have found that large doses of ipecac have most beneficial effects in **amebic hepatitis** and **hepatic abscess.** If the diagnosis be made before the formation of pus, this is prevented by the agent. It should be given when the patient suffers with a general feeling of lassitude, foul tongue, pain in the right shoulder and in the right hypochondrium. The liver is enlarged and tender on pressure. There is marked leukocytosis but the polynuclear increase is not great. Ipecac is given in these cases in single large doses, usually from twenty to thirty grains, given at least two hours after eating and best taken at bedtime. Occasionally this dose is given twice daily in capsules.

Frazier claims that ipecac in large doses is an excellent addition to the treatment of **typhoid fever.** In five cases where he used it, the temperature dropped suddenly so that within four days it was normal. In the earlier stages he gave thirty grains on the first day; twenty-five the next; twenty the next and so on down until ten. He gave small doses of opium to keep the patient from vomiting. The results were pronounced. This course is worth trying.

The successful use of this common remedy, in the treatment of **epilepsy** has been reported, since our first edition. Persistent cases have been treated, with ten minim doses of a strong fluid extract, increased to forty minims. This has been persisted in according to the susceptibility of the patient. The action of emetine or alcresta ipecac should be at once determined for the above conditions.

In **hemorrhages** Ipecac has exercised a satisfactory influence. Its action upon the circulation is quite prompt. It is given by some physicians in small doses for this purpose, and by others in full doses to prompt emesis. It has controlled postpartum hemorrhage, menorrhagia, metrorrhagia, epistaxis and hæmoptysis, and will exercise a beneficial influence in hæmaturia.

SCILLA. SCILLA MARITIMA.

Synonym—Squill

CONSTITUENTS—Scillitin, skalein, calcium oxalate, sinestrin, scillipicrin, scillitoxin, scillin.

PREPARATIONS—Acetum Scillæ, Vinegar of Squills. Dose, from five to thirty minims.

Extractum Scillæ Fluidum, Fluid Extract of Squills. Dose, from one to five minims.

Syrupus Scillæ, Syrup of Squills. Dose, from half an ounce to two ounces.

Therapy—This agent is best known for its action upon the mucous membrane of the respiratory tract. It increases expectoration and is actively nauseating.

For this effect it is given in severe **bronchial coughs** without secretion, in dry, harsh **irritating coughs,** the sputum scanty and tenacious. It has a soothing influence over bronchial irritation.

Squill is an active **diuretic.** Given in non-inflammatory conditions where there is lack of tone, reflection of the mucous membrane, with debility, it stimulates the entire urinary structures. It has long been given in dropsy for the removal of the fluid, its action being prompt and efficient, partly because it stimulates the action of the heart, improves the circulation and strengthens the pulse.

It may be given in conjunction with apocynum, digitalis or cratægus, with all of which it acts harmoniously.

GRINDELIA ROBUSTA.

Synonyms—Wild Sunflower, Gum plant.

PREPARATIONS—Fluid Extract of the leaves and flowering tops. Dose one-half to one fluid dram. Solid Extract. Dose, 5 to 15 grains.

Specific Medicine Grindelia—Dose, from two to ten drops.

Physiological Action—The influence of the agent is exhibited on the heart, at first by a quickened pulse, subsequently by retarding it. It elevates the blood pressure at first, subsequently lowering it. In overdoses it is toxic, the specific influence of the agent on the respiratory nerves being shown by paralysis of the muscles of respiration.

Specific Symptomatology—The agent is specific to **asthmatic breathing.** It must be given in full and frequent doses, and the effects, although not striking from a single dose, are soon evident and are more or less permanent. It soon relieves the effort of breathing and produces expectoration, but on continued use the entire train of symptoms slowly abate, and if persisted in the paroxysms do not soon recur.

Therapy—In spasmodic asthma, pure and simple, with complete relief between attacks, it is not the remedy. It is an excellent antispasmodic expectorant in all chronic spasmodic **bronchial coughs,** and in chronic bronchitis, Asthmatic bronchitis is often benefited, from the first dose, by its use. In whooping cough it is of value in combination with other more specific agents.

It will relieve the **irregular heart** action often accompanying chronic coughs, and improve the strength and general character of that organ.

Grindelia has relieved many cases of **hay fever** and has cured some few, for the time being. In the chronic cough following pneumonia the agent has been used with good results.

As an application to the skin when poisoned by rhus toxicodendron, this agent is valuable. It acts promptly and satisfactorily.

It is curative also in the bites of insects, quickly antidoting the poisoning.

As applied to old indolent ulcers it has given unusual satisfaction in a few cases, although not often used.

Co-operatives—It may be combined with good results with lobelia, stramonium, drosera, or ipecac, and in some cases for continued use, small doses of the iodide of potassium will act nicely with it.

QUEBRACHO. ASPIDOSPERMA QUEBRACHO.

Synonym—Quebracho Blanco.

CONSTITUENTS—The bark of Quebracho contains at least six alkaloids. Aspidospermine, which is thought to be one of these, is not a single alkaloid, but represents the full activity of the drug; dose, ¼ to ½ grain.

PREPARATIONS—Fluid Extract Quebracho, not miscible with water; dose, fifteen minims to one fluid drachm. Solid Extract Quebracho; one part equals ten of drug; dose, one to three grains.

Physiological Action—In investigating the physiological action of this agent, Penzoldt determined that its influence was exerted upon the heart and respiratory functions. He found in different forms of dyspnœa—from emphysema severe **bronchitis, phthisis, chronic pneumonic processes, with periodic asthma and pleuritis,** that after giving one to two teaspoonful doses of a solution sometimes two or three times a day, the frequency of breathing generally diminished, the respirations were less deep, and that the cyanosis especially, in phthisis and emphysema, was almost invariably diminished or removed. The effects lasted for hours and were followed, without exception, by improvement of the patient. It is now prescribed for the above conditions. In one case of inherited **pulmonary stenosis,** and in another of **thrombosis** of the left main branch of the pulmonary artery, the effect was remarkable, though but temporary.

Mariasi y Larrion, of Madrid, employed quebracho in a number of diseases of the respiratory and circulatory organs. The following conclusions are a short resume of his observations from a paper translated for the Therapeutic Gazette in 1880:

"The principal action of this drug is to cause a diminution of the number of pulse beats per minute, and lessen the frequency of the respiratory act.

"Its principal and direct action is on the circulatory center, giving tone and regularity to the contractions of the heart, with an intermediate effect on the nervous system."

Specific Symptomatology—Quebracho acts specifically in restricted, **difficult breathing**—dyspnœa, as occurring in many forms of heart disease and mildly in asthma of whatever character.

It is not employed with such good effects in nervous dyspnœa.

Its action is rapid, and is manifested almost immediately after the administration of the medicament.

Its administration in the doses indicated is not dangerous, and its continuation will not have any undesirable influence on other organs.

Therapy—Hale calls it the digitalis of the lungs and lauds it for its influence on difficult breathing without much distinction as to the cause.

The agent has quite a positive influence in malarial fevers.

In **thrombosis** of the pulmonary artery, in some cases of **apoplexy,** and in **uremic dyspnœa,** it has been of great service. Those of our own physicians who have used it wherever there is difficulty in breathing are enthusiastic in praise of the relief it gives. It overcomes some severe cases of cyanosis, and although its influence is not always permanent, it often prolongs life and the relief is most grateful to the patient.

It undoubtedly removes temporary obstruction to the **oxidation of the blood** and by stimulating the respiratory centers it increases oxidation, and facilitates the excretion of carbonic acid.

The agent has quite a positive influence in **malarial fevers** with or without lung complications, acting as a sedative, antiperiodic and febrifuge. It is not widely used for this purpose and it does not influence other fevers.

CHAPTER II.

Agents Acting Upon the Mucous and Serous Structures of the Respiratory Tract.

STICTA. DROSERA. POTASSIUM BICHROMATE.
ASCLEPIAS. EUPHRASIA.

STICTA. STICTA PULMONARIA

Synonym—Lungwort.

CONSTITUENTS—Not analyzed.

PREPARATIONS—Specific Medicine Sticta; dose, from one-tenth to ten minims.

Specific Symptomatology—This agent acts directly upon irritation in the chest, especially when complicated with irritation of the nerve centers.

Pain beneath the scapulæ extending to the occiput, sharp pain with soreness above the scapulæ, or in the shoulders, especially indicate sticta.

As given by Felter and Lloyd in the American Dispensatory, the indications are as follows: Pain in the shoulders or in the back of the neck extending to the occiput, soreness or dull pain in the chest, or in the extrinsic respiratory muscles, which is increased by deep breathing. Irritation at the base of the brain, or in those organs or parts supplied by the pneumogastric nerve. **Irritative cough;** cough persistent and dry, of a rasping or wheezing character; short, sharp, hacking cough, with quick darting pains in the chest walls. They also advise it in the treatment of **rheumatism,** which involves the muscles and smaller joints. It may be given in **hay fever,** where the headache is severe, and in catarrhal disorders, where there is frontal tension, with sneezing, **coryza** and **conjunctivitis.**

It is given in the exhaustive cough of phthisis, bronchitis, and laryngitis. It relieves the cough and irritation in these cases and controls hectic fever, chills and night sweats.

Therapy—In coughs of acute **bronchitis,** with the indications named, it is useful; in **cough,** with wheezing and tightness—**asthmatic cough,** with the characteristic quick, sharp pains, it is indicated. It also influences directly the post-nasal mucosa.

It is valuable in some forms of **catarrh,** especially if there is reflex irritation. It has been used in **whooping-cough** and in **croupal coughs.**

Sticta has been suggested in **rheumatism** where the muscles of the chest are involved, where there is sharp, quick pain on respiration or where the muscles of the shoulder are sore and tender, where the muscles of the neck are involved.

The remedy has been used in **scarlet fever** to good advantage, but we have no specific directions for its administration in these cases beyond those named.

It has a specific influence in the treatment of those forms of **hay fever** and in those attacks of **influenza** characterized by the discharge of a hot, irritating, watery mucous, which afterwards becomes thick, bloody, greenish or yellow.

The catarrhal disorders to which this remedy is applicable are characterized by headache, with tearing pains through the side of the face and lower jaw, with pressure in the forehead, at the root of the nose, coryza, conjunctivitis, soreness and dull pains in the chest.

ASCLEPIAS. ASCLEPIAS TUBEROSA.

Synonym—Pleurisy Root.

CONSTITUENTS—Glucoside, tannic and gallic acids, resin, fixed oil, volatile oil, fat, gum, starch.

PREPARATIONS—Extractum Asclepiadis Fluidum, Fluid Extract of Asclepias. Dose, from one to five grains. Specific Asclepias. Dose, from one to sixty minims.

Action—Diaphoretic, expectorant, cathartic, tonic.

Physiological Action—In regard to the influence of asclepias, Grover Coe, M. D., writing in 1858, gives the following wide range of action. He says: "No other remedy with which we are acquainted is so universally admissible in the treatment of disease, either alone or in combination. In fact we think of no pathological condition that would be aggravated by its employment. It expels wind, relieves pain, relaxes spasm, induces and promotes perspiration, equalizes the circulation, harmonizes the action of the nervous system, and accomplishes its work without excitement; neither increasing the force or frequency of the pulse, nor raising the temperature of the body. It is of special service in the treatment of affections involving the serous membranes, as pleuritis, peritonitis, etc." In this it resembles bryonia closely.

The most active apparent influence of this agent is upon the sudoriparous glands. It is distinctively an eliminative agent of general utility. It is mild in its influence, but if given with confidence it will produce good results.

Specific Symptomatology—Its first direct effect is upon the serous membranes within the thorax. It is specific in **pleuritic pains,** both of the acute and subacute variety, in doses of fifteen drops every two or three hours. For these I have long prescribed this agent with positiveness, and have yet to be disappointed. If effusion be present, its rapid removal is facilitated. The pain and distress abate, the cough disappears, the respiration becomes free and natural, the inspiration being especially pleasant; the heart takes on increased tone, and the entire contents of the thoracic cavity seemed benefited. I have treated with this remedy the "stitch in the side," which had been present for many months after pleurisy, and have removed it satisfactorily.

This agent will cure **pains** in the **chest** unaccompanied by prominent symptoms, acute, sharp and cutting, recurrent or persistent in their character, if given in doses of half a dram every two or three hours and persisted in for a few days.

Therapy—It is beneficial in acute **pleuritis** specifically, also in **bronchitis, pneumonitis** and **peritonitis.** It has distinct expectorant properties. In tight and painful coughs with difficult respiration, especially where there is a general suspension of secretion, with dry skin and mucous membranes, and in soreness of the chest from coughing, it is a most excellent remedy. In all these conditions if there is the least elevation of temperature its influence will be greatly enhanced if given in conjunction with aconite.

It was in great repute among the older Eclectic physicians in the treatment of **acute pleuritis,** as suggested above. They also used it in acute inflammations of serous membranes, especially if there were acute, quick pains, and a tendency to serous effusion. Its eliminative action upon the skin greatly enhances its influence in these cases.

If the powdered asclepias be combined with ipecac and camphor, a powder is produced with diaphoretic properties of an **Improved Dover's Powder.**

To obtain active diaphoresis, asclepias should be given in strong, hot infusion. Its influence in **acute rheumatism** should not be overlooked. It

may be combined with such agents as macrotys and colchicum, and will markedly intensify their action, especially if aconite be indicated.

DROSERA. DROSERA ROTUNDIFOLIA.

Synonyms—Sundew, Youthwort, Lustwort.

PREPARATIONS—Fluid Extract Sundew; not miscible with water; dose, five to twenty minims.

Specific Medicine Drosera, two to five minims. An excellent and potent preparation.

German Tincture Sundew; an imported preparation, from the green plant; dose, fifteen to sixty minims.

Specific Symptomatology—The field of the influence of this remedy is narrow. It is specific to dry, irritable, persistent cough; also cough of a hoarse, resonant, explosive, or spasmodic character, without secretion.

Therapy—It is an antispasmodic, expectorant, and sedative as applied to such coughs. It will also relieve coughs of sympathetic origin, and so-called nervous coughs. It will cure the **cough** of **measles** more quickly than other remedies, and it will cure the after-cough of **whooping-cough.** It will terminate a whooping-cough and leave the patient free from cough, when the active stage of the disease has passed. If there is a deficiency of bronchial secretion it will be found of service during the progress of whooping-cough, modifying the paroxysms of the disease; they, occurring less frequently.

It is serviceable in all chronic coughs of a dry, irritating character, especially if the central nervous system be irritated. It is of service in **chronic bronchitis** and in **phthisis pulmonalis.**

It has also relieved **asthmatic coughs,** with nervous irritability. It has been used in a few cases as a sedative and tonic in irritable conditions of the **stomach,** relieving **flatulence** and curing mild cases of **gastric ulcer.**

EUPHRASIA. EUPHRASIA OFFICINALIS.

Synonym—Eyebright.

PREPARATIONS—Specific Medicine Euphrasia; dose from one to sixty minims.

Specific Symptomatology—The sphere of action of this agent is upon irritating and catarrhal disease; first, of the upper portion of the respiratory tract, and afterward of the mucous structures of the throat, and bronchial tubes. It is more immediately beneficial if the discharge is thin and watery—fluent. "**Snuffles**" in infants demands this remedy.

It is specific to acute disorders of the **nasal mucous membranes.** It is especially applicable in children's cases, but is curative also in adults. Where there is **watery discharge** from these membranes, where there is **earache,** or **headache,** and especially if the distress be across the eyes, in acute catarrhal affections, it has a direct influence upon the lachrymal apparatus.

Therapy—In **cough** and **hoarseness,** where there is a thin bronchial discharge, it is applicable especially to the **catarrhal manifestations** following **measles.** It will prevent other sequlæ of measles, as **catarrhal conjunctivitis, catarrhal deafness,** and **chronic nasal catarrh.** It is indicated where there is abundant secretion of thin acrid mucus, from the eyes and nose, with pain and heat in the frontal sinus.

It is especially indicated in that form of recent colds that spend their force on the mucous surfaces of the nose and throat with fullness of the frontal sinus.

In **acute coryza** the agent exercises a specific action. It should be given in ten drop doses of the tincture every hour or two. In "**snuffles,**" so called in very young infants, five or ten drops of the tincture may be dropped into a half of a glass of water, and a teaspoonful given every ten, fifteen or thirty minutes. Relief is often immediate. In the **coryza** of **measles** it is of much benefit, and the bronchial and pulmonary irritation caused by this disease is ameliorated also by its use.

A reliable indication is a red and watery condition of the eyes—irritation of the lachrymal structures. Any unpleasant after influence of measles upon the eyes is relieved by the use of Euphrasia. Its internal use will benefit many cases of conjunctivitis, especially those of recent origin in children. The specific indications for this agent, plainly suggest its use in certain well marked cases of **epidemic influenza.** It should be given a careful, thorough trial in this, often most serious disorder.

A writer reports a chronic case of **catarrh,** in which the patient for many months had seemed to be persistently renewing an acute cold in the head. There was persistent sneezing, a constant inclination to blow the nose, and a profuse watery secretion which, when lying down, continually ran from the posterior nares. Five drops of specific euphrasia every two hours, cured this patient within a couple of weeks. In children the smaller dose is preferable, and a dose of ten drops will cure most of the acute cases. But some of the chronic cases will not be benefited until they are given large, full doses. It is claimed also that it has cured chronic **catarrh** of the **intestinal tract.**

It is excellent also as a collyrium in **blepharitis,** and **conjunctivitis,** twenty drops in four ounces of water applied freely. It is given internally at the same time. It is a tonic, improves the appetite, and conduces to a general sense of well being.

It is asserted that **epilepsy** has been successfully cured by giving four ounces of an infusion of this remedy, upon an empty stomach, every night at bed time.

POTASSIUM BICHROMATE.

Formula—K_2Cr_2O.

Synonym—Bichromate of Potassium.

Therapy—Triturated with sugar of milk this agent is of much service in some cases of bronchitis. One one-hundredth of a grain of the salt so triturated will relieve dry, irritable bronchial coughs and produce amelioration of symptoms in some stubborn cases.

It is useful in **hoarseness** from a cold, with the accompanying dry, hard irritating cough. Harsh, rasping **cough** in the **upper air tubes** is influenced by its persistent use.

This is the remedy with which to influence congestion of the larynx.

It will cure hoarseness after a cold. It should be given where there is **dry catarrh,** with dry exudation from the nose, or greenish discharge, the disease advancing until there is deep ulceration. Any discharge from mucous membranes that is tough and stringy that can be drawn out in long strings, will be cured by very small doses of this salt.

Bichromate of Potassium is beneficial in cases of **aphonia** from congestion. One grain in four ounces of water, a teaspoonful every two, three or four hours, is about the proper dosage. It is also given where there is chronic, spasmodic, **bronchial cough,** accompanied with hoarseness or with a sense of dryness in the naso-pharynx. Dr. Cole uses it in the **dyspepsia of beer drinkers** with good results, but he thinks that the 2x trituration in a one

grain tablet is the best form to give it. One doctor gives it in **diphtheria** about one-sixtieth of a grain at a dose. He finds that it clears off the exudate and promotes a cure in some cases especially if used in combination with echinacea or phytolacca.

CHAPTER III.

Agents Acting Upon the Mucous and Serous Structures of the Respiratory Tract.

TURPENTINE. BENZOIN. ACETIC ACID.
TEREBENE. AMMONIUM CHLORIDE.

TURPENTINE. OLEUM TEREBINTHINÆ.

Synonyms—Long-leaved Georgia, Swamp, or Pitch Pine.

Occurrence—Turpentine is obtained from the Pinus Plaustris and from other species of the pine in the form of an **oleoresin.**

The oleoresin is distilled, and the product is the **Oil of Turpentine** or the **Spirits of Turpentine.** The residue is **Resin** (colophony) .

Description—The oil is a thin, neutral, colorless liquid, with a specific gravity of 0.87, soluble in three volumes of alcohol. It boils at about 330 degrees Fahrenheit.

PREPARATIONS—The oil distilled with six volumes of lime water, produces the **Rectified oil of Turpentine** (Oleum Terebinthinæ Rectificatum). This is the form which should always be used in medicine. Dose, from one to ten minims. It should be given in an emulsion for gastric and intestinal disorders. For respiratory disorders, drop from two to five drops on a square of loaf sugar to be dissolved slowly on the tongue, and swallowed with the saliva.

Terpene hydrate is formed by the action of nitric acid upon the rectified oil of turpentine, and alcohol. The product is distilled; it is crystalline, colorless, nearly odorless; slightly soluble in water, soluble in alcohol. Dose, from one to three grains.

Terebene is obtained by the action of sulphuric acid on the rectified oil. The product is distilled. A colorless, thin, aromatic liquid is the result. It is soluble in alcohol, only slightly so in water. Dose, from three to fifteen minims.

Physiological Action—The oil of turpentine is an irritant when applied to the skin or mucous membranes in any considerable quantity. It causes burning, a vesicular eruption, and deep, stubborn ulcerations. In the stomach it produces warmth, increased from an overdose to a burning pain, nausea, vomiting, purging, eructations of the oil, great gastro-intestinal irritation, amounting to gastro-enteritis. In toxic doses it causes renal hyperæmia, great irritation of the urinary tract, violent hæmaturia and strangury, with suppression of urine and albuminuria.

It stimulates the heart, increases the arterial tension for a time, increases the temperature and exalts the mental faculties. Ultimately there is a reduction of physical strength, muscular insecurity, tremblings, inco-ordination, great nervous irritation, wandering of the mind, incoherence, insensibility and coma, breathing stertorous and labored, from paralysis of respiration; face cyanosed or flushed, pupils dilated. All exudations contain its odor.

While violent symptoms have often been produced by full medicinal doses of turpentine, fatal results have seldom occurred. Five ounces have been taken by adults with recovery. Children have died from overdoses in a few instances. The agent is eliminated through the kidneys and mucous membrane,

and this fact explains its immediate influence upon these organs and structures.

Specific Symptomatology—In two marked conditions apparently diametrically opposite in their character, this agent is specific.

First. In **excessive secretion of mucus**—catarrhal discharges from whatever cause, especially if there be relaxed, enfeebled, atonic mucous membranes. It may be given with confidence.

Second; in **gastric** or **intestinal inflammation,** or in persistent fevers, with dry, red, glazed tongue, dry mucous membranes—**tympanites,** with **suppression of the secretions** of all gastric and of intestinal glands.

It is also indicated by a steady distress or dull grinding pain in the abdomen, a sensation of hardness across the abdomen, with tendency to constipation, with general inactivity of the entire glandular structure of the gastro-intestinal tract.

It increases the tone and capillary circulation of all the mucous structures, and in the abdomen of the muscular structures of the intestines also. Its antiseptic powers are great, destroying parasites and germs of disease, and inhibiting putrefaction and fermentation.

In intestinal disorders of childhood it prevents the formation of lactic and butyric acids, and the irritation caused by their presence.

Therapy—The specific indications suggest the use of turpentine in **acute** and **chronic bronchitis** when there is an excessive discharge of mucus. Its influence may be observed from the first.

It controls the cough, allays the excessive bronchial secretion, soothes the irritation throughout the chest, relieves the diffused soreness and promotes the cure. In **pharyngitis** and **laryngitis** it is of value also.

In acute inflammations within the chest its external application is of much value, especially in pneumonitis or capillary bronchitis with diffused soreness. Soreness and tenderness in acute fevers and inflammations are relieved by the external use of turpentine, while quick, sharp, acute pain is best combated by the external use of mustard and anodyne counter-irritants.

In *croup* its influence is direct. In both the mucous and membranous forms it has accomplished excellent results. It is given internally, applied externally, and its vapors are inhaled in these cases for a short time, careful watch being kept for evidences of its irritating influence upon the kidneys. In some extreme cases where it has not been previously used, a single large dose of ten or fifteen drops to a child of five years or above, will apparently exercise a prompt influence.

In **diphtheria** with occlusion of the larynx, throat or nasal passages, from the membrane, it should be dropped on the surface of hot water in a close-mouthed vessel, and the vapor inhaled for a few minutes every two or three hours. It may be used in this manner with excellent results with an equal amount of the oil of eucalyptus. It may be also used in an atomizer for this purpose. In all throat difficulties its external application is beneficial.

It is a remedy for **acute** and **chronic nasal catarrh** and if given persistently it will prove most serviceable, even in stubborn, chronic cases. In **gastric** or **intestinal catarrh** it is a remedy of much value given in proper doses in palatable emulsion. **Pain** due to this condition is quickly relieved by turpentine, and atonic, relaxed and enfeebled mucous or muscular structures quickly restored, and normal function attained.

Turpentine is a most excellent remedy in the treatment of **typhoid typhus** and low forms of **fever,** and in typhoid complications of **acute inflammations.** In these conditions, when the tongue is dry, glazed and dark red, the temperature persistently high, the pulse small, wiry, rapid and feeble, with distention of the abdomen from tympanites, the urine scanty and dark, the intestinal

glands ulcerated and intestinal hemorrhage present, turpentine is certainly a most efficient remedy. Its antiseptic influence is exercised in conjunction with its restorative power over the mucous and intestinal glands. It is given in doses of from two to five drops every two or three hours.

In **peritonitis** or **appendicitis** with any of the above phenomena with tympanites the agent is prescribed with only good results.

In all conditions within the abdomen where its internal use is demanded, especially if there is distention of the abdominal parieties from the accumulation of gases, the external use of turpentine is important. A stupe may be prepared by wringing a piece of flannel out of hot water and sprinkling a few drops of turpentine over its surface as it is applied. This should be kept hot by being properly covered. A popular domestic method is to melt a quantity of lard and add to it an equal quantity of turpentine and apply this freely to the surface. Olive oil is a good menstruum, but an increased proportion of this oil is required because of less density than the lard.

In all cases pain must not be caused by the turpentine applications. Its influence also upon the kidneys must be watched, and if difficult, painful or burning urination, or scanty urination occurs, or the least blood appears in the urine, it must be stopped at once, at least for a time. In large doses it produces nephritis, strangury and priapism. Inhaled constantly it will produce these symptoms in those otherwise healthy.

Turpentine has been used in passive hemorrhages. It prevents the **hemorrhage** of **typhoid** and controls hemorrhage in **gastric ulceration.** It controls hæmaturia given in small doses, in some cases, and also the hemorrhage of scurvy and purpura hemorrhagica. In extreme persistent postpartum hemorrhage, after complete evacuation of the womb, it has been painted over the inner lining of the womb with immediate control of the hemorrhage. The conditions demanding its use in passive hemorrhage are great relaxation of tissue, lack of tone, dilated and atonic blood vessels, with constitutional depression—conditions permitting a passive transudation of blood.

In **catarrh** of the **bladder** it is an excellent remedy. It may be given in conjunction with other measures or suggested remedies. In all these cases the indications for other remedies should be promptly met to facilitate the action of this remedy.

Turpentine internally is a serviceable remedy for **leucorrhœa,** either of a specific or non-specific character. It has long been used in the treatment of **gonorrhœa,** but is not the best of our remedies. In pyelitis with excessive mucous discharges, in gleet, in subacute gonorrhœa, it will allay the discharge occasionally when other agents have been inefficient.

Incontinence of urine from relaxation and feebleness of structure has been benefited by turpentine.

In the treatment of **dysentery** when the violent phenomena have been controlled, and in some exhausting diarrhœas, turpentine will be found of much service. It is best given in small doses in such cases. It has been used in yellow fever and in cholera also.

Turpentine is applied to swellings from **chronic rheumatism** of the joints, to **plethoric swellings,** and slow forming abscesses.

It is of much value in **chilblains,** and, although painful, has been painted over small burned areas. It has been used in gangrene also with good results.

Erysipelas has been treated with turpentine, but we cannot commend its influence.

Turpentine is an efficient **anthelmintic** for the removal of tænia. It is given in a single full dose of from thirty to sixty minims upon rising in the

morning. It may be followed shortly by a tablespoonful of castor oil in a teaspoonful of hot milk. The patient should fast, until the oil operates. All nervous phenomena dependent upon the irritation caused by the presence of the worms will abate with the destruction of the worms. This is not due to any nerve sedative influence of the turpentine, however.

Whitford treated thirty cases of **trichina spiralis** at one time with the persistent use of turpentine. Five drops every three hours was sufficient. The diagnosis in the larger number of the cases was confirmed by the microscope. As every case recovered which was so treated, his confidence was naturally confirmed in this use of turpentine. At another time two parties were known to have eaten of a certain lot of pork which on examination was found teeming with trichina. Both were affected in the same manner and death seemed imminent. One was treated with turpentine and recovered; the other died. In nearly all of the cases, the beneficial results were plainly traceable to this remedy.

BENZOIN

The **Tincture of Benzoin** has been a popular remedy in the past. It is given in doses of from one-half to one dram. The **compound tincture,** composed of benzoin, storax, balsam of tolu, and purified aloes with alcohol is advised for its influence in laryngeal and bronchial difficulties. The dose is from one-half to two fluid drams of the official U. S. P. preparation.

The **Compound Tincture** is vaporized in hot water, and the vapor is inhaled in chronic and acute **laryngitis.** It is useful in many forms of bronchial irritation without secretion. Its antiseptic properties are not great, but are apparent where there is a scanty, fetid expectoration.

AMMONIUM CHLORIDE.

Formula—NH_4Cl.

Synonyms—Ammonium Muriate, Chloride or Muriate of Ammonium.

Dose, from three to ten grains.

The taste should be obscured in an aromatic syrup.

Physiological Action—In its influence it exhibits the peculiarities of ammonia. It is not widely different in its action from the carbonate, but does not act powerfully upon the heart and is less transient in its effects.

During the last five years much has been learned concerning the specific action of this remedy upon mucous surfaces. The author has observed that while it influences the mucous membranes of the bronchial tubes, in a satisfactory manner, curing alone many cases of dry, harsh, irritable **cough,** and relieving many cases of chronic cough, it is equally beneficial in its influence upon the mucous membranes of the stomach and gastro-intestinal tract. It can also be used in **purulent inflammation** of the lining of the pelvis of the kidney and bladder.

Administration—It is not necessary that large doses be given, as it often produces excellent results in doses of less than a grain. One-half grain doses will materially benefit bronchial coughs which have been persistent and which are dry in character and recur with every change of the weather. Many stubborn cases are reported as cured by small doses of this remedy.

Specific Symptomatology—The following indications are suggestive in the administration of this chloride: Deficient capillary circulation, evidenced by dusky redness of the skin, the redness disappearing on pressure

and returning slowly; **ecchymosis** of the surface of the body, especially of the eyelids. A hot solution of the muriate of ammonia will quickly overcome the discoloration of a violent contusion. **Cough** of a rasping, irritating, tight and harsh character, with deficient or scanty secretion, is allayed by it; also cough depending upon hepatic, gastric or intestinal irritation.

A German writer advises ammonium chloride for the same conditions of the **glandular structures** of the body for which we advise phytolacca, but believes in giving it in small doses. It certainly exercises an alternative influence, and it would be well to give these two agents together and observe their action. One grain or even less of this agent at a dose will be sufficient.

Therapy—Its common use is in the treatment of **bronchitis.** In the conditions where a stimulant expectorant is needed, as mentioned of the ammonium carbonate, its administration being more easily rendered pleasant, it is more commonly used than the carbonate. It is a common ingredient of many extemporized cough syrups. It is especially useful in **catarrh** of the **bronchi** with relaxed and debilitated mucous membranes.

Catarrhs of all kinds are promptly influenced by its use, whether they be nasal, gastric, intestinal, or gastro-intestinal, or catarrh of the bladder, or leucorrhœa, wherever there is an abundant thick secretion from the mucous membrane.

In **catarrh** of the **stomach,** with excessive acid secretion and constant pain during digestion, ten grains of this salt before meals is often productive of complete relief and subsequent cure. It should also be used in **intestinal catarrh.** It will be found of great service in **colitis** or **ilecolitis** and will relieve the irritation and pain present. In **chronic diarrhœa** due to chronic catarrhal irritation of these intestinal mucous membranes we have seen some striking results. One case suffered from intense, acute intestinal pain and chronic diarrhœa, with a persistent temperature of from one hundred to one hundred and one and a half degrees. The condition had been present two years and a half, and a tubercular condition was diagnosed. The only marked effects, from any remedy in this case, were observed from the action of this chloride. It relieved the irritation and pain, controlled the diarrhœa, and there was slow abatement of the temperature. The patient attributed all the beneficial results to this remedy, although there were other indicated remedies given, which assisted in the total result.

Another case of **intestinal indigestion,** with frequent attacks of diarrhœa, accompanied with sharp, colicky pains, was cured with this remedy.

Whitford for many years has advised this agent as a specific in **neuralgias.** It is indicated in those of a rheumatic character, and those of a distinctly malarial type, with a tendency to periodicity, especially if occurring in the face or head. In those cases where belladonna is not contraindicated, he gives the two agents in conjunction in full doses. It is a serviceable remedy and his experience is confirmed by that of such men as Watson, Anstie and Ringer. To give relief it must be given in doses of from ten to thirty grains. Small doses are of but little benefit.

This agent is recommended highly in **chronic inflammation** of the **liver** with torpor and engorgement. In **catarrhal jaundice** it stimulates the liver, working actively in harmony with many of our organic remedies. In other glandular affections it is of much value, especially where there is chronic enlargement. This applies to **mastitis, ovaritis** and **prostatitis.** A solution of the salt applied to enlarged glands is very efficacious, promoting removal of the enlargement. It is also applicable to contusions and indolent tumors and is applied to **senile gangrene.**

This agent should be used in the treatment of **chronic prostatitis.** It may be given for a short time in large doses, and then continued in small

doses, the large dose to be repeated as the occasion demands. Many physicians claim that it is a positive cure in the treatment of prostatic enlargement. It soothes **vesical irritation,** relieves tenesmus, overcomes the mucopurulent discharge, and adds tone and vitality to the parts.

The drug is a stimulant to the capillary circulation and will be found of benefit in exanthematous fevers, favoring the eruptive process, especially if there has been a recession. Externally, the solutions of chloride of ammonium are applied to **chilblains,** parts threatened with **gangrene, indolent tumors** and **plethoric abscesses.** It is also advantageous in **erysipelas,** and in some forms of articular **rheumatism.** Mild solutions in the latter case will effect satisfactory results. Applied in hot solution over an inflamed gland, with soreness present, it has a beneficial influence, much as the chloride of sodium would have under similar circumstances.

ACIDUM ACETICUM.

Formula—$C_2H_4O_2$.

Synonyms—Acetic Acid, Pyroligneous Acid, Acetyl Hydrate or the Hydrogen Acetate.

The pure, free, absolute acid is known as the **Glacial Acetic Acid.** It contains ninety-nine per cent of the acid.

Vinegar is a liquid made from the juice of apples, acidulated with Acetic Acid, which is produced therein by the ferment **mycoderma aceti** in the natural process of **acetous fermentation.** Alcoholic fermentation first takes place in the fermenting substance, and this is followed by the acetous fermentation, produced artificially by the introduction of the characteristic ferment, or **mother of vinegar.**

Therapy—In **spasmodic croup** a few drops quickly volatilized on a hot surface, or on the surface of boiling water, will often give quick relief in breathing. Its vapor is often diffused in the room from hot water in cases of dry **bronchial cough,** in bronchitis, with excellent results. It is useful also in **diphtheria** and **membranous croup,** both internally and externally. It is of service in syrups forming an acetous syrup of many well known expectorants, such as sanguinaria, ipecac, lobelia and squills. The influence of the other constituents is often enhanced by this combination.

Dr. Vassar advocates the use of acetic acid in nose bleed. He makes a fifty per cent solution of vinegar and water, saturates cotton and passes it back along the floor of the bleeding nostril. In extreme cases he uses full strength vinegar. Sometimes he tampons posterially also.

Glacial acetic acid mixed with one part of chloroform and applied lightly once a day to the bare spot will cure some cases of alopecia.

There is good authority for the use of acetic acid dilute, or strong vinegar in twenty-five per cent solution as an external application in many forms of infectious disease. One so-called crank claimed to cure all chronic disease with the use of vinegar baths. A case resembling general bubo, apparently malignant infection of the glands, was rapidly relieved by the action of this remedy externally.

There is a tradition that some nurses in the London Bubonic Plague of the fourteenth century saved their lives and those of some patients by vinegar baths.

This agent is specific in **carbolic acid** poisoning. If Acetic Acid or plain vinegar is at once diluted to a safe strength—one that can be swallowed without strangulation, and given to the patient immediately after taking a

dose of carbolic acid, its influences are neutralized immediately, and no appearance of the destructive poisonous effects of the latter acid are apparent. Henning took a teaspoonful of 95 per cent carbolic acid into his mouth for a minute or more, then ejecting it, he held dilute acetic acid in the mouth for a short time, when all evidences of the carbolic acid disappeared, and no unpleasant symptoms whatever were experienced. Many cases are reported of its prompt action in carbolic acid poisoning.

If acetic acid be poured on to a compress and inhaled by a patient after the patient has taken chloroform, Lewis says it will relieve **nausea and vomiting from the chloroform,** or prevent it, most effectually.

Many **alcoholic** habitues are in the habit of drinking vinegar diluted with water to cut short a debauch, claiming that it produces steadiness of action and overcomes the intoxicating effects of alcohol.

This acid is used as a reagent in the laboratory. It is used also in the preservation of food stuffs, as it is actively antiseptic. Its vapor has been used as a stimulant, inhaled in asphyxia, and syncope.

It has been used in the treatment of **venereal sores** and other specific ulcers and in cancers, and it has been applied to gangrenous degeneration.

CHAPTER IV.

Agents Acting as Respiratory Sedatives and Mild Tonics.

PRUNUS. ALLIUM. YERBA SANTA.
TOLU. LIQUORICE.

PRUNUS. PRUNUS SEROTINA.

Synonym—Wild Cherry.

This is often called, though improperly, Prunus Virginiana, which belongs to the Choke Cherry family.

CONSTITUENTS—Hydrocyanic acid, amygdalin, volatile oil, emulsion, tannin, gallic acid, resin, starch, a bitter principle.

PREPARATIONS—Extractum Pruni Virginianæ, Fluid Extract of Wild Cherry. Dose, from a half to one dram. Specific Medicine Prunus. Dose, from one to ten minims.

Therapy—The tonic influence of this agent is more markedly apparent when it is administered in disease of the respiratory apparatus of a subacute or chronic character. It is not given during the active period of acute cases, but is of value during the period of convalescence.

It is a common remedy in the treatment of **chronic coughs,** especially those accompanied with excessive expectoration. It is valuable in whooping-cough. The syrup is used as a menstruum for the administration of other remedies in this disease. It is excellent also in reflex cough—the cough of nervous patients without apparent cause. The syrup may be used persistently in **phthisis,** for the administration of many other agents which seem to be indicated during the course of the disease. Wild cherry is popular in the treatment of mild cases of **palpitation,** especially those of a functional character, or from reflex causes. Palpitation from disturbed conditions of the stomach is directly relieved by it. It is said to have a direct tonic influence upon the **heart** when the **muscular structure** of that organ is greatly weakened, where there is dilatation or valvular insufficiency, especially if induced by prolonged gastric or pulmonary disease.

As a remedy for **dyspepsia** it has many advocates. It is a tonic to the stomach improving digestion by stimulating the action of the gastric glands. It soothes irritability of the stomach from whatever cause. Although the properties of a nerve sedative are not ascribed to this agent, general nervous irritation is soothed by its administration, nervous irritability of the stomach and of the respiratory organs is allayed, and a tonic influence is imparted to the central nervous system.

TOLU. BALSAM TOLU.

PREPARATIONS—Syrupus Tolutani, Syrup of Tolu; dose, from two to six drams. Tincture Tolutani, Tincture of Tolu; dose, from one-half dram to two drams.

Physiological Action—The remedy is disinfectant—antiseptic, and when applied to the skin and to raw surfaces it is stimulant. It promotes healing of wounds and restores impaired and abnormal conditions of the skin. It is direct in its action upon mucous membranes, exercising a tonic and healing influence and restoring deficient secretion. It is eliminated freely through these membranes and through the kidneys, hence its beneficial action upon these structures.

Therapy—The agent is used in all forms of **bronchial irritation.** Its influence is not so readily observed in the acute forms as in the subacute and chronic forms. It is not sufficiently active to be depended upon to the exclusion of other more direct remedies, but it is serviceable in facilitating the action of these remedies and in modifying the action of stimulating or irritating expectorants.

In the treatment of the various forms of **cough,** induced by disease of the bronchi, the direct remedies may be often administered to excellent advantage in the syrup of tolu. Short, sharp, hacking, dry coughs are directly benefited by its use. On the other hand coughs accompanied with an extreme outpour of thick mucus, with an atonic, relaxed condition of the mucous membranes, are relieved by this agent.

It is serviceable in **pharyngitis** and in **laryngitis.** In **whooping-cough** it is an excellent menstruum for the administration of the direct remedies.

In diseases of the gastro-intestinal tract, or of the kidneys where turpentine is indicated, that agent may be administered to an excellent advantage in the syrup of tolu.

ALLIUM. ALLIUM SATIVUM.

Synonyms—Garlic, Onion.

CONSTITUENTS—It contains an essential volatile oil, mucilage, sugar and albumen.

Administration—The fresh juice is used in medicine, the crushed bulbs are used externally, and a tincture is prepared, of which from five to thirty drops is the dose.

Physiological Action—There is positive proof of the antiseptic properties of this agent.

One writer claims that diphtheria does not occur in families that are free partakers of the onion in any way. With many it produces flatulency. If used moderately for a while the quantity can be increased without unpleasantness. The odor is no more unpleasant than that of carbolic acid, creolin, asafœtida and some others.

Covert gave the following facts concerning the common onion: "The volatile oil is the essential part of the onion, and has not only gastronomic but therapeutic merit. The onion is expectorant, stimulant, diuretic, rubefacient and discutient, and as a domestic remedy is well remembered by the oldest inhabitants in the form of onion syrup, onion draughts, onion poultices and the like. As a domestic remedy always at hand and of varied virtues it stands unrivaled.

The onion poultice stands in high favor with me for all **swellings,** such as that of the throat in scarlet fever and diphtheria. It was long declared of much importance in the treatment of **croup** and as an application to the chest in all inflammations of the lungs and bronchi.

"An onion may be roasted and the cut surface applied hot to glandular inflammations and suppurating tumors."

Bloyer advises the tincture of the **Red Onion** in gravel. The specific indications are extreme **urinary irritation,** with a constant desire to urinate and the passage of calcareous concretions. **Hemorrhage** and pus and mucus are often present from **inflammation of the bladder.** The cystoscope shows the bladder walls greatly thickened, nodulated and imbedded with concretions of various sizes. This persistent and almost incurable condition has been quickly cured by a tincture of the red onion and the tincture of cocklebur in equal parts, from fifteen to twenty drops given every three hours. The cure of this condition alone by the agent will give it a place in therapeutics.

ERIODICTYON. ERIODICTYON GLUTINOSUM.

Synonym—Yerba Santa.

CONSTITUENTS—Volatile oil, fixed oil, ericolin, eriodictyonic acid, resin, gum, tannin.

PREPARATIONS—Extractum Eriodictyi Fluidum, Fluid Extract of Eriodictyon; dose, from a half to one dram. Specific Yerba Santa; dose, from five to twenty minims.

Therapy—Yerba Santa has a soothing influence upon irritating, dry, hacking, persistent **cough.**

It is of value in **chronic bronchitis, chronic pneumonitis** and in **phthisis pulmonalis,** in allaying the cough which seems to increase the patient's feebleness and advance the development of the disease. It is an excellent remedy combined with grindelia robusta. It acts well in all forms of cough where there is dryness of the mucous membranes, in conjunction with other directly indicated remedies. It is prepared in the form of a syrup, and like prunus virginiana, can be made a basis or vehicle for other agents. The syrup conceals the bitter taste of quinine admirably.

GLYCYRRHIZA. GLYCYRRHIZA GLABRA.

Synonym—Liquorice.

CONSTITUENTS—Glycyrrhizin, glycyramarin, asparagin, resin, sugar, starch.

PREPARATIONS—Extractum Glycyrrhizæ, Extract of Glycyrrhiza, (Extract of Liquorice). Dose, *ad libitum.* Extractum Glycyrrhizæ Fluidum, Fluid Extract of Glycyrrhiza. Dose, *ad libitum;* of the powdered root from 15 to 60 grains.

Therapy—The agreeable taste of liquorice in any form covers to a practical extent the taste of very many disagreeable remedies. Acrid and bitter

tastes are well disguised by it. A syrup made by adding two parts of the fluid extract to fourteen parts of simple syrup will disguise the bitter or otherwise unpleasant taste of a large proportion of the fluid extracts. The taste of quinine can be concealed by it to a considerable extent.

Its demulcent properties render it useful in inflammation, or irritation of the mucous membranes of the lungs and bronchi. In combination with ipecac, lobelia, squill, sanguinaria, or ammonium chloride, an excellent expectorant mixture or cough syrup may be extemporized, as this agent modifies any acrid or irritating influence the other agents may exhibit.

The virtue of the **Compound Liquorice Powder** of the dispensatory does not depend upon the properties of the liquorice, only as it imparts to the whole a pleasant taste.

CHAPTER V.

Respiratory Sedatives and Tonics.

CASTANEA.
LIPPIA MEX.
TRILLIUM.
PENTHORUM.

CASTANEA. — CASTANEA VESCA.

Synonym—Chestnut.

Therapy—This agent is lauded as a specific for **whooping-cough.** The evidence adduced would lead to the conclusion that certain conditions not yet determined, must be present if it exercises curative powers. In certain experiments it has apparently ameliorated the symptoms promptly. In some cases there was a prompt arrest of the disease. In other cases no results have been apparent. It should receive thorough investigation to determine the specific conditions in which it will exercise a curative influence.

It should be given in full doses every two or three hours. If it proves curative in whooping-cough it should be found of service in other bronchial coughs with free secretion.

LIPPIA. — LIPPIA MEXICANA.

Synonym—Lippia Dulcis.

PREPARATIONS—Concentrated tincture, miscible with water without material precipitation. Four parts of the tincture equal one of the drug; dose, one-half to one dram. Fluid Extract Lippia; dose, ten to twenty minims.

Specific Symptomatology—Persistent, dry, hard, ringing or resonant bronchial cough, hoarse, barking or metallic cough. The use of this agent is limited to the air passages.

Therapy—It is useful in **asthma** and **chronic bronchitis.** It is peculiarly sedative to the entire mucous surfaces of the post-nasal region and bronchial tubes. It is soothing, expectorant, and relieves irritability of these surfaces. It quiets hacking cough and chronic bronchial cough of any character. The experience of the writer has proven it specific in the peculiar, deep, resonant, barking, winter cough, without secretion, common to many ladies in the northern States, usually absent in the summer, very persistent, stubborn and difficult to cure. This cough, lippia has cured for the writer in several cases. In every case the cough failed to recur in the following winter, as it had recurred before in several preceding winters.

PENTHORUM. PENTHORUM SEDOIDES.

Synonym—Virginia Stonecrop.

PREPARATIONS—Specific Medicine Penthorum. Dose, from one to twenty minims.

Specific Symptomatology—It is suggested in cases of **chronic disease** of the **fauces,** larynx, or pharynx, where the mucous membranes are relaxed and of purple color, irritable, sore and dry. This condition sometimes, resists all ordinary throat remedies. Five drops of specific penthorum every two hours with a gargle of capsicum, quite strong, used three times daily, will quickly relieve the troublesome condition. The gargle alone is of benefit.

Therapy—It influences the functional activity of the stomach through the direct action on the glandular structure of the mucous membranes. It will impart tone to the stomach and increase the appetite and power of the digestion. It regulates the function also of the entire intestinal tract in a mild, but sometimes very desirable manner.

The remedy has been employed in the treatment of **cholera infantum,** where a mild tonic astringent was needed, and in many forms of **diarrhœa.** In **piles** it may be given in conjunction with collinsonia or hamamelis. It has been lauded in the treatment of **intestinal dyspepsia,** and other forms of atonic indigestion, especially where nervous exhaustion is present. Scudder remarked that mucous membranes in any locality, which had suffered from acute inflammation, were markedly susceptible to the action of this remedy in its direct restorative influence. It will remove irritation, restore the functional activities of the glands, and conduce to the return of the normal condition. He gave it also for chronic **catarrh, pharyngitis, bronchitis, vaginitis** and other catarrhal disorders. The fluid extract of penthorum may be given in doses of from one-fourth to one dram, every three hours.

Additional specific symptoms, are catarrhal inflammation, with profuse secretion, catarrhal gastritis, colitis, or iliocolitis, with mucous discharges and a spongy condition of the gums.

TRILLIUM. TRILLIUM PENDULUM.

Synonym—Bethroot.

CONSTITUENTS—An acrid principle, a resin, tannic acid.

Therapy—Trillium influences mildly the nerve supply of the organs of the thorax. It assists **heart** remedies in relieving ample functional irritation. It cures **catarrhal bronchitis** when there is very profuse expectoration. It soothes the cough of incipient **phthisis,** especially where there is a tendency to hemorrhage, over which it has a marked controlling influence. It restrains excessive action of the kindneys. At one time it had an excellent reputation in the control of **diabetes insipidus.**

It controls **uterine hemorrhage** of a passive character to an excellent advantage, especially **menorrhagia** and **metrorrhagia.** Excessive vaginal catarrh is restrained by it.

GROUP IV.

Agents Acting upon the Stomach.

CHAPTER I.

Agents which Increase the Normal Functional Activity of the Stomach—Stomachics.

COLLINSONIA.	GLYCERINE.	QUASSIA.
CALUMBA.	EUPATORIUM.	SUMACH.
GENTIAN	LYCOPODIUM.	CORNUS.
	CROCUS.	

Note—Among the agents of the second and third divisions of the first group of remedies in this book are several such as nux vomica, strychnine, capsicum, xanthoxylum, hydrastis, quinine, and avena, which serve a first purpose as stomach tonics although otherwise classed. Three or four of the above named remedies have been popular as such in the entire profession for many years. Other than these, the remedies here included in this and the following chapter although presented at some length, are mild in their action and possess properties, which are without doubt included in the influence of the remedies first above referred to, which possess an essentially wider and more positive influence.

There is great similarity in the action of such remedies as cornus florida, ptelia, liatris, frasera, asarum and others of this character, which is mild throughout the entire field of their operation. They have no pronounced action.

Those in this first chapter at least have specific individual peculiarities that make them distinctive.

In the administration of the pure stomach tonics, if the indications for an acid are present, as shown by deep-red membranes, and a dark, narrow thin tongue, the agents of this group are best given in conjunction with hydrochloric or nitro-hydrochloric acid, or if the indications are those described in the specific symptomatology of this agent, indicating an excess of acids, certain alkaline remedies, as the sodium, potassium or ammonium salts, will increase the influence of these vegetable tonics.

COLLINSONIA. COLLINSONIA CANADENSIS.

Synonym—Stone Root.

CONSTITUENTS—Volatile oil, resin.

PREPARATIONS—Specific Medicine Collinsonia. Dose, from one to sixty minims.

Extractum Collinsoniæ Fluidum, Fluid Extract of Collinsonia. Dose, from two to fifteen minims.

Tincture Collinsoniæ, Tincture of Collinsonia. Dose, from five to thirty minims.

All preparations should be made from the green plant.

Physiological Action—Collinsonia stimulates the stomach, promoting its

own absorption. It is actively tonic in its influence upon the entire function of this organ, and from this influence its beneficial action is exercised upon the function of all the vital organs.

Collinsonia acts as a tonic to enfeebled muscular structure of the heart. It is conspicuous in its ability to overcome relaxed and out of tone conditions of the walls of the veins. It has a direct influence upon atonic and dilated or otherwise impaired conditions of the veins and arteries.

Specific Symptomatology—In **piles** with a sense of fullness, or of a foreign body in the rectum, in all relaxed conditions of the mucous membranes of the lower bowel, collinsonia is the remedy. It works more promptly if there is passive congestion with blueness or dark discoloration of the membranes, showing imperfect venous capillary circulation.

Collinsonia is given where there is a sensation of constriction, heat and weight in the rectum; where there is deficient secretion from imperfect capillary circulation in the mucous membranes, the patient passing the feces in the form of dry scybala.

Therapy—It is a specific remedy for **hemorrhoids.** If they are of recent origin they can be cured in a comparatively short time with this agent. The most intractable cases will be relieved and permanently benefited by its persistent use. There is no therapeutic influence more reliable than this. I have relied upon it for years.

In **catarrhal gastritis,** where the circulation is defective, collinsonia, either alone or combined with hydrastis, is of first importance. These agents combined improve the tone of the stomach, strengthening its walls and its mucous membranes, and increasing the strength and character of its glandular structure. They increase the appetite and greatly improve the digestion and assimilation of food.

This combination is a superb general tonic in relaxed and debilitated conditions, and combined with iron can hardly be excelled.

Acute inflammations do not promptly yield to collinsonia, although it is an excellent auxiliary to the indicated treatment.

When **piles** are operated upon, this remedy may be given before and after the operation to most excellent advantage. The author has cured many cases by combining equal parts of the fluid extracts of collinsonia and hamamelis virginica, and giving from twenty to thirty drops of the mixed extracts every two hours. The distilled extract of hamamelis can be injected into the rectum, or kept in contact with the external piles by a compress, especially during sleep. Or an occasional application of the liquor of the persulphate of iron in full strength can be made to stubborn external piles.

Collinsonia is of great value in the hemorrhoids of the pregnant female, with imperfect venous circulation in the pelvic viscera.

Pain in the rectum from whatever cause, especially pain not attributable to a definite cause, and pain after surgical operations or a sensation of weight, constriction and general uneasiness in the rectum are quickly and more or less permanently relieved by collinsonia. In pain in the lower bowels, persistent and steady, collinsonia is specific. Either single full doses, or doses of five minims of the tincture every ten minutes, should be given in water. It is superior to opium in some cases.

Collinsonia is a **heart tonic** of direct and permanent influence. It does not seem to stimulate the heart to sudden action, but its continued use induces steady, permanent and highly satisfactory improvement in the strength and character of the organ, and a correspondingly improved general circulation.

It is valuable when the heart is debilitated from protracted fevers, or from **rheumatic inflammation** or from overstrain. It will be found excellent

in the **bicycle heart,** in conjunction with small doses of cactus grand.

In chronic **laryngitis** or **pharyngitis,** with relaxed walls of the larynx, with dark discoloration and enfeebled capillary circulation, collinsonia exercises a specific influence, especially in the condition known as **clergyman's sore throat,** caused or increased by the use of the voice.

In atonic conditions of the circulation of a local character, where **passive hemorrhages** are of frequent occurrence without apparent cause, where there is increasing debility, collinsonia and hamamelis in conjunction given as above indicated are positively curative.

I have made some important observations within the last five years, and have collected the observations of others, which must be added to our knowledge of this remedy. Guided by its influence upon the walls of the veins, I have given it in large doses persistently in the treatment of **varicocele,** and have obtained satisfactory results. I would advise that it be given in the early stage of this difficulty, and if the condition is anticipated in boys, or youth at the age of puberty, the patient may be put on this remedy and kept on it, for some time.

My suggestions concerning its positive action in **hemorrhoids** alone, or combined with hamamelis, as may be indicated, have been acted upon by very many physicians who have reported brilliant results, and an increasing confidence in the remedy.

This agent having a specific influence as suggested above, upon the walls of both the veins and the arterioles has been my most reliable remedy in the treatment of **varicosis.** This may be general or local, it may be permanent or temporary, as in pregnancy. I have had admirable results with this and hamamelis combined in the treatment of extreme cases of **varicosis of the vaginal walls** and pudenda, during pregnancy. Cases which would certainly otherwise have demanded an operation before delivery for the patient's safety, were cured fully before delivery with no complicating influences. I would prize it most highly for this result alone.

I had under observation, for a short time, the worst case of **epilepsy** it has ever been my lot to treat. The paroxysms, if the patient was not saturated with medicine, would occur many times a day. The patient's mind ultimately became a blank.

The paroxysms were completely controlled during a period of nearly two years, by tablespoonful doses of the fluid extract of collinsonia three or four times daily. Given at the beginning of an attack, it would ward off the attack.

I have not been able to find many other physicians who have made any observation of the remedy in the control of convulsions, but it certainly exercised that influence in this case, and therefore should be used in similar cases, and the results reported. It acted in every way similar to the bromides for which it was given as a substitute.

Other writers attribute anti-spasmodic properties to collinsonia. In the treatment of **chorea,** some writers have given it with excellent results, believing it to be superior to macrotys or arsenic in this disease.

In sub-acute proctitis, and **muco-enteritis,** with **dysentery,** or following dysentery, or when dysenteric phenomena are present during **cholera infantum,** with pain or inflammation in the rectum, this agent is important.

Where operations have been performed upon the rectum for **ulcers, piles, fistula,** or the removal of pockets, the consequent soreness is directly relieved with full doses of collinsonia. Pain in the rectum that cannot be attributed to any given cause can be relieved by collinsonia. Dr. Scudder advised the use of this agent in small doses. I have been obliged to give it in doses of from ten to twenty minims to secure the desired results. I am

confident that the larger dosage will give more satisfaction.

Foltz employed this agent where there was **inflammation** in the **middle ear,** when there was **follicular pharyngitis** and hypertrophy of the glands of the throat. Chronic thickening of these membranes with enlarged capillaries, will be relieved by it.

Shoemaker extols collinsonia in the treatment of **acute cystitis.** Combined with aconite, he has excellent results. In some cases he combines it with narcotics, and uses it as a rectal or vaginal injection, or it may be incorporated in a suppository for this purpose. It promptly relieves **spasms** of the **sphincters** and **vaginismus.**

CALUMBA. JATEORRHIZA PALMATA.

Synonyms—Columbo, Columba.

CONSTITUENTS—Calumbin, a white, bitter, crystalline principle. Berberine, the alkaloid, identical with the alkaloid of Berberis Vulgaris, Calumbic acid.

PREPARATIONS—Extractum Calumbæ Fluidum, Fluid Extract of Calumba. Dose, from three to thirty minims.

Tinctura Columbæ, Tincture of Calumba. Dose, from twenty minims to one, or even two drams.

Specific Medicine Calumba. Dose, from five to thirty minims.

Physiological Action—This agent is a gastric tonic and one of the typical stomach bitters. It is believed to increase the flow of the saliva and of the gastric juice, and increases also the appetite and the power of digestion. It is an intestinal antiseptic to a limited extent and is anthelmintic.

It is similar in action to hydrastis canadensis, but does not extend its influence so positively to the nervous system.

Therapy—It is indicated when there is atonicity of the digestive apparatus, especially when there is any irritation whatever. In debilitating disease of the stomach or bowels it is an excellent remedy. It is restorative in fevers, improving the general nutrition by the improvement of the tone of the organs of digestion and assimilation. It is useful after protracted **diarrhœas** and **dysentery,** after **cholera infantum** when a non-irritating tonic is needed, and in cholera morbus, being of benefit in promoting restoration in these cases. It will relieve the vomiting of this disease, and a few drops of the tincture will also relieve vomiting in **seasickness,** and has been beneficial in the **vomiting** of **pregnancy.**

It is useful in overcoming **intestinal flatus,** an infusion in inflammatory intestinal disease being most satisfactory.

In **chronic malaria** with marked intermittent fever it is valuable.

GENTIANA. GENTIANA LUTEA.

Synonyms—Gentian, Yellow Gentian.

CONSTITUENTS—Gentiopicrin, gentisic acid.

PREPARATIONS—Extractum Gentianæ, Extract of Gentian. Dose, from two to ten grains.

Extractum Gentianæ Fluidum, Fluid Extract of Gentian. Dose, from five to thirty minims.

Specific Medicine Gentian. Dose, from five to thirty minims.

Physiological Action—Tonic in large doses, irritant, causing nausea, vomiting and diarrhœa. The fresh root is more active than the dry.

Therapy—This is a popular stomachic tonic in cases where enfeeblement has occurred as the result of protracted disease. It has long been given in combination with other tonics or in wine, as an agent in the **dyspepsia** of the aged, or of gouty patients, and in the gastric inefficiency of infants and children, and to a good advantage in **catarrhal diarrhœa.**

As a tonic to the stomach, and the other organs of digestion and appropriation, in those cases where the system is greatly debilitated by protracted disease, it is one of the best remedies, especially by exhausting fevers of malarial origin. It is of much value in malarial conditions generally and has been used to a great extent instead of quinine.

When the periodicity has been overcome by quinine this is a rapid **restorative to the system.**

The tincture of gentian is given freely in conjunction with other tonics and with alteratives. It is given with the tincture of iron in the treatment of **anæmia** complicating **malarial disease.** It is given in conjunction with the iodide of potassium where a tonic and alterative is demanded, and given alternately with hydrocyanic or hydrochloric acid, it is sometimes of great value in the **vomiting** of **pregnancy.**

This agent is perhaps the most valuable of this class. It can be depended upon as a bitter tonic and constant use will establish a confidence in it.

GLYCERINUM.

Synonyms—Glycerin, Glycerine.

Physiological Action—It produces heat in the esophagus and stomach when swallowed, which to some sensitive patients is exceedingly disagreeable. In greatly excessive doses symptoms not widely different from alcoholic poisoning may be induced.

It is eliminated by the kidneys and will cause dark colored urine, the quantity of which will be greatly increased. In purges in large doses, and by abstraction of water from the tissues, a property it possesses to a high degree, will sometimes induce hydragogue catharsis, especially if introduced into the rectum.

Therapy—For internal use glycerine is antiseptic, laxative and nutritive, taking the place of cod liver oil to a large extent with children in the latter particular. This fact is denied, but it is capable of demonstration.

It is valuable diluted with equal parts of water to moisten the dry mouth and tongue of protracted fevers, and for the removal of sordes. It prevents decomposition in the stomach and encourages secretion, and if a small quantity be added to ice water and drank regularly in these fevers it is an intestinal antiseptic and nutritive.

In **dyspepsia** glycerine serves an excellent purpose; holding a fixed quantity of the peroxide of hydrogen in solution; it is known as **Glycozone.** It acts on enfeebled stomachs, especially if there be ulceration or **catarrhal gastritis.** It is a most efficient preparation. Glycerine will relieve many cases of pyrosis and excessive gastric acidity. It is useful in chronic intestinal dyspepsia, especially the flatulent variety and in certain forms of chronic constipation, stimulating the secretory and excretory functions of the intestinal glands. It is not yet determined that the above influences depend on the dehydrating action of the agent.

Glycerine injected into the bowels produces prompt and satisfactory evacuation, which renders it valuable with constipated infants, as it stimulates the secretions, encourages normal peristaltic action and may subsequently result in a cure. From half a teaspoonful to a teaspoonful injected at the same time each morning, or with very young infants morning and evening, will establish regular habits of evacuation. A larger quantity is necessary with adults.

Glycerine suppositories are prepared for adults which are often very convenient.

Introduced into the vagina glycerine will induce a large, in some cases excessive, watery excretion from the tissues, which is utilized as a local depletive in many cases of engorgement of the structure of the womb, in **congestion** and **subinvolution.**

Glycerine is applied to **fissures** and **chaps** of the skin, and is restorative to all cutaneous surfaces. It prevents the action of the atmosphere on these tissues and acts as a lubricant.

It allays **itching** of the skin and heals many forms of **scaly skin disease,** and serves also as a vehicle for the administration of more active skin remedies. It is of much service in eczema, psoriasis, lepra, prurigo, herpes and pityriasis and will modify the pitting in variola.

It is valuable applied to fissured nipples, to indurated glands and to erysipelatous inflammation, either of an acute or subacute character.

A foreign writer gives fourteen grains of glycerine for every pound of the body's weight in every twenty-four hours, to reduce the **excess of uric acid** within the system. He gives this in divided doses in seltzer water three or four times a day, repeating the treatment when the condition recurs. It is especially recommended if gravel is present. Hermann of Germany has experimented on it fully, and believes that the use of large quantities of the remedy as suggested will not only help expel the small granules formed, but will assist in dissolving the larger ones, making it possible for them to pass. At the same time it prevents muscular contraction of the walls of the passages. The entire influence is desirable.

A physician introduced an ounce of glycerine antiseptically high up in the womb when desiring to **secure premature birth.** Five cases out of six, aborted satisfactorily by this treatment.

EUPATORIUM. EUPATORIUM PERFOLIATUM.

Synonyms—Boneset, Ague Weed.

CONSTITUENTS—Eupatorin, volatile oil, resin, tannin, wax, gum.

PREPARATIONS—Extractum Eupatoriæ Fluidum, Fluid Extract of Eupatorium. Dose, from ten to sixty minims.

Specific Medicine Eupatorium. Dose, from five to thirty minims.

Physiological Action—Stimulating tonic, aperient, diaphoretic, emetic, antiperiodic.

The action of this agent upon the stomach is somewhat unique, differing in some important particulars from that of other stomach tonics.

Therapy—It is valuable in catarrhal disorders of whatever nature, whether gastric, intestinal, post-nasal, bronchial or vesical. It has an undoubted soothing influence upon the nervous system, and is of much value in stomach disorders of nervous origin. In a case of neurasthenia of long standing, complicated with emphysema, the patient, an extremely nervous woman,

persistently **regurgitated** all the **food** she took. There was no nausea, no vomiting; the food simply came back after it was swallowed. Fifteen drops of the fluid extract of boneset every two hours was given. The second day the patient was relieved, and there was no return of the disorder after the fifth day, for several months, when it recurred for a short time, but was promptly relieved by the same medicine.

In a case of intractable **hiccough** in an old man, when every possible remedy had failed and death seemed inevitable, boneset, fifteen drops in an infusion of capsicum, every hour, produced a permanent cure.

It is a typical diaphoretic, although not powerful in its action. In intermittent fever of the severest types, in remittent fever, in continued fevers of any type, and in the exanthemata, given in hot infusion in the early stages, it produces delightful results.

Dr. Locke says the remedy is specific in **masked intermittent fever,** in which there is sluggishness of every function and irregular occurrence of chill and fever, the fever followed with but little reaction, almost no perspiration, but with severe aching in the bones. He uses the infusion, made by steeping one ounce of the foliage of the plant in a quart of boiling water. Of this a half teacupful is given every fifteen minutes until the patient vomits thoroughly. He then puts the patient to bed and continues the remedy in smaller doses at lengthened intervals until the patient has perspired for two or three hours, when the medicine is discontinued and tonics are then given.

In conditions due to malaria, where there is intermittent headache, or severe irregular browache, where many of the symptoms of ague are present, this remedy takes precedence over every other.

LYCOPODIUM. LYCOPODIUM CLAVATUM.

Synonym—Club-moss.

CONSTITUENTS—Fixed oil, sugar, volatile base (methylamine), alumina, phosphoric acid.

PREPARATIONS—Specific Medicine Lycopodium. Dose, from one to fifteen minims.

Powdered Lycopodium. For external use.

Tincture of Lycopodium. Dose, from one to twenty minims.

The tincture prepared from the triturated sporules contains to the fullest extent the medicinal principles of the herb.

Physiological Action—The older writers claimed that the agent acted as a stimulant to the sympathetic visceral system of nerves and influenced the functional activity of all organs so controlled. It was believed to increase the tone of the liver, and to restrain over-action of the kidneys and eliminative organs.

Specific Symptomatology—Extreme sensitiveness of organs of special sense. Pain under the ribs and around the waist; shooting pains under the shoulder blades; severe pains across the stomach; nausea; vomiting of sour and bitter food; persistent constipation; painful bleeding piles; coldness of the extremities; pale, ashy or jaundiced complexion, with dirty skin; in some cases of flatulence, with distention of the intestines; persistent constipation of children; irritation of the bowels following an injection; sour stomach and heartburn; in old standing congestions of the liver, with great desire to sleep after eating. All conditions accompanied with excess of uric acid are benefited by it.

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Therapy—The simple powder is used extensively as an application to tender and irritable conditions of the skin, and as an application to certain skin diseases to which a dry powder would seem applicable—to **intertrigo, erysipelas, eczema, herpes,** and ulcerated surfaces and perhaps to burns. Its domestic use is in its application to chafed surfaces and as a dusting powder for infants.

The agent is said to be dependable in its influence upon certain severe forms of **dyspepsia.** That common condition present in catarrhal gastritis, evidenced by soreness on pressure over the stomach, and a sensation of fullness of the stomach when only a little has been eaten, is quickly relieved by its use.

It is advised in **rheumatic** conditions, especially if accompanied by any of the above indications. It is depended upon as a cure for the **uric acid diathesis** and in this probably lies its influence upon rheumatism.

Dr. Harrison of Illinois treated several cases of **fever** that had morning remissions, but the highest occurred in the middle of the afternoon, in which the urine was suddenly of a dark red color, and deposited the usual stains of the urates with considerable uric acid. In another case, there was cerebral and spinal irritation. The urine was similar in all the cases. Small doses of lycopodium, twenty drops in four ounces of water, a teaspoonful every two hours, was sufficient to modify all the conditions and overcome the fever.

In its action upon the urinary apparatus it relieves **urinary incontinence,** especially if caused by an excess of uric acid and the urates, painful urination and vesical catarrh.

It is also serviceable in gonorrhœa and in gleet.

CROCUS. CROCUS SATIVUS.

Synonym—Saffron.

CONSTITUENTS—Crocin, volatile oil, picrocrocin (saffron bitter), gum, wax, fat, albumen.

PREPARATIONS—Tincture Croci, Tinctura Croci, Tincture of Saffron. Dose, from one to three drams.

Tinctura Serpentariæ Composita, Compound Tincture of Serpentaria. Dose, from ten to sixty minims.

Therapy—Saffron tea was long in good repute among the grandmothers of our older men as an essential remedy to start new-born babes in normal health channels. It was thought necessary to encourage the action of the liver and to cleanse the intestinal canal and stomach. It was positively indicated, if the skin was yellow and in **infantile colic.**

It has mild **diaphoretic,** stimulant, **antispasmodic** and tonic properties. It may be given in the early stages of fevers, and especially in **eruptive fevers,** in full doses if there is a retrocession of the eruption.

It checks mild cases of irregular **uterine hemorrhage,** menorrhagia or metrorrhagia, and encourages the lochial discharge when suppressed after confinement.

QUASSIA. QUASSIA AMARA.

Synonym—Simaruba Excelsa.

CONSTITUENTS—Quassin. Dose, one-third of a grain.

PREPARATIONS—Extractum Quassiæ Fluidum, Fluid Extract of Quassia. Dose, from ten minims to one dram. Tinctura Quassiæ, Tincture of Quassia. Dose, from one-half dram to one dram.

Physiological Action—The taste of quassia is so intensely bitter that with some patients it acts as an emetic at once. It stimulates most positively the salivary, mucous, gastric and intestinal canal. It is an anthelmintic and parasiticide.

Specific Symptomatology—Extreme inactivity of the digestive and assimilating organs from debility—a cessation of function from lack of power, is an indication for the use of this remedy. The evidences are a broad, flabby tongue, pale, thick, indented with the teeth, sometimes heavily furred, coated with a dirty white or brownish coat, mucous membranes of the mouth pale, anorexia, general feebleness.

Therapy—It is one of the best of what is known as "stomach bitters." In **debility** of the **stomach** or **intestinal** structures, and inactivity of the secreting organs, the tonic effects of this agent are most pronounced. In convalescence from severe acute disease, the conditions there often existing are satisfactorily corrected with this remedy.

Many forms of **dyspepsia** depending purely upon atonicity, are cured by the use of quassia, either alone or in conjunction with some of the other remedies of this group which possess a similar action.

Quassia, by enema, will destroy **ascarides. Pin or thread worms** in large quantities may be removed by a single injection of a strong infusion of the bark.

As these worms infest almost the whole of the large intestine, it is advisable for their complete removal that the patient lie on the left side with the hips elevated, and that a large quantity of the infusion, not too strong in this case, but as warm as can be borne, be slowly introduced into the bowel from a fountain syringe. Tonic remedies internally are advised in conjunction if there is a persistent tendency to their reappearance.

Quassia in infusion will destroy small insects, ants, flies and lice of all kinds. The pediculus capitis and pediculus pubis are readily destroyed by frequent washing with a strong infusion of the drug.

SUMACH. RHUS GLABRA.

Synonym—Smooth Sumach.

CONSTITUENTS—Volatile oil, resin, tannic and gallic acid, albumen, gum, starch. The berries contain malic acid in combination with lime.

PREPARATIONS—Extractum Rhois Fluidum (A. D.), Fluid Extract of Sumach Bark. Dose, from a half to one dram.

Extractum Rhois Glabræ Fluidum (U. S. P.), Fluid Extract of Sumach Berries. Dose, one dram.

Specific Symptomatology—Its influence is upon mucous surfaces in a relaxed, ulcerated and phlegmonous, but irritable and intractable condition.

Therapy—It is used in **aphthous stomatitis**, both internally and externally, in **gangrenous stomatitis** in conjunction with more active agents, and in **stomatitis materni** it is a good remedy. It will serve a good purpose in atonic ulcerations of the stomach and intestinal canal, in some cases of prolonged diarrhœa and dysentery with greatly debilitated mucous surfaces. Its field is well covered, however, with more active remedies.

CORNUS. CORNUS FLORIDA.

Synonym—Dogwood.

CONSTITUENTS—Cornin or cornic acid, resin, gallic acid, tannin.

PREPARATIONS—Extractum Corni Floridæ Fluidum, Fluid Extract of Cornus Florida. Dose, from a half to two drams.

Specific Medicine Cornus. Dose, from five to sixty minims.

Therapy—This agent is indicated not only to correct the atonic conditions of the glandular structure of the gastro-intestinal apparatus in malaria, but as an antidote to the malarial poison itself. It has marked control over many of the manifestations of malaria.

Its influence upon the stomach in these cases increases the appetite at once, improves the character of the digestion and relieves the drowsiness and dullness apt to follow imperfect digestion. It is a tonic in enfeebled conditions of the stomach from whatever cause and improves intestinal digestion.

CHAPTER II.

Mild Stomach Tonics.

FRASERA.	ASARUM.	CONDURANGO.
PTELIA.	PANAX.	INULA.
ALNUS RUBRA.	LIATRIS.	SACCHARINUM.

FRASERA. FRASERA CANADENSIS.

Synonym—American Columbo.

CONSTITUENTS—Gentiopicrin, gentisic acid, two distinct yellow coloring matters glucose, gum, sugar, salts.

PREPARATIONS—Specific Medicine Frasera. Dose, from five to thirty minims.

Therapy—This agent operates upon the stomach and digestive apparatus directly, influencing the tone of the glandular organs of the entire digestive tract. It is a stomachic tonic of considerable power, exercising its best influence when the apparatus is impaired by protracted disease. Under these circumstances it is also a stimulant and astringent to the secreting surfaces, correcting **excessive night sweats** common to such a condition, controlling the **diarrhœa** and **dysentery** where there are relaxed and atonic mucous membranes.

In that form of **catarrhal gastritis,** where there is a sense of fulness in the stomach after eating even a little food, it improves the digestion and relieves the distress, and where there is marked debility improves the tone of all the organs.

PTELIA. PTELIA TRIFOLIATA.

Synonym—Wafer Ash.

CONSTITUENTS—Oleoresin, starch, albumen, yellow coloring matter, berberin, volatile oil, salt of lime, potash and iron.

PREPARATIONS—Specific Medicine Ptelia. Dose, from one to twenty minims.

Therapy—The agent is a mild tonic, exercising a direct influence upon the stomach and digestive apparatus, correcting certain faults of gastric secretion, overcoming dyspepsia and improving the appetite. It may be given to good advantage with other stomachic tonics and iron. It corrects atonic diarrhœa and is of benefit in dysentery, its pungent properties and sufficient astringency renders it of benefit in mild cases. In full doses it acts upon the skin as a diaphoretic. It has been given in lung troubles, but we have other active remedies which produce more gratifying results.

ALNUS. ALNUS RUBRA.

Synonym—Tag Alder.

CONSTITUENTS—Not analyzed.

PREPARATIONS—Specific Medicine Alnus. Dose, from one to sixty minims.

Therapy—This agent combines both alterative and tonic astringent properties. It removes waste products, improves the tone of mucous structures and increases the secretory action of the glands of these structures. At the same time it prevents the flow of an excessive quantity of mucus into the stomach, and stimulates the flow of gastric juice and aids the digestion. It cures various forms of ulcerations in the mouth, or in the gastro-intestinal canal. It is advised in **rhus poisoning.** It has accomplished satisfactory cures in pustular and eczematous disease of the skin.

Dr. Ramey of Lincoln, Neb., suggests the use of alnus in the treatment of **syphilis.** He gives it in conjunction with echinacea and stillingia with successful results. It can be given as high as thirty drops at a dose, four times a day and will undoubtedly add something to our list of good remedies for this disease.

ASARUM. ASARUM CANADENSE.

Synonym—Wild Ginger.

Dose, from one-half to one dram of the specific medicine.

Dr. Houts claims that asarum is a reliable **emmenagogue,** and perfectly safe. He gives it alone when he needs to restore the menses, and says he needs nothing with it. It has a direct influence on the uterine system. For young girls with their early menstruation and in cases of painful menstruation, he uses an infusion of the fresh root and expects to get satisfactory results. He takes one ounce of the root and lets it steep slowly for one hour in a pint of water and sweetens it. He gives from one to two drams every half hour or hour. He takes from five to ten drops of the fluid extract to a cupful of hot sweetened water and gives this every half hour or every one or two hours as the patient needs. The results have established his confidence.

The stimulant properties of this agent are of a local character, acting directly upon the mucous lining of the intestinal tract, and overcoming flatulence. It is also a stimulant to the secretory function of the skin, acting as a mild but efficient diaphoretic.

In inflammatory conditions it should be avoided, but after the inflammation has abated, it will mildly stimulate the function of digestion and food appropriation.

The late Dr. R. S. Newton was quite enthusiastic concerning the action of this remedy. Other of our writers believe that it has a more important place than that given by most of our authors. It is advised in strong infusion, freely given, as a stimulating diaphoretic.

Therapy—In acute **nasal catarrh,** where the discharge has not appeared, or has been suppressed, with the usual symptoms of headache and general oppression, muscular aching and general discomfort, it is given with good results. **Inflammation** of the **conjunctiva,** from taking cold, where there is profuse and constant lachrymation, will be relieved by it.

In painful or longstanding **spasmodic affections** of the pulmonary region, as in **whooping cough** or **bronchitis,** it will be advantageous and, at the same time, it influences the digestive apparatus, correcting **nausea, cholera** and **diarrhœa,** which may be present.

Dr. Newton considered its most important influence to be exercised upon the generative apparatus. It is a stimulant to the muscular structure of the womb and to the ovaries, and is **abortive** and an **active parturient,** and may be given to good advantage in recent cases of **amenorrhoea** from cold. During **labor,** when the pains are excessive, and when there is extreme erythism, a few drops of the tincture may be put in half a glass of water and a teaspoonful administered every five or ten minutes. It will induce quiet and render the labor more natural. It works in perfect harmony with small doses of Macrotys.

In **metrorrhagia** and in **menorrhagia,** where the flow is steady but not free, where there are cutting pains in the abdomen and groin, extending down the thighs, with aching in the back, the patient nervous and irritable, this remedy will restore the flow to its normal proportions, will relieve the nerve tension and subdue pain. **Violent pain** in the small of the back on the approach of the **menstrual epoch,** which seems to interfere with the breathing, is said to be a diagnostic indication for this remedy.

Where there is **melancholy** and nervous disturbance in the early part of pregnancy, so that miscarriage seems to be threatened, a teaspoonful of asarum every two or three hours will sometimes restore the patient to normal condition.

PANAX. PANAX QUINQUEFOLIUM.

Synonym—Ginseng.

CONSTITUENTS—Panaquilon, gum, resin, starch, albumen.

PREPARATIONS—Specific Medicine Panax. Dose, from five to sixty minims.

Therapy—This agent is an important article of commerce in China, being a general domestic remedy and highly prized. It is a mild sedative and tonic to the nerve centers, **improving** their **tone,** if persisted in, and increasing the capillary **circulation** of the **brain.** It is given in **cerebral anæmia,** and if combined with other tonics is capable of doing some good. It is also prescribed in the failure of **digestion** incident to **nervous prostration** and general nerve irritation.

LIATRIS. LIATRIS SPICTA.

Synonyms—Gay Feather, Colic Root.

PREPARATIONS—Extractum Liatris Fluidum, Fluid Extract of Liatris. Dose, from one-half dram to one dram.

Specific Medicine Liatris. Dose, from ten to sixty minims.

Infusion Liatris. Dose, from one to four drams.

Physiological Action—The agent has the properties, to a mild degree, of a bitter tonic. It is said to act as an antispasmodic to spasm of the muscular structure of the intestines, relieving spasmodic colic. It stimulates the kidneys and has been used in dropsies. It may be used in the latter stages of fevers as an eliminant.

Therapy—Liatris stimulates the stomach mildly, and is a tonic and antispasmodic to the entire gastro-intestinal apparatus, relieving colic and soothing irritation, after fevers and after other acute prostrating diseases, restoring healthy glandular action. Its eliminative action is quite marked, it having been often used in syphilis and scrofula.

It is a prompt diuretic, relieving kidney irritation and assisting in the removal of dropsical effusions, but we have more direct and efficient remedies.

CONDURANGO. GONOLOBUS CONDURANGO.

Synonyms—Condurango (Cundur-angu, vine of Condor).

PREPARATIONS—Extractum Condurangonis Fluidum, Fluid Extract Condurango, not miscible with water without precipitation. Dose, one-half to one fluid dram.

Therapy—The influence of the agent is exercised directly upon the stomach as a tonic and corrective of perverted action. It is of service in **gastric ulcer** and in the early stages of **cancer of the stomach,** for which it was originally lauded as a cure. It is depended upon by some enthusiastic users to retard progress of some cases of this disease, and to relieve distress and urgent symptoms when fully developed. It cannot be curative. It will be found of service, probably, in catarrhal gastritis with extreme atonicity and threatened ulceration. In these cases its virtues as a tonic and restorative will find exercise to the full extent of their influence.

It deserves thorough investigation and faithful trial. It may be given in the form of a warm decoction with excellent advantage. A wine of condurango is prepared which has good influence upon the stomach. Half an ounce may be taken with the meals.

A Homeopathic writer gave condurango internally to a man 74 years of age who had small crusts forming on his lower lip for a long time suggesting the beginning of **cancer.** He gave a Homeopathic trituration and satisfactorily cured the case. This remedy being recommended externally should be tried internally for other cancerous conditions. In the above case a chronic catarrh of the stomach where there was vomiting of a green slime after dinner with hyperacidity and emaciation was inadvertently cured with the treatment as stated.

INULA. INULA HELENIUM.

Synonym—Elecampane.

CONSTITUENTS—Helenin, inulin, volatile oil, acrid resin, bitter extractive.

PREPARATIONS—Extractum Inulae Fluidum, Fluid Extract of Elecampane. Dose from ten to sixty minims.

Specific Medicine Inula. Dose from five to forty minims.

Administration—The agent is given in infusion to excellent advantage, and a syrup may be prepared which is serviceable in lung troubles.

Helenin is given in doses of from the one-twelfth to the one-fourth of a grain four or five times daily.

Physiological Action—The tonic influence of this agent has been recognized for many years. It acts directly upon the nutritive functions of the body. In general debility from protracted disease or from overwork, or from age, its influence is plainly apparent. It imparts tone to the digestive and respiratory organs and to the urinary tract.

Therapy—In atonic condition of the abdominal viscera with engorgement great relaxation and general inactivity this agent exercises specific properties. It influences not only the character of the circulation but acts also as an alterative, improving the character of the blood. It is of advantage in those **atonic conditions** where, with great inactivity of the gastro-intestinal tract, there is disorder of the skin and discoloration and eruptions.

The direct tonic influence of inula seems to be exercised also upon the **respiratory tract** after protracted disease promoting recovery. It lessens excessive bronchial secretion controls the **night sweats** and imparts real tone and strength.

Hare says that inula has an actively astringent influence. Giving it during the course of cough if there be great secretion the influence is very desirable but if there is but little secretion it makes the cough very tight.

Foreign authorities have written considerable in the last five years on the action of this agent in the treatment of **pulmonary tuberculosis** claiming that it has a directly toxic action upon the tubercle bacilli. They believe that a pure alkaloid of inula will exercise a more positive influence than creosote, or guaiacol preparations. Von Unruh experimented with inula and echinacea hypodermically (see echinacea). He uses Subculoid inula, from three to five cc. daily. His first report will be found in The National Quarterly, Volume I, Number 7. It certainly promises favorably. It must be carefully investigated. Inula is a useful remedy in certain coughs.

Perhaps the alkaloid inulin will be found superior to the fluid medicine in these cases. It is certainly an important remedy in the relief of irritation of the trachea and bronchi. Where there is persistent **irritating cough,** with pain beneath the sternum, and abundant expectoration, the condition being acute or sub-acute in character, and accompanied with some elevation of the temperature, it will be found serviceable. It is an expectorant of a soothing character. It is also diuretic and diaphoretic in its general influence. Excessive **catarrhal discharges** from the bladder are readily controlled by its use, and vaginal catarrh yields readily to its influence. It acts directly upon the glands of the cervix uteri and in catarrhal endometritis it speedily overcomes the glairy mucous discharge and materially improves the condition. **Emmenagogue** properties are claimed for it but this property has yet to be demonstrated.

Dr. Burd says that he is acquainted with an old German physician who claimed to have cured forty-seven cases of hydrophobia with **elecampane,** without a single failure. The patients had the diagnostic symptoms plainly marked so that there was no doubt that the disease was present. He made a very strong decoction of the remedy in sweet milk. He gave half a pint of it every hour. He claimed that all these patients vomit a peculiar green vomit, and when this stops the medicine can be discontinued or given in less quantities.

SACCHARINUM.

Formula—$C_7H_5SO_3N$.

Synonyms—Saccharin, Hydro-orthosulphaminbenzoic acid.

Physiological Action—Saccharin has no toxic influence on the animal body; when given internally or subcutaneously, is excreted by the kidneys in an unaltered state. It is therefore not decomposed in the body, nor do the saliva or the fæces contain any traces even after large doses. Unlike benzoic and salicylic acid, it is not converted into hippuric or salicyluric acid. It has scarcely any retarding effect on the digestion of either proteids or hydrocarbons, and in fact it is said to increase the diastatic action of malt. When given in large doses, however, fifty to seventy-five grains, injurious effects or disturbances of the appetite are sometimes induced. The urine is usually not altered either in specific gravity, quantity, or in the amount of urea and uric acid; it, however, does not readily undergo fermentation. The amount of chlorides in the urine appear to be increased during its use, while the phosphates remain normal. Animals on full diet with the addition of Saccharin increase in weight.

Therapy—It is given to replace sugar when that agent should be avoided. **Diabetic patients** use it freely for sweetening their food and beverages, and in most cases are as well satisfied with it as with sugar. Five grains will sweeten a cup of coffee as effectually as two teaspoonfuls of sugar. It sweetens sauces and fruits however acid they may be without chemical change.

It is used in the treatment of **obesity,** but its utility in this condition is questionable.

In certain forms of **acid dyspepsia** it has exercised a mild curative influence.

It conceals the bitter taste of quinine and bitter tonics more effectually than sugar.

CHAPTER III.

Agents Used in the Relief of Gastric and Intestinal Pain—Gastro Intestinal Sedatives.

DIOSCOREA. GINGER. HORSEMINT.
COLOCYNTH. PEPPERMINT.

DIOSCOREA. DIOSCOREA VILLOSA.

Synonym—Wild Yam.

CONSTITUENTS—Saponin.

PREPARATIONS—Dioscorein. Dose, from one to four grains.

Specific Medicine Dioscorea. Dose, from one to forty minims.

Physiological Action—Antispasmodic and anodyne.

Specific Symptomatology—In sudden spasmodic **griping** pain in the stomach and bowels it acts similarly to colocynth, but is more certain in the severer cases, especially if from malarial causes. It is specific in **bilious colic**—in the pain of the passing of **gall stones,** in mild cases, and is valuable in spasmodic colic of any kind. Spasmodic pain yields to it readily, but it is much more certain in pain and muscular spasm of the intestines. Its action produces either immediate or negative results. If, therefore, there is no benefit after one or two hours' use it may be discontinued.

Therapy—In the spasmodic pain of cholera morbus or cholera infantum, of diarrhœa or dysentery it is useful.

In **neuralgic dysmenorrhœa,** in **ovarian neuralgia,** in **cramp-like pains** in the uterus at any time and in severe **after pains** it often acts satisfactorily, quickly relieving the muscular spasm. Fifteen drops of the tincture of the specific dioscorea in half a teacupful of hot water should be drunk at a single dose, as in acute cases it is much more certain if given in this manner. Five drops every hour or two can be given with good results in constantly recurring mild **colicky pains** without apparent cause. When given for after pains it is usually best to give the tincture in ten drop doses in cold water every half hour or hour, as the hot infusion may cause too great relaxation of the uterine muscular structure, and permit severe hemorrhage.

COLOCYNTHIS. CITRULLUS COLOCYNTHIS.

Synonym—Colocynth.

CONSTITUENTS—Colocynthin, extractive, fixed oil, resin, gum, pectin, calcium and magnesium phosphate.

PREPARATIONS—Extractum Colocynthidis, Extract of Colocynth. Dose, from one-half to two grains.

Extractum Colocynthidis Compositum, Compound Extract of Colocynth. Dose, from five to twenty grains.

Specific Medicine Colocynth. Dose, from one-twentieth to three minims.

Physiological Action—Hydragogue cathartic, tonic. In excessive doses it causes violent emesis, catharsis, bloody stools, severe burning colicky pains, spasms, and in some cases death.

Dr. Cressman of Illinois reported a case poisoned by colocynth. The patient was taken with violent pain in the stomach and bowels, followed immediately by vomiting. The bowels moved once, then. The tongue was clean; the pupils were dilated; pulse weak and rapid; respiration short; skin cool and moist; intense frontal headache. The pain in the extremities increased with the pain in the back. In twenty-four hours the pulse was weak, temperature subnormal, bowels moving every fifteen or twenty minutes, movements streaked with blood, headache very intense, tenesmus extreme. By hypodermics of morphine for the pain, and carbolic acid and subnitrate of bismuth for the intestinal disturbance, she slowly recovered, but subnormal temperature continued for several days.

Specific Symptomatolgy—Acute, cutting pains in the stomach and bowels in infants—in otherwise perfect health. Intestinal derangements denoted by screams and sharp crying out in sleep, persistent crying and screaming with drawing up of the legs in very young babes. Spasmodic pain of all kinds in the stomach or bowels.

Therapy—Five drops of the tincture in half a glass of water, a teaspoonful every fifteen minutes, will cure **infantile colic** with the above symptoms in an hour. It is serviceable in all forms of colic in these small doses, whether from the liver, stomach or the intestines, if the pain is sharp, quick and of a cutting character. It will cure neuralgic colic wherever located, and also some cases of idiopathic neuralgia.

In large doses it is **cathartic** and depressant in its action, slowing the heart and reducing the temperature and at the same time producing great irritation, consequently feebleness and inflammation are contraindications to its use.

In **bilious dyspepsia,** so-called, with distension or a feeling of fullness in the stomach after eating, it is a good remedy in minute doses given after meals. The tincture is a better remedy than the specific, as the latter is too active. It is a good plan to dilute it for every day prescribing, in the proportion of one dram to nine drams of dilute alcohol. Of this ten minims in a four-ounce mixture will produce excellent results.

Colocynth is advised for **ovarian trouble** where the pain is sharp and cutting; where the ovaries are enlarged and tender from neuralgia. Also during menstruation if the pain is griping, spasmodic, sharp, and severe. Ten drops in a four-ounce mixture, a teaspoonful every half hour or hour. In the latter case better results may be secured by adding to the mixture ten or fifteen drops of dioscorea.

ZINGIBER. ZINGIBER OFFICINALE.

Synonym—Ginger.

CONSTITUENTS—Volatile oil, resin, starch, gum, gingerol.

PREPARATIONS—Extractum Zingiberis Fluidum, Fluid Extract of Ginger. Dose, from ten to thirty minims. Oleoresin Zingiberis, Oleoresin of Ginger. Dose, from a half to one minim.

Tinctura Zingiberis, Tincture of Ginger. Dose, from fifteen to sixty minims, diluted with water.

Infusum Zingiberis, Infusion of Ginger, prepared by adding a teaspoonful of powdered ginger to half a pint of hot water. Drunk at once, it acts as an emetic and diaphoretic.

Physiological Action—This agent is mentioned in but few therapeutic works, although it occupies an important place, and should not be neglected. It is a profound and immediate stimulant, an active diaphoretic, an anodyne in gastric and intestinal pain, and a sedative to an irritated and overwrought system when there is extreme exhaustion. An infusion of the powder drunk warm produces immediate but mild emesis and active diaphoresis.

Administration—Ginger is an emergency remedy. In every case in which brandy or whisky is given to produce an immediate stimulating influence, the tincture of ginger can be given with even better results. From half a teaspoonful to a teaspoonful will produce greater stimulation than half an ounce of brandy. It may be stirred into half a glass of cold water, but is much more immediate in its action if given in hot water. The tincture does not produce emesis.

Therapy—The agent stimulates the stomach actively, producing a pleasing sense of warmth. It overcomes flatulence and quickly relieves **flatulent colic.** In **atonic conditions** of the **stomach** and intestinal tract, it stimulates the structure to renewed activity and materially assists in the restoration of normal tone. It relieves pain from any cause except inflammatory action, when this remedy must be avoided.

In **acute colds** the entire train of symptoms may be aborted in a single night, by advising the patient to take a hot mustard foot bath at bedtime, while the body, prepared for bed, is wrapped in warm blankets. During the foot bath the patient should drink a glass or two of hot water, each of which contains half of a dram of the tincture of ginger.

Acute inflammations may be aborted by this course. In **dysmenorrhœa, ovarian neuralgia** and **uterine pain** from any cause at the menstrual epoch, this agent is reliable. If given at the beginning of an **hysterical attack** it will often abort the attack, and produce quiet and restful sleep.

Its influence as a rubifacient is slow and by no means as satisfactory as mustard, and it is now seldom used as a counter-irritant.

MENTHA. MENTHA PIPERITA.

Synonym—Peppermint.

CONSTITUENTS—Volatile oil, resin, tannin, gum.

PREPARATIONS—Aqua Menthæ Piperitæ, Peppermint Water. Dose, *ad libitum.*

Olium Menthæ Piperitæ, Oil of Peppermint. This is a volatile oil prepared from the fresh herb by distillation with steam—a greenish-yellow liquid, having a pungent odor and taste. Dose, from one to fifteen minims.

Physiological Action—Peppermint is a powerful diffusible stimulant, carminative, antispasmodic, stomachic, and in the form of the volatile oil a local anæsthetic.

Specific Symptomatology—Flatulent **colic,** gastrodynia, nausea, **vomiting,** spasmodic pain in the bowels, hiccough, **palpitation** from indigestion, griping, cholera morbus, cholera infantum, spasmodic cholera, irritability of the stomach, **diarrhœa** with abdominal pain, nervous headache, painful gonorrhœa.

Therapy—In fevers of an inflammatory character caused by exposure to cold and damp, with nausea and vomiting, a warm infusion of peppermint may be given to produce perspiration and promote a cure, as it is a very efficient diaphoretic.

The oil of peppermint, on account of the menthol present in it, is a local anæsthetic, and may be employed to relieve local pain, as in the inflamed

joints of **rheumatism,** as a spray in painful inflammation of the throat and fauces, and in any painful condition where a direct application of the anæsthetic can be made.

Where the food tends to ferment in the stomach and bowels, it may be given in doses of three to five minims in capsules, as an antiseptic to prevent fermentation and promote digestion.

When a local application of the oil of peppermint is made, the parts, where practicable, should be covered with oiled silk or rubber cloth to prevent evaporation.

A spray of oil of peppermint may be inhaled with relief of many of the distressing symptoms incident to asthma and chronic bronchitis of the aged.

Oil of peppermint applied to carious teeth will promptly relieve the pain of **toothache.** The cavity should be dried and a pledget of cotton saturated with the oil placed in it.

In the extreme irritability of the stomach in **cholera morbus** and in painful stasis of the stomach and bowels, the spirit of peppermint may be given at frequent intervals in hot, sweetened water, while hot fomentations should be applied to the abdomen at the same time.

In the pain of **acute indigestion,** and in painful diarrhœa and dysentery, while peppermint will prove a valuable analgesic it is more important to the safety of the patient to empty the stomach with an emetic of the compound powder of lobelia, or move the bowels with a cathartic of sulphate of soda; when the cause is removed the pain and danger will pass away.

In burns and scalds peppermint is both soothing and curative, the parts being kept wet with it. It is a stimulating dressing, but is not objectionable on this account.

In **rectal pruritus,** and in painful papillary growths at the orifice of the female urethra, either the oil of peppermint or menthol may be employed as a local anæsthetic to relieve the itching and pain.

In painful bowel complaints with inflammation—pain on pressure, tongue dry, with reddened tip and edges, peppermint should not be given. In any case if the remedy does not afford relief in a reasonable time it should be discontinued.

MONARDA. MONARDA PUNCTATA.

Synonym—Horsemint.

CONSTITUENTS—A dark-yellow volatile oil which contains thymol. Soluble in alcohol. Dose, from one to five drops.

Physiological Action—In its general influence monarda punctata is a pure active stimulant of a diffusible character; a few drops of the oil on the tongue will produce a stimulation which will be felt at the tips of the fingers in a few minutes. It stimulates the nervous system and increases the heart's action, taking the place of alcoholic stimulants to a great extent. The essence, tincture or infusion are all prompt in their action. It soothes nervous excitement when due to exhaustion, promoting sleep and rest. Upon the stomach, in whatever form taken, it is a stimulant tonic and carminative.

Therapy—It soothes **gastric and intestinal pain** in the absence of inflammation, especially in Cholera Morbus and overcomes nausea and vomiting. It controls **diarrhœa** from debility with relaxation of the mucous structures of the intestinal canal.

The agent is efficient in the control of **vomiting** due to exhaustion, or persistent nausea with flatulence present in dilated stomach, or the **vomiting of alcoholics,** in whom it will, in part, **supply** the craving for liquor, and im-

part a temporary tone to the stomach and nervous system. Dr. Laws claimed to prevent fully, all nauseating influence of lobelia and ipecac by this agent and from this influence he learned to try it in all cases of vomiting, usually with much satisfaction. He believed its influence controls irritability of the pneumogastric.

It may be given with turpentine or gautheria in extreme atonicity of the intestinal tract in protracted fevers with tympanites. It is to some extent a diaphoretic, and has also a diuretic action which is important in these fevers.

The agent has been used to considerable extent as an emmenagogue, and is sometimes efficient in simple retention of the menses from cold.

Note—As sedatives to nausea and gastric irritation, other agents, as hydrocyanic acid, ingluvin, ferrocyanide of iron, and ipecac in small doses, are efficient, and this property is fully described in the consideration of the therapy of those agents in other chapters.

CHAPTER IV.

Agents Used as Sedatives to Gastric Irritation—Anti-Emetics.

AMYGDALUS PERSICA. BISMUTH SUBGALLATE. ARSENIC OXIDE.
BISMUTH SUBNITRATE. OXALATE OF CERIUM.

AMYGDALUS. AMYGDALUS PERSICA.

Synonym—The Peach Tree.

PREPARATIONS—Tincture Amygdalus Persica. Dose, from ten to sixty minims.

Specific Medicine Amygdalus. Dose, from five to thirty minims.

Therapy—The older physicians suggested this remedy as specific to irritation in the stomach, with **persistent nausea** and **vomiting,** especially valuable in childhood where the tongue was elongated and pointed, the edges red and the stomach tender on pressure. It has invariably disappointed the author, but other physicians use it with much confidence. It is said to relieve **nervous vomiting** and the **vomiting** of **pregnancy,** and the persistent vomiting of **cholera infantum.** It is sometimes best given in strong infusion of the bark of the green twigs. The influence claimed for this by Scudder has not been confirmed by more recent observers.

BISMUTH SUBNITRATE.

Synonym—Subnitrate of Bismuth.

This salt is formed from purified bismuth, by the action of nitric acid in the presence of distilled water.

Physiological Action—It is a mild and soothing agent in its local influence upon the skin and inflamed mucous surfaces. Internally its influence is confined almost exclusively to the gastro-intestinal mucous membranes.

The agent is not entirely devoid of toxic properties, when applied very extensively to large, open wounds. It sometimes produces poisonous effects owing to a not uncommon adulteration with a salt of arsenic. It has produced gastro-intestinal irritation and symptoms or arsenic poisoning. Des-

quamative nephritis with albuminous urine has occurred from its free and long continued use.

In all cases where its use is persisted in, it produces a greenish or black discoloration of the feces, and an odor of garlic upon the breath which is due partly to decomposition of the salt and partly to the presence of tellurium.

Therapy—It is applicable in all cases of vomiting from local irritation. It has long been in use for this purpose. It is one of the best known remedies in **chronic catarrh** of the **stomach** with much nausea and the secretion of large quantities of mucus. The writer has used an arbitrary combination of this salt with an equal part of ingluvin in all cases of irritation of the stomach. The combination is much more serviceable than either agent alone, and is applicable to very many conditions particularly to the **summer complaints** of children with extreme and persistent nausea.

In these cases it is well to add half a teaspoonful of this powder to half a glass of water, and after thoroughly stirring it, to administer a teaspoonful every few minutes for an hour or two, all other remedies being suspended. When the irritation is controlled, the agent should be continued for a short time in alternation with other necessary remedies.

Its influence is not confined to the stomach alone, but extends to the intestinal mucous surface, where it materially assists in controlling many forms of **diarrhœa** through the astringent properties of the bismuth.

In the use of bismuth subnitrate for the cure of chronic gastric catarrh, large doses are necessary. Fifteen grains of the pure salt, given once in three or four hours, is of more service than five grains often repeated.

It is useful also in **pyrosis,** in gastric **flatulence** and in extreme **acidity** of the **stomach** especially from the presence of lactic and butyric acids.

In **diarrhœas,** where extreme relaxation is present with lack of tone in the intestinal membranes, this agent is of but little value as it lacks tonic properties.

When the tongue is clean and the bowel movements are watery, **Liquor Bismuth** is indicated in dram doses, after each stool.

As an **external application,** bismuth is one of the most valuable remedies. It forms a most perfect dusting powder for **chafings** and **excoriations** especially in young infants. It is applicable also to the skin of the face when easily chapped or when sensitive from shaving, and to chapped hands.

Incorporated in an ointment of lanolin, is is excellent applied to cracked and fissured nipples. It should be kept constantly applied, any excess being wiped off before nursing, and the ointment fully reapplied afterward.

This ointment is most superior as an application to **superficial burns.** After the pain and heat are reduced by the application of a carbonate, if this ointment is kept constantly applied to the burned surface, the healing is very rapid and the cicatrix is in some cases scarcely perceptible, usually no contraction of tissue taking place.

Although antiseptic properties are not ascribed to the remedy, pus is not likely to form when it is used. Where an active antiseptic is needed, boric acid may be incorporated with it. An ointment of this character is applicable to **eczema** of the moist variety. If applied, and the surface closely covered, healing in some cases takes place with great rapidity. In **eczema** of the **scrotum** and **anus,** this agent is applicable, and in **piles** of an acute or sub-acute character, it renders excellent service. It is applicable to **fissures** of the anus and to **ulcerated conditions** within the **rectum,** especially if there are offensive and irritating discharges.

BISMUTH SUBGALLATE.

Synonyms—Subgallate of Bismuth. Dermatol.

Specific Symptomatology—Thornton says it is a specific in gastric troubles, usually those of a sub-acute character, in which there are a white tongue, acid eructations, feeling of weight in the stomach after meals—bloating, diarrhœal discharges at irregular intervals, general dilation of vessels.

Therapy—This agent performs the function of the subnitrate in nearly every particular, but is more actively astringent and antiseptic. Although toxic properties have not yet been observed to any great extent, they are undoubtedly present in the agent. In all conditions in which iodoform has been used in surgery, this agent has been substituted with results in most cases equally as satisfactory. It apparently acts in a similar manner, destroying the ptomaines, and thus rendering the germ inert. In an ointment with lanolin or with equal parts of lanolin and zinc ointment, in the proportion of one dram of this substance to the ounce, its use is advised in all the cases we have named for the subnitrate. It is praised for its action upon **moist eczema.** In all the cases of gastric and intestinal inflammation, and as an agent to control vomiting, this agent is used in much the same manner as the subnitrate, in doses of from three to ten grains.

CEROUS OXALATE.

Synonym—Oxalate of Cerium.

Administration—The salt may be given in doses of one grain every three hours. Three grains three times daily may serve the purpose. Eight grains is the maximum dose. It may be given in pill form or in a capsule. Large doses are sometimes effectual where small doses fail.

Therapy—The agent is a sedative to **gastric irritation,** controlling **vomiting.** Although acting similarly to bismuth subnitrate is has a wider action, through its influence as a nerve sedative, thus being especially advantageous in reflex vomiting. In vomiting of pregnancy it is commonly used; also in the vomiting or nausea present in **hysteria** and in **uterine disorders** and displacements. As a local **gastric** sedative, it is given in **pyrosis,** in **acid dyspepsia,** in **catarrhal gastritis,** especially if there are nervous complications and in small doses in vomiting of **cholera infantum.**

In the disordered stomach of **chronic wasting diseases**—phthisis, chronic diarrhœas and chronic nephritis—it is sometimes advantageously used.

That the agent has an influence upon the nerve centers is proven by the fact that it effectually controls some cases of **chorea,** and has been given advantageously in other forms of nerve irritation, and in epilepsy. It must be given in full maximum doses of the pure salt to obtain good results in these cases.

ARSENIC. ACIDUM ARSENOSUM.

Synonyms—Arsenous acid, Arsenic trioxide, Arsenicum album, white Arsenic.

Physiological Action—In its physiological action this agent is a caustic poison. It acts as an escharotic and local irritant. When a poisonous dose has been taken there is salivation, metallic taste in the mouth, nausea, vomiting, great pain, with diffused soreness and intense burning in the stomach,

which radiates from this organ outward throughout the abdomen. It produces irregular heart action, palpitation, feeble pulse, shallow, rapid and oppressed breathing, œdema and albuminuria.

The skin becomes cold and covered with a cold, clammy sweat. Finally, delirium and convulsions occur and are followed by death.

Almost all the phenomena of cholera in extreme cases, are apparent in the symptoms of arsenic poisoning.

In medicinal doses the agent increases the appetite and digestion, stimulating the intestinal glands to increased secretion and encouraging peristaltic action. It stimulates the function of the brain and the central nervous system, producing a feeling of exaltation and exhilaration. Its tonic influences are quite marked. While power to improve the condition of the blood is attributed to it, the manner in which this improvement occurs is not understood.

Specific Symptomatology—It is especially indicated where there is a general plethoric or engorged condition, or an œdematous condition of the cellular tissues, with a deficiency of normal elasticity. This condition when resulting from malarial influences, or from inactive liver and spleen, is especially susceptible to the action of this remedy.

In its absorption by the stomach, Ringer says if that organ is empty the arsenic enters the veins and is carried directly to the liver. If there is food in the stomach, the agent is absorbed by the lacteals, and is thence poured into the blood current.

Therapy—In **dyspepsia** from general atonicity of the stomach, arsenic taken before meals will stimulate this organ, promoting the flow of the digestive fluids, and materially improving its tone. It is a common remedy in the treatment of **gastralgia** and in ulcer of the stomach.

In that form of chronic indigestion which induces a necessity for an immediate evacuation of the bowels, quite common to some debilitated patients and to children, this agent is of specific value. It relieves the increased peristaltic action induced by the presence of food, which is the cause of the food being expelled before it is digested. In these cases the digestion is increased, rapid absorption of the food takes place and the patient shows an improvement in general nutrition. The agent should be given in small doses before meals, one drop of Fowler's solution being usually sufficient.

In chronic ulceration and **cancer of the stomach** it alleviates the pain and relieves the vomiting. It is useful in all cases of **vomiting**. The vomiting of cholera and of **cholera infantum** are relieved by it.

The **reflex vomiting** of **pregnancy** and the regurgitation of food, common to neurasthenic and hysterical patients, is sometimes cured with arsenic when other agents have failed.

It has been highly commended in treatment of the **vomiting** of **alcoholics.** Given in proper doses in these cases and persisted in it restores the tone of the stomach, improves the digestion and materially increases the appetite. It is used in the treatment of alcoholism in combination with other measures.

In **membranous dysmenorrhœa** this agent is of much service, and Simpson claims that the agent is specific to that form of **diarrhœa** in women in which with copious evacuations from the bowels, there are shreds and particles of membrane freely discharged, a condition which results in great emaciation and nervous exhaustion.

In the treatment of **cholera,** arsenic has been experimented with very widely. It has been used both in large, and in homœopathic doses. In the

latter form very much has been claimed from its use. In small or medium doses, it will, without doubt, materially assist the cure.

The agent is useful in **jaundice** due to **malaria,** where there is catarrh of the bile ducts, also in overcoming duodenal catarrh. Often repeated doses of arsenic, not exceeding the 1/100 of a grain, triturated with sugar of milk, are exceedingly efficacious in some cases of **watery diarrhœa,** with greenish discharges. This influence is thoroughly accomplished in the use of the arsenite of copper, to which the reader is referred.

Arsenic has won considerable reputation as an antiperiodic. In that class of cases in which there is marked impairment of the sympathetic nervous system, it imparts **tone** to the **nervous centers.** It is especially adapted if the paroxysms are of irregular occurrence, or erratic in character. Small doses will accomplish good results in such cases, even better than large ones. The functions of the stomach, liver and other glandular organs are improved at the same time.

In the treatment of diseases of the skin arsenic is in common use. It is adapted to all **scaly eruptions** and to chronic **eczema.** It is useful in **psoriasis,** in **pemphigus** and **lichen.** In that form of eczema which affects the soft tissues, such as those of the anus, scrotum and vulva, it is especially applicable. If satisfactory results from this agent in full doses do not soon occur, better results may be obtained if the dose be decreased.

Fowler's Solution applied freely will cure warts. In the case of long standing, large warts, give from seven to ten drops internally three times daily.

Although arsenic has been long used in **chorea,** it is not so advised by Eclectic clinicians, other methods available to them being more successful.

Dr. Lester reports the application of arsenious acid, full strength, into the cavity of a tooth to destroy the nerve. The patient had for some time been affected with **paralysis of the left side** of the body and face. He then had **tonic spasm** of the **right side** of the body. These would relax after a short time to recur. He had suffered with these for four years. Immediately after the application of the acid to the tooth, he said, "Look, I can move my hand," and slowly the power came back first to the fingers and thumb; then to the left foot. At the time of the report every condition was slowly improving, especially was the sight returning to the left eye which had been blind from the paralysis. This is a well authenticated case.

LIQUOR POTASSII ARSENITIS.

Synonym—Solution of the Potassium Arsenite, Fowler's solution.

Administration—This solution, probably the most common of the arsenic solutions and the most convenient for administration, contains one per cent of arsenious acid. Although ten minims is given as the maximum dose, we would advise, however, that a dose above five minims be always given with caution. Our range of administration is from one-fourth of a minim to five minims.

CHAPTER V.

Agents Used as Evacuants of the Stomach—Emetics.

EUPHORBIA.
MUSTARD.
COPPER SULPHATE.
ZINC SULPHATE.

EUPHORBIA. EUPHORBIA COROLLATA.

Synonym—Large flowering Spurge.

CONSTITUENTS—Euphorbin glucoside, resin.

PREPARATIONS—Specific Medicine Euphorbia. Dose, from one to ten minims.

Physiological Action—Emetic, diaphoretic, expectorant, epispastic. In large doses it causes emeto-catharsis, and in some cases inflammation of the stomach and bowels.

Therapy—Though euphorbia acts as an emetic it is but little used for that purpose, being too harsh in its action, inducing hydragogue catharsis at the same time. While in extreme doses it may cause acute gastro-enteritis, in small doses it stimulates normal functional activity of the stomach, influencing the glandular function of the entire gastro-intestinal tract. In the **atonic dyspepsia** of enfeebled conditions of the stomach, with bad breath, bad taste in the mouth, furred tongue, anorexia and constipation with a sense of weight in the stomach, and occasional colicky pains in the bowels, it is a good remedy. Ten drops of the tincture in two ounces of water, a teaspoonful every two hours, will relieve this common train of symptoms. It has been used in cholera infantum and other summer diarrhœas of children with good results. It is advised in the tenesmus of dysentery, and in the diarrhœa of exhausting diseases.

SINAPIS. SINAPIS ALBA. SINAPIS NIGRA.

Synonyms—Mustard, white, black or yellow Mustard.

PREPARATIONS—Powdered Mustard. Oil of Mustard. Dose, from one-twentieth to one-tenth of a minim.

CONSTITUENTS—Volatile oil.

Physiological Action—Mustard is emetic, stimulant and actively revulsive with marked anodyne properties. Its application to the skin produces intense burning, violent inflammation, and if persisted in too long, sloughing or ulceration. Taken into the stomach in large quantities, if emesis be not produced, it causes a burning sensation and a mild form of gastritis.

Specific Symptomatology—For external application it is indicated in **acute** cutting **pain** local in character, usually intermittent and usually present as the result of rapidly developing acute inflammation, but dull, steady and constant pains or soreness, slowly developing and persistent, are not readily relieved by its application. Turpentine externally is of service in these cases.

Internally it is indicated to excite vomiting when non-corrosive poisons have been taken, when a foreign body is lodged in the esophagus, or when there is great distress from an overloaded stomach.

Administration—In the use of mustard for counter-irritation, in cases of acute pain, it is desirable to obtain its sharp effects as quickly as possible. In order to do this, a fresh article should be procured, one in which the pungency is sharply indicated by its action on the nostrils and eyes, since

mustard kept in a paper package on the shelves for weeks is inert from loss of the volatile oil. Vesication must be avoided, as the blisters thus caused are of no advantage, and exceedingly painful and difficult to heal. The white of an egg rubbed up with mustard and a little water, will produce a poultice which will not readily blister.

When mild counter-irritation only is desired, which is to be prolonged for some hours, a poultice is made in the proportion of one part of mustard to four or six of linseed meal or flour. This is not, however, effective in acute pain, but only where there is soreness or prolonged distress. Vinegar and mustard also make a good poultice for prolonged use, as vinegar destroys an excess of activity of the mustard.

For a hot mustard pediluvium, a tablespoonful of the powder is stirred into a gallon or two of hot water, in which the feet are immediately immersed.

For a general mustard bath, two or three tablespoonfuls of mustard are mixed in a full bath. For a child one tablespoonful will be sufficient, care being taken to protect the eyes of the patient from the vapor.

Therapy—A teaspoonful of mustard in a bowl of warm water will produce active and immediate **emesis.** This should be followed by another bowl of warm water alone, which will continue the evacuation and wash out any remaining mustard, as even then the burning sensation from the local effects of this substance with a few patients is hard to bear. Emesis must be obtained as soon as possible after the ingestion of the mustard. An emetic dose must not be allowed to remain in the stomach, as inflammation may follow.

Mustard has but little therapeutic influence when administered internally. It does not seem to increase the tone of the gastro-intestinal canal, or promote the action of the secretory or excretory glands, or assimilative organs, to any great extent, but its external use is common.

In the treatment of **acute pleuritis** a warm poultice applied over the affected side sufficiently large to much more than cover the diseased area, will usually relieve the pain at once, and a large poultice is always more effective than a small one. It may be necessary to repeat its application within twenty-four hours, but if vigorous direct treatment is adopted, this is seldom necessary.

In **bronchitis** or **pneumonitis** in the initiatory stages, a quick poultice of mustard will exercise a good influence, but it does not give the immediate relief experienced in **pleuritis** or **pneumonitis** where acute pain is a prominent symptom. It should be followed, in the former conditions, as soon as the sensitiveness of the skin will allow, by persistent heat, moist or dry, as seems indicated.

In acute **pain** in the **heart,** either in angina pectoris or from other cause a sharp mustard poultice is essential.

In acute **stomach** pains and in intestinal colic, or pain in the abdomen from any cause, a large hot mustard poultice will be of much service. In all cases where mustard is used it is only auxiliary to other prompt treatment, as its influence is usually transient.

A most efficient measure in **congestive headache,** or in headache from any cause with fullness of the cerebral vessels, is a mustard poultice on the nape of the neck.

Spinal irritation is most effectively treated by the use of a succession of these poultices. On the first day of the treatment one is applied on the back, across the upper third of the spine; on the second day across the middle third, and on the third day across the lower third, producing thorough sharp counter-irritation but no blistering. On the fourth day it is ap-

plied at the top of the spine again and the same course followed as before. This may be continued for two weeks or more if the skin is sufficiently restored in the interim, between the poultices. This course will most materially assist other measures adopted in the treatment of this condition.

A hot mustard foot bath is of great service in **congestive chill,** also in the chill at the onset of acute fever, or acute inflammation of any character. It produces immediate derivation, assists in equalizing the circulation, acts as a diaphoretic and perceptibly checks the progress of the disease.

In the **recession** of the rash of **eruptive fevers** no measure is more prompt than a general hot mustard bath, which should be continued until a mild redness covers the entire body.

At the onset of acute **cerebro-spinal meningitis** the disease has been completely aborted by the prompt use of a hot mustard bath. In some cases the patient may be wrapped in a blanket wrung out of hot mustard water, until the skin is reddened.

In conditions where there is a constant tendency for the skin of the legs to become cold, and the muscles to cramp during the night, a hot mustard foot bath at bedtime is of direct benefit.

In **arrest** of the **menses** from cold, a sitz bath strong with mustard will sometimes produce an immediate restoration of the flow. It is always of assistance to other measures. It is sometimes necessary to take this bath each night for a week preceding the time the menses should appear and continue it until that result is obtained.

COPPER SULPHATE.

Formula—$CuSO_4$.

Synonyms—Blue Vitriol, Bluestone.

Therapy—Given in doses of five grains dissolved in water the sulphate of copper is a **prompt emetic,** acting quickly and without irritation. It is used, though but seldom now for any purpose, in the same conditions for which the sulphate of zinc is advised, except as an emetic for the evacuation of the stomach after poisons are taken.

It was claimed that its influence in small doses upon the stomach would increase the flow of gastric juice, as it does of saliva in the mouth and also of the intestinal juices. Its use is limited by the irritation produced even by small doses. It has been advised in **gastric ulcer,** in atonic conditions of the stomach and bowels with loose, watery **diarrhœas.**

This agent is one of the chemical antidotes for phosphorus in poisoning by that agent. It is administered carefully, as the agent itself is poisonous.

Externally it acts upon **raw surfaces** and **open sores** and **wounds** as a caustic and antiseptic, and is somewhat painful and irritating in its action. It serves a good purpose in solutions of one grain to the ounce of distilled water in purulent inflammations of the eyes, and in all catarrhal and ulcerative conditions of mucous membranes wherever located.

ZINC SULPHATE.

Formula—$ZnSO_4$.

Physiological Action—This agent is an active **irritating emetic.** It is used when profound and immediate emesis is necessary, as after the ingestion of poisons. When given in overdoses, the vomiting is extreme and there is persistent retching. If the stomach is in a state of irritation when evacua-

tion seems imperative, the stomach pump or irrigation should be used and this agent should be avoided.

Therapy—With a very torpid stomach, heavy coating on the tongue, and pale, flabby mucous membranes, this agent will produce a good result, by arousing the action, unloading morbid secretion and stimulating the nervous influence of the stomach, but vegetable emetics devoid of irritating properties will accomplish the same result in a much more satisfactory manner.

It was in use at one time in the treatment of **gastric catarrh.** It was given in small doses, probably not exceeding one-fourth of a grain. It should be beneficial in this disease from its inherent properties, but we have not used it in this condition because we have not needed it.

It has been given as an emetic in **membranous croup,** and in **spasmodic croup** and **whooping cough** and in other laryngeal disorders. The agent has antiseptic properties, is very astringent, and is said to be tonic to the surfaces to which it is applied. It is widely used as a topical application or as an injection or wash.

It is so used in **gonorrhœa** with hydrastis in the proportion of about one grain to the ounce. It is used in leucorrhœa, and in other catarrhal or purulent discharges. An excellent combination for the eyes is made by dissolving one grain of hydrastine hydrochlorate and five grains of zinc sulphate in an ounce of rosewater. From five to ten drops of this is slowly instilled into the eye twice daily. It is useful in purulent conjunctivitis. It is used for indolent ulcers and gangrene, and the dried salt is made into an ointment for application to urethral caruncles, warts and fungoid growths, in lupus and in condylomata. In these cases at least one-fourth of the ointment should be of the sulphate. It should be used with care. In ulcers a much milder ointment may be used.

CHAPTER VI.

Acids Used for their Direct Influence Upon the Gastro-Intestinal Canal.

HYDROCHLORIC ACID.
NITRO-HYDROCHLORIC ACID.
NITRIC ACID.
SULPHURIC ACID.
AROMATIC SULPHURIC ACID.
TARTARIC ACID.

Physiological Action of Mineral Acids.

These agents are all destructive to organic bodies. They abstract water from the tissues rapidly, coagulate the albumen and destroy protoplasm. The weaker solutions are irritant, vesicant and astringent. Increased in strength they produce local inflammation and in full strength they produce rapid disintegration of tissue structure.

The physiological action is obtained by the administration of medicinal doses of the dilute acids always further diluted with an abundance of water. As one of the evidences of their absence in the system is a **deficiency of secretion,** so their administration **increases** the **secretions** of all the gastro-intestinal glands and glandular organs. The mouth becomes moist from an increased flow of saliva, the digestive fluids increase in quantity and the appetite is improved. Their continued use may overstimulate the salivary glands, but there is a reaction on the part of the gastro-intestinal glands resulting in greatly lessened secretion. They have astringent properties and will ultimately constipate the bowels.

Their absorption into the blood neutralizes the normal alkalinity of that fluid, causes contraction of the capillaries and increases the arterial tension by increasing the force of the heart's action. They do not to any great extent exercise a direct influence upon the nervous system. The most active of these acids in this particular is the sulphuric acid. This is prescribed in the form of the aromatic sulphuric acid and has a slightly tonic and sedative effect upon the nervous centers.

Their influence in neutralizing the alkalinity of the blood increases the acid character of the secretions, notably that of the urine.

Toxicity—Poisoning from these acids occurs from the local destruction of tissue which takes place so rapidly that but little absorption of the acids occurs. Their poisonous influence should be treated by the administration of alkalies to effect in a chemical manner, their neutralization. It is often a fatal waste of time to undertake to protect the tissues from their influence by the administration of oils and other unctuous substances. The introduction of a stomach tube is dangerous because of the ease with which the walls of the stomach or esophagus are perforated.

Antidotes—In the selection of alkalies to neutralize these acids when taken in excessive quantities, the carbonates and bicarbonates should be avoided if possible where the liberation of carbonic acid gas is likely to produce distension or rupture. The free sodium or potassium hydrate in common soap is an active neutralizing agent, and a dilute solution of the soap may be administered. Liquor potassium, calcined magnesia, lime water or aqua ammonia, fully diluted, may be administered. The administration of the carbonates of magnesia, sodium or potassium is of advantage and very efficacious where the liberation of gas will not produce harm. Treatment subsequent to the neutralization of the acid consists of the administration of demulcents with hypodermics of strychnine and brandy, and of morphine if necessary to relieve severe pain.

Physiological Action in Medicinal Doses—Ringer claims that acids allay thirst by promoting the secretion of alkaline saliva; that acids before meals check the secretion of the normal acids of the gastric juice, and that if given after meals where there is a persistently sour stomach, the acidity will be increased; that acids stimulate the salivary secretion first by an impression upon the mucous membrane, which is conducted to the spinal cord and thence reflected through the cerebral and spinal nerves to the salivary glands, because if these nerves are divided, acids have no influence on the salivary secretion.

The influence of acids then, in increasing the action of the salivary glands, greatly lessens the thirst of fever patients and overcomes the extreme dryness of the mouth and mucous membranes. The thirst lessened, general irritability of the nervous system is soothed. Sleep follows as perspiration appears upon the skin, the temperature is reduced and a general beneficial result follows.

Specific Symptomatology—In the administration of acids the presence or absence of these in the system must be fully considered.

The general predominance of an alkaline condition is evidenced by a red condition of the mucous membranes of the mouth. A thin, narrow-pointed, red tongue, with usually a deficiency of the secretions, or a dry, brown coating on the tongue, or a sleek, red, dry tongue, shows a demand in the system for acids, and their administration is usually prompt in overcoming a train if symptoms dependent on this condition, and greatly facilitates the action of other indicated remedies. There may be, however, in some cases, especially in protracted fevers, an excess of acids in the system at large, with deficiency of secretion of hydrochloric acid. This is evi-

denced by extreme anorexia. The tongue is usually moist and the papillæ are red at the base, but elongated and tipped with a white coating, through which the pinkish redness of the base can be seen. In these cases if alkaline salts given prior to eating do not stimulate a secretion of hydrochloric acid, that agent must be given regularly for some time, especially after the taking of food.

We have known this condition to persist during neurasthenia where the redness of the tongue or membranes was not marked, but where the white-tipped papillæ persisted for months. The food test showed an almost complete absence of hydrochloric acid—achlorhydria—while the urine and other secretions were acid in reaction.

ACIDUM HYDROCHLORICUM.

Synonym—Hydrochloric Acid.

Description—Free hydrochloric acid is a colorless gas with a pungent odor and with a sharp, acid, caustic taste. It is irrespirable and destructive to vegetation. Thirty-one and nine-tenths per cent of this gas dissolved in water constitute the **official hydrochloric acid.** The **dilute hydrochloric acid** of the pharmacopœia contains only ten per cent of the gas.

Occurrence—The gas is made by the action of sulphuric acid upon the chloride of sodium. It is a by-product also in the manufacture of sodium sulphate from common salt. It may be also made from the chloride of magnesium or potassium.

ACIDUM HYDROCHLORICUM DILUTUM.

Synonym—Hydrochloric Acid Dilute.

The strong acid is too concentrated for medicinal purposes, consequently the dilute acid is alone universally employed in therapeutics. It is made by combining three ounces of the full strength acid with seven ounces of distilled water. It is preserved in glass stoppered bottles.

Administration—The dose of the dilute acid is from five to thirty minims well diluted. It should be taken, as all the mineral acids should, through a glass tube to prevent its destructive action upon the enamel of the teeth.

If colic, disordered bowels and vomiting occur from the administration of acids, it is an evidence that they are contra-indicated.

Therapy—Hydrochloric acid, the free acid of the gastric juice, is essential to digestion. When deficient in the digestive fluids, the evidences of which have been named, it may be directly supplied. **Indigestion** due to this cause is treated by the administration of from five to twenty drops of the acid in water immediately after eating. Its administration in these cases every two or three hours is sometimes necessary to complete the digestion and restore tone to the stomach, stimulating the glands to normal secretion.

When its indications are present it is a most efficient remedy in **low fevers** and in **typhoid** forms of inflammatory **fever,** and is of much value in malignant scarlet fever. It is indicated in many cases of **phthisis pulmonalis,** and in nearly all cases of **neurasthenia** at some time during the course of the treatment.

It is an excellent remedy also to counteract phosphaturia and the deposit of phosphatic sediment or calculi in the urine.

As in the **chronic catarrh** of the stomach in alcoholics and in **cancer** of the stomach, there is usually absence of hydrochloric acid, in these cases this acid is demanded.

ACIDUM NITRO-HYDROCHLORICUM.

Synonym—Nitro-hydrochloric Acid.

Occurrence—Nitro-hydrochloric Acid is made by combining six fluid ounces and forty-one minims of full-strength nitric acid with twenty-seven ounces, five drams and forty-eight minims of Hydrochloric Acid in a glass vessel. This forms what was known as the aqua regia of the alchemists and earlier chemists because of its power to dissolve gold.

Description—This combination forms an intensely corrosive fuming liquid. It has a golden-yellow color and may be wholly volatilized by heat. It is unstable and should be kept in small bottles which are only in part filled and are kept in a dark, cool place.

Administration—For medicinal use it is prepared by adding water at the time the acids are united, in the proportion of three ounces of nitric and four ounces of hydrochloric acid and twenty-five ounces of water. It is advisable, however, to unite the acids before the water is added. From five to twenty minims of this, well diluted, is prescribed for internal use.

Therapy—It is somewhat difficult to determine the exact cases in which this acid is superior to its constituents given singly. It is, however, specific in cases of functional **torpor** of the **liver** and in **incipient cirrhosis**. It stimulates the flow of the bile in a marked manner. In **chronic hepatitis** it is sometimes very valuable. It is contra-indicated where there is obstruction to the flow of the bile, or catarrh of the gall duct. In these cases its use should be preceded by such remedies as chionanthus, iris versicolor or leptandrin. Like its constituents it is beneficial in many forms of **dyspepsia** from deficient secretion, both of the glands of the stomach and those of the intestinal canal. It is also valuable in the oxalic and uric acid diathesis.

ACIDUM NITRICUM.

Synonym—Nitric Acid.

PREPARATIONS—There are at least five varieties of Nitric Acid in commerce and pharmacy.

First—The pure acid, just described, marked C. P. (chemically pure). It must be kept in strong glass bottles in the dark, the bottles always full, and stopped with glass stoppers, sealed with paraffine.

Second—The commercial aqua fortis, a yellowish, very impure liquid, too impure for chemistry or pharmacy, sometimes containing arsenic, iron, sulphuric or hydrochloric acid, and the nitrogen oxides. It is also in two strengths—the *single acid* containing 39 per cent of the strong acid, and the *double acid* containing 64 per cent.

Third—The *Fuming Nitric Acid*, highly concentrated, *more or less free* from impurities. It is of a reddish-yellow color, and is a powerful oxidant.

Fourth—The U. S. P. *Acid.* It contains 70 per cent of the C. P. concentrated acid; is a valuable caustic and escharotic.

Fifth—The *Dilute* U. S. P. *Acid.* It contains only 10 per cent of the C. P. acid. The B. P. acid contains 17.44 per cent.

Occurrence—Nitric Acid may be prepared by the action of sulphuric acid upon the nitrate of sodium or potassium in a glass retort, $Na(NO_3)+H_2(SO_4)=HNa(SO_4)+H(NO_3)$. The Nitric Acid is driven off by distillation.

Administration—For internal use the diluted acid only is administered. It must be given freely diluted and taken through a glass tube or a straw. The dose is from one to six or eight drops three times daily. Three drops every three hours is about the usual prescription. As a caustic the full strength C. P. acid may be used, avoiding the destruction of too much tissue at a single application.

Nitric acid produces on animal tissues a characteristic yellowish discoloration, by which its action may be known.

Specific Symptomatology—When the indications for the action of this acid are conspicuous, the tongue and mucous membranes are of a violet, carmine or clear red color, the membrane being apparently transparent, showing the red color through or below it. There is marked deficiency of secretion from the mucous membrane and glandular structures.

Therapy—This agent in medicinal doses is an excellent tonic, antiseptic and astringent. It stimulates the intestinal glands, modifying their function and inducing normal activity. Although not naturally present in the intestinal juices, it operates very similarly to hydrochloric acid. If there is diarrhœa with indigestion, this agent is superior. If there is constipation, hydrochloric acid is preferable.

When indicated, it operates satisfactorily in cases of **indigestion** if given after the meal. In some cases of **chronic gastric acidity** a few drops of dilute nitric acid given four or five times a day will produce a permanent cure. In some forms of intestinal indigestion evidenced by pain in the bowels, occurring from one to two hours after eating, this agent is curative.

It may be given in alternation with other digestives or bitter tonics. In **chronic diarrhœa** of **children,** with persistent green discoloration of the fecal matter, especially if alkaline in reaction and of an offensive odor, the agent is of much service.

In **intestinal hemorrhage** and **bleeding piles,** nitric acid has been given with good results. A lotion of the acid may be applied in the latter case. Nitric acid given when **uric acid** is excreted in abnormal quantities, or where the **oxalic acid diathesis** is present, will relieve both of these conditions.

Externally both nitric and hydrochloric acids were at one time used very extensively in baths. They exert a very powerful stimulating influence upon the function of the skin. This is most marked in the night sweats and debilitating perspiration following exhausting fevers and accompanying pulmonary tuberculosis.

Nitric acid in full strength applied to **chancres** and **chancroids** destroys at once the specific character of these ulcers. If carefully applied, no harm to surrounding tissue nor local inflammation is induced, and it is but seldom that a second application will be needed. It is applicable to **phagedenic ulcers** and to **gangrene.**

ACIDUM SULPHURICUM.

Synonyms—Hydrogen Sulphate, Sulphuric Acid, Oil of Vitriol.

Dilute Sulphuric Acid of the pharmacopœia contains only 9 or 10 per cent of the strong acid. This dilute acid—the *medicinal Sulphuric Acid*—is prepared by combining three and one-half ounces, by weight, of the acid with thirty-two and one-half ounces of distilled water. The acid is added slowly to

the water and not the water to the acid. Extreme heat is evolved by the process of mixing.

Acidum Sulphuricum Aromaticum.

Synonyms—Aromatic Sulphuric Acid, Elixir of Vitriol.

Administration—The dilute sulphuric acid and the aromatic acid only are administered internally. The dose of either is from two to twenty drops well diluted. As an escharotic the C. P. acid is used.

Physiological Action—The physiological action of sulphuric acid in a general way is described heretofore in the general action of mineral acids. It neutralizes alkalinity, produces irritation of the mucous membranes and in extreme cases may produce gastro-intestinal irritation. If this irritation is at all severe, a congestion of the intestinal glands may result which materially interferes with the process of nutrition, the patient dying from inanition. Muscular weakness is one of the results of overdoses of this acid.

Specific Symptomatology—In fevers, a brown-coated tongue of dark color, with dark mucous membranes; the coat increasing in color in the center to black; the tongue usually dry, with deep red tip and edges, indicates sulphuric acid.

Therapy—The strong acid has been used as a caustic, but is more irritating than nitric acid, which now replaces it in all conditions in which it was previously used, with perhaps the single exception of the cauterization of the bites of rabid animals, in which it seems to be superior to other caustics.

As an antiseptic and stimulant to mucous surfaces it acts similarly to the sulphurous acid. It is superior, however, in **adynamic diarrhœas** or diarrhœas with extreme prostration. It is not only an antiseptic in these cases, but exercises a positive astringent effect. Used in epidemics of **cholera** its apparent influence has been very marked. Many patients taking it in anticipation of the attack have failed to be attacked. A pleasant method of administration in these cases is from four to six drops of the aromatic acid in a glass of sweetened water, forming an artificial lemonade, which may be drunk at the pleasure of the patient.

The lemonade above mentioned is a very grateful drink in **typhoid** or **typhus** fever when this condition prevails. In all inflammatory conditions with these indications, especialiy in inflammation of the vital organs, and in **erysipelas** the influence of this acid will often apparently cause a decline of the fever.

This agent is a reliable **hemostatic** in passive hemorrhages; where there is feebleness of the mucous membranes with sluggish capillary circulation it is excellent. The aromatic acid is much the more active in this particular. This inherent property renders this agent useful in excessive mucous discharges from whatever locality, being eliminated rapidly from the skin; the astringent and stimulating influence of the agent is exercised directly in the control of colliquative **night sweats.** The tonic properties of the agent making it especially desirable for this purpose in the protecting sweats that follow all forms of continued fever and the night sweats of pulmonary consumption.

The agent was at one time used for **prolapsus ani, piles, fissure of the anus or rectum,** also phagedenic ulcers, aphthous ulceration of the mouth and salivation, for which we have mentioned the use of the sulphurous acid.

King ascribes nerve tonic properties to this remedy and advises it in certain forms of **nervous prostration,** especially where there is irritation of the spinal cord. In cases where quinine may be used in conjunction, that agent may be dissolved in this acid and given in an aromatic syrup or elixir.

ACIDUM TARTARICUM.

Synonym—Tartaric Acid.

Therapy—It stimulates the mucous and salivary secretions and is a somewhat efficient agent in **fevers.** An artificial lemonade can be made from this acid by dissolving it in water and adding a few drops of the essence of lemon. By adding a small quantity of this acid to the bicarbonate of sodium or potassium, a pleasant effervescent drink is made.

CHAPTER VII.

Agents Used as Assistants to Gastric or Intestinal Digestion—Digestives.

PEPSIN.	PAPAW.	DIASTASE.
PANCREATIN.	INGLUVIN.	TAKADIASTASE.

PEPSIN.

Occurrence—Pepsin is the natural enzyme—a proteolytic ferment, obtained from the glandular structure of the lining membranes of the fresh stomach of the domestic hog—*sus scrofa.* It is an essential constituent of the gastric juice.

Description—Pepsin occurs in the form of scales, granules or as an amorphous powder. It is yellowish-white, translucent, has a characteristic odor and a peculiar, moist, elastic feel to the touch. To the taste it is slightly acid, bitter, saline. It is soluble in 100 parts of water, but by the addition of hydrochloric acid its solubility is greatly increased. It is insoluble in alcohol and chloroform.

It should have a digesting power equal to 3,000 times its own weight of freshly coagulated egg albumen.

Administration—It is given in the form of the powdered pepsin or as saccharated pepsin in doses of from three to ten grains. The essence of pepsin in dram doses is an excellent form for administration.

Physiological Action—Pepsin digests the nitrogenous constituents of food, converting them into peptones. Its action is increased by the addition of hydrochloric, lactic and citric acids.

Therapy—A deficiency of the digestive ferments in the stomach, evidenced in **painful** or **imperfect digestion,** is largely supplied by the administration of pepsin. Whenever severe disease induces inactivity of the glandular organs of the body, there is apt to be inefficient action of the peptic glands, and consequently a deficiency of pepsin. This is the case after **severe shock,** either from injury or from surgical operation, in **neurasthenia,** and in **brain** or **spinal disease;** also in severe **acute inflammatory disease,** in **protracted fevers,** in **heart disease,** in **diabetes,** and especially in **gastric ulcers** and **cancer.** In all these cases, there being atonicity with enfeeblement of functional operation, pepsin in conjunction with tonics, stomachics and hydrochloric acid is often demanded.

Infants fed on artificial food are benefited by the use of pepsin. It may be given during or at the end of the meal, and is often productive of excellent results.

Where **malnutrition** is marked, and the growth and development of the child retarded from this cause, this agent is sometimes the means of accomplishing a complete cure. In **diarrhœa** in childhood from indigestion, a most

important factor in the treatment, is the perfect digestion of the food. A little skill on the part of the physician can often so adjust the administration of pepsin as to satisfactorily accomplish all desired results in such cases, often without the use of astringents. Mild intestinal antiseptics are often necessary in conjunction.

It is argued that artificial digestion, by doing the work of the gastric juice, is apt to produce impairment of the function of the gastric glands because of inactivity or non-use. It is the observation of those who have used pepsin, pancreatin and papoid, that they act not only as assistants to the digestive processes, but that they stimulate the gastric glands, and impart real tone and renewed functional energy. This may be in part due to the immediate improvement in general nutrition from the rapid appropriation of the more perfectly digested food. These digestives exercise a sedative influence also upon the stomach when there is nausea and irritation due to the presence of undigested food.

The partial predigestion or peptonizing of the food of infants suffering from malnutrition is generally recognized as an essential process. This process is adopted with invalids suffering from gastric disorder, and is advised also in preparing milk for administration per rectum, when no food can be introduced into the stomach. In this case a few grains of pepsin added to the prepared enema, whatever its character, is of great assistance in its appropriation.

Pepsin in solution has been used to dissolve the false membrane in croup, and the exudate in diphtheria. It has also been injected into the urinary bladder to dissolve blood-clots, and applied to indolent ulcers to destroy unhealthy tissue and stimulate the surface to normal granulation.

PANCREATIN.

Occurrence—Pancreatin is found in the fresh pancreas of warm-blooded animals, and is obtained for general use from the pancreas of the hog.

CONSTITUENTS—Pancreatin is a mixture of several enzymes, consisting of the ferment **trypsin,** similar to that of pepsin, proteolytic in character, but active in an alkaline medium; a starch digesting ferment—**amylopsin** resembling diastase or ptyalin; a milk digesting ferment, and a fat emulsifying ferment—**stearopsin,** closely allied to that found in the bile.

A solution of pancreatin is prepared, called **Liquor Pancreaticus.** The fresh pancreas is finely minced and exhausted with water, strained and treated with dilute alcohol for preservation. This is often more active than the powder.

Description—Pancreatin is a grayish or yellowish amorphous powder, with a characteristic odor and taste, soluble in water, insoluble in alcohol and chloroform.

Administration—It is most active in an alkaline medium, is destroyed in a strongly acid medium, and is consequently best given from two to three hours after eating, when it assists the intestinal digestion. Dose, from two to twenty grains.

Physiological Action—It will peptonize various articles of food, such as milk, oysters, broths and gruel, and will emulsify oils and fatty foods intended for rapid nutrition.

Specific Symptomatology—Pain in the **intestinal canal,** beginning an hour or more after eating, and continuing for two or three hours; eructations of fatty foods; passage of undigested fats with the feces, are all indications for the use of pancreatin.

Without these indications it may be given in the slow convalescence of wasting disease, where anorexia and malnutrition are present and not corrected by pepsin and stomach tonics.

Therapy—The agent is of some use in **gastric inactivity,** but in the stomach, there is but little influence it may exercise that is not fully exercised by pepsin.

However, if administered at the beginning of a meal, it will sometimes exercise a full beneficial influence before enough of the gastric acids are poured out to retard its action—an influence sometimes more satisfactory than that exercised by pepsin, but as the acidity of the stomach fluids is apt to retard or destroy its influence, it is best given an hour or more after meals if there is **impairment** of the **intestinal digestion,** where it acts to the best advantage. If the stomach digestion is nearly complete, a dose of magnesium or sodium carbonate or bicarbonate may be given to neutralize any excess of acid.

It will accomplish desirable results in **lienteric diarrhœa,** and in the diarrhœas of infants where there is marked emaciation, the stools containing fat cells in abundance.

Pancreatin, the liquor pancreaticus, or the powdered pancreatic glands are advised in the treatment of **diabetes mellitus.** It is possible that some benefit has followed this method of treatment in cases where the pancreas was diseased, but the author has but little confidence in it in the larger proportion of cases.

PAPAYA. CARICA PAPAYA.

Synonyms—Papaw, Pawpaw, Melon-tree.

Part Employed—An active principle obtained from the juice of the unripe fruit.

CONSTITUENTS—The active principle has been variously named papain **papaotin, papoid** or **caroid.** It is precipitated by alcohol, is a nitrogenous principle approximating in character a true albuminoid, and is associated with vegetable peptones and a milk-curdling ferment.

Description and Administration—It is a powder of cream-white color, almost odorless and with but little taste. It is easily soluble in water and also in glycerine. Dose, from one to three grains. A larger dose may be given where immediate effects are desired, but is seldom necessary. It is sometimes advisable to repeat the dose in from one to two hours.

The natives have long had a custom of wrapping fresh meat in the leaves of the pawpaw, claiming that it prevented decomposition, softening it and materially assisting its digestion. They also applied the juice to open and offensive wounds, to cleanse them and promote healing.

Therapy—The indications for the use of papoid in treating digestive disorders may be summarized somewhat as follows:

Actual and relative deficiency of the gastric juice or its constituents. (*a*) Diminished secretion of gastric juice as a whole; apepsia, anæmia and deficient blood supply; wasting diseases. (*b*) Diminished proportion of pepsin; atonic dyspepsia; atrophy of gastric tubules. (*c*) Diminution of hydrochloric acid—achlorhydria; carcinoma. (*d*) Relative deficiency of gastric juice; overfeeding.

In gastric catarrh. (*a*) Where there is tenacious mucus to be removed, thus enabling the food to come in contact with the mucous membrane. (*b*) Where there is impaired digestion.

In excessive secretion of acid, to prevent duodenal dyspepsia.

In gastralgia, irritable stomach, nausea or vomiting.

In intestinal disorders. (*a*) In constipation due to indigestion; in diarrhœa, as a sedative. (*b*) In intestinal worms. (This claim the writer has not personally verified, but as the intestinal mucus which shields the worms is removed by papoid, it is easily understood that their destruction would naturally result, or would be more readily accomplished after its administration.) Hutchinson treated tapeworm successfully with five grains of the dried juice twice daily.

In infectious disorders of the intestinal tract. (*a*) Where there is abnormal fermentation, by its antiseptic action, which may be heightened by combination. (*b*) Where there are foreign substances present, its detergent effect may be utilized in clearing these out from the intestinal canal by their digestion.

In infantile indigestion. Here papoid not only readily peptonizes cow's milk, but the resulting curds are also rendered soft and flocculent, resembling those of breast milk.

In case of obstruction of the esophagus by the impaction of a piece of meat or gristle, a paste of papoid and water produces softening in a short time.

Nearly all of the above statements have been confirmed in the experience of the writer during ten or twelve years' constant use of the agent, alternated with, but seldom in conjunction with the animal ferment.

Where papoid or any form of pawpaw is used as a digestive agent, there may be observed an increase in the amount of uric acid when that substance is deficient, and if oxalates are present they are diminished.

It is a reliable remedy for **general distress** or **pain** in the **stomach** and bowels during the process of digestion. It can be prescribed almost without discrimination in these cases, and the results are in some cases surprising. It may be given during the meal, and pain not occur for an hour. At that time, its influence being probably spent, another dose will continue the effects of the first. Its effects become permanent usually in acute or subacute cases after a few days, when it may be discontinued.

It is not a remedy for pain occurring before meals or after the food is digested, or for gastric pain occurring without regard to the taking of food —continuous pain and distress—since these pains are either neuralgic or organic in character. The agent is specifically one for functional disorder. It is a most valuable agent in **catarrh** of the **stomach** and in the **digestive** failure accompanying continued fevers. It stimulates the stomach in the beginning of convalescence, and in some cases increases the appetite and promotes absorption of the digested pabulum.

It is serviceable in the digestive **disorders of pregnancy,** stimulating appropriation and assimilation. In those cases where the digestion is seriously interfered with during the last three months of pregnancy, it being almost impossible, because of the great pain induced, for the patient to take any food into the stomach, the condition will be entirely relieved by this agent within a few days, the patient being enabled to eat large meals of meat without discomfort and with satisfaction.

The agent is a **solvent** of **fibrin,** and has been used to **dissolve false membranes,** old hardened tissue, warts and tumors, and has been satisfactorily applied to **epithelioma.**

Mortimer Granville reports several cases of **cancer** of the **stomach** treated very satisfactorily with this agent. In **diphtheria** the powder serves a most useful purpose in dissolving and permitting the removal of the densest exudate, which in some cases covers the pharynx and naso-pharynx, and occludes the nares. Good results have been reported by Jacobi, Hubert and others, and have come under our own observation. Kots and Asche are reported in the *Prescription* as having observed more than a hundred cases treated with success by this method.

Empirically it has been used in a few cases of **nephritic colic** with the most marked results. It will diminish the formation of the oxalates, although in cases where tried there has been an increase in uric acid.

INGLUVIN.

Occurrence—Ingluvin is the active principle derived from the gizzard of the domestic fowl—*ventriculus callosus gallinaceus.* The lining structure of the chicken's gizzard is a dense, hardened membrane, surrounded by powerful muscles. The motion of these muscles upon the contents of the gizzard is accompanied by the continuous exudation of a strong, organic fluid from glands located in the lining membrane. This fluid acts preliminarily upon the food before it reaches the gastric juices in the stomach, and also assists in the complete digestion of the food when there. It exercises in part the function of pepsin, as well as of the ptyalin of the salivary secretion.

Description—The substance occurs in scales or as a coarse granular powder, yellowish or brownish-yellow in color. It is bitter, slightly acid, and has but little odor. Dose, from three to twenty grains.

Therapy—The digestive powers of this agent are not as wide as those of pepsin, but it is efficient in cases where there is **indigestion** with **nausea** and gastric irritation. **Pain** in the **stomach,** with the above conditions, is relieved by this agent. In the deficient action of the stomach accompanied with **nausea** and **vertigo** in **neurasthenics** this is a useful remedy, as it certainly acts as a tonic or stimulant, increasing the functional activity of the stomach and soothing both local and reflex irritation. It is of much value in the **vomiting** of **infants** from local or undetermined causes. In these cases thirty grains may be stirred into half of a glass of water and a teaspoonful of this given every ten, twenty or thirty minutes. In small infants equal parts of Ingluvin and bismuth may be stirred together in the water and administered in smaller doses. It is given in capsules when large doses are needed in adults. This combination is of much efficacy in **cholera infantum** and in other protracted diarrhœas with nausea. Sodium bicarbonate should be added where there is excessive acidity.

In the **vomiting** of **pregnancy** it has won its highest reputation and should be given in doses of from five to twenty grains before meals. It may be given in two ten-grain doses, one before and the other at the end of the meal, when the nausea is accompanied with indigestion. If the nausea is constantly present it may be given at any time at short, regular intervals, but with best results when the stomach is empty. In these cases when there is excessive nervous irritation with hysterical phenomena, an active nerve sedative will greatly facilitate the action of this remedy. Dilatation or mild cauterization of the os uteri may remove one of the causes of nausea, the Ingluvin afterwards quickly soothing the stomach.

When given as a digestive it should be given during or after the meals. The agent certainly exercises an influence which differs widely from that of pepsin and pancreatin, and yet is fully as important and valuable.

DIASTASE. TAKADIASTASE.

Diastase is one of the principles of the digestive fluids of the animal body. It appears during the fermentation of starchy substances—grains. It is one of the enzymes capable of being classed with pepsin and pancreatin of

the digestive group. Its especial function is the conversion of the starch molecule into a sugar molecule.

Takadiastase is a form of diastase which results from the growth, development, and nutrition of a distinct microscopic fungus known as the eurotium oryxæ.

Administration—Two grains of Takadiastase is the usual dose, although five grains is often given. The dose is usually given in a capsule during or at the end of the meal. In liquid form one dram contains two grains.

Physiological Action and Therapy—As stated the agent possesses a diastatic and fermentative property. Its specific field is the correction of diastatic imperfections. It converts 100 times its weight of dry starch into sugar. It digests starches and prevents constipation, flatulence, malaise, insomnia, headache and vertigo, which result from the ptomaines of undigested and decomposed starch.

While starch digestion is its direct field of action, it is found of much benefit in apepsia—in incomplete digestion from atonicity. It is found to be a most useful remedy, and yet so recently has it been given to the profession, that complete observation cannot be said to have been made. It is believed that a much wider influence will yet be found to be exercised by it than has yet been observed.

Note—Other well known assistants to digestion are hydrochloric acid, described in another chapter, the malt extracts, lactopeptine and peptenzyme. The two latter preparations are proprietary, and the writer has no perfect knowledge of their composition, although they have served him a good purpose at times. Those described are in common use.

GROUP V.

Agents Acting upon the Intestinal Glandular Organs and upon the Intestinal Canal.

CHAPTER I.

Laxatives and Cathartics

CASCARA.	ALOES.	OLIVE OIL.
RHEUM.	SENNA.	PARAFFIN OIL.
	CASTOR OIL.	

CASCARA SAGRADA.

Synonyms—Rhamnus Purshiana, chittem bark, sacred bark, Bearberry, bear-wood.

CONSTITUENTS—There are present a crystalline, bitter principle and three distinct resinoid bodies, not bitter, which are believed to be derived from chrysophanic acid which is thought to be present in the bark.

PREPARATIONS—Fluid Extract Cascara Sagrada, not miscible with water. Dose, as a stomachic tonic and function restorer, three to ten minims; laxative, five to twenty minims four times a day; as a cathartic, twenty to sixty minims morning and evening.

Solid Extract Cascara Sagrada. Dose, as a laxative, one-half to two grains; as a cathartic, three to eight grains.

Powdered Extract Cascara Sagrada, produced by evaporating the solid extract at a low temperature and triturated with sugar of milk, same strength as the solid extract.

Cascara Cordial with elimination of the bitter principle. Dose, half a dram to a dram and a half.

Physiological Action—Dr. Bundy, the discoverer of cascara, writing in 1878, says: "I employ a fluid extract of cascara, using one ounce in a four ounce mixture in combination with other remedies or alone, as the case may require. It acts upon the sympathetic nervous system, especially upon the solar plexus, stimulating the nutritive and assimilative forces, increasing the digestive processes generally. It acts upon the secretory system in a marvelous manner, especially where the secretions are deficient and perverted, and this seems be one of its special indications. Constipation depends upon the nature of the diet, deficiency or a faulty composition of the intestinal secretions, disordered glands that pour their secretions into the intestines, impairment of muscular power, which leads to a deficiency in their propelling power which may result from nervous or mechanical influences, congestion of the portal circulation, normal secretion of intestinal juices interfered with, deficiency in biliary secretions of a healthy character, congestion of mucous membranes of intestines, and last and the most frequent, constipation which has been caused by resisting the calls of nature from carelessness or circumstances that prevent obedience at the proper time."

Scheltzeff in 1885 (London Med. Record) made the following observations: "In doses from four to ten cubic centimetres (with double quantity of water), cascara sagrada excites the secretion of gastric juice and increases it during

digestion. It increases also the secretion of the pancreatic juice. It excites and increases the secretion of bile. It has no action on the secretion of saliva. It has not led to any rapid and considerable evacuations.''

Cascara is a bitter tonic of specific value in its direct influence upon the function of the stomach and intestinal canal. It acts upon the vasomotor system, stimulating the glandular apparatus of the intestinal tract to more perfect secretion, and increasing peristaltic action. It is especially indicated in torpidity or atonicity, quickly restoring functional activity.

It is not a cathartic in the common acceptation of the term, but by restoring normal function, by its tonic influence, bowel movement of a natural character follows.

It does not mechanically liquefy and empty the intestinal canal, but it restores normal elasticity and tone to the relaxed structures, and natural vermicular motion and peristaltic action, exercising a direct influence upon muscular structure of the intestinal walls. It materially influences the venous and capillary circulation of the entire intestinal tract, thus proving of much value in hemorrhoids.

Administration—In prescribing cascara for the cure of **chronic constipation,** large doses at the first are undesirable. If a single dose, so large as to produce a cathartic effect be administered, subsequent small doses will prove insufficient to restore tone, and the constipation will remain unless the large dose is constantly repeated. If a dose of from two to ten drops in a proper vehicle be given, three, four or five times daily for many days, even if the constipation does not at first yield, the effects after a few days are usually salutary. There is a normal movement in the morning and the habit of regular evacuation can be soon fixed, and as the agent is continued the dose may be slowly decreased until a single drop at each dose is given. Finally, a single small dose morning and night may be continued for a time and then stopped, the bowels continuing their normal action.

If constipation pre-exists, it is well to give a simple laxative or to flush the bowels thoroughly with some other agent before beginning the use of this, to overcome the chronic condition. The results can be sooner obtained also by smaller doses.

Therapy—Large doses of the agent produce colic and are seldom needed. In the temporary **constipation of pregnancy** or in the convalescence of acute disease, doses of from one-fourth to one-half dram in a tonic mixture, preferably of malt extract, taken at the bed hour will be most satisfactory. Often a single dose followed by a glass of cold water on rising will have a salutary effect. This is true of constipation extending over a short period, not necessarily chronic. To produce an immediate effect as a physic, a dram of the fluid extract should be given, and it will probably induce some pain. The agent should not be used in this active form for its immediate effects during the pregnant term, as its irritating influence may be sufficient to produce miscarriage.

Cascara in medium doses is an efficient agent in **gastric or intestinal catarrh.** It quickly restores the normal tone of the mucous membranes, suspending undue secretion and acting in perfect harmony with other measures adopted.

It is a useful remedy in many cases of **chronic indigestion** and in chronic disease of the liver. It has been used in **cirrhosis** with the best of results. It is useful in **jaundice** with deficient excretion of bile, and corrects catarrh of the bile duct. It is useful in **diarrhœa,** subacute or chronic, depending on deficient liver action, and upon catarrhal and atonic conditions of the intestinal tract.

In 1886 quite an interest was excited by the assertion of Goodwin, of New York, that cascara was an excellent remedy for **rheumatism.** Many ex-

perimented with it and some reported excellent results, but its use for this purpose has not been continued. It is, however, of value in the treatment of those cases where gastric and intestinal disorders are present, given in conjunction with more specific agents.

RHEUM. RHEUM OFFICINALE.

Synonyms—Rhubarb, Chinese or Turkey Rhubarb.

CONSTITUENTS—Chrysophan, phæoretin, erythrorrhetin, aporetin, chrysophanic acid, rheotannic acid, emodin, gallic acid, rheumic acid, calcium oxalate, sugar, starch, salts.

PREPARATIONS—Extractum Rhei, Extract of Rhubarb. Dose, from ten to fifteen grains.

Extractum Rhei Fluidum, Fluid Extract of Rhubarb. Dose, from a half to two drams.

Syrupus Rhei et Potassæ Compositus, Compound Syrup of Rhubarb and Potassa, Neutralizing Cordial. Dose, from one to four drams.

Specific Medicine Rheum. Dose, from one to twenty minims.

Physiological Action—The influence of this agent is peculiar. It is a laxative first, cathartic if in extreme doses, and subsequently astringent. It tones the gastro-intestinal tract to a marked degree, if debilitated, and if over-activity is present, the agent restrains that condition.

It mildly and satisfactorily evacuates the bowels without irritation or stimulation. Some individuals eat a few grains of the crude root, which they carry in the pocket, every day for chronic constipation, others are not benefited with large doses.

Therapy—In **atonic conditions** of the **bowels,** with debility or general relaxation, whether **diarrhœa, dysentery, cholera morbus** or **cholera infantum** is present, it is a most useful remedy. Its tonic powers are promptly exercised, and properly combined with indicated remedies, it produces markedly restorative effects. It acts directly upon the duodenum, and subsequently upon the entire intestinal tract. It is the laxative for debilitated patients, or for patients recovering from prostrating disease.

Given to a nursing mother, like aloes, it relaxes the infant's bowels, and in some cases it is desirable to administer it to the mother for this purpose.

SYRUPUS RHEI ET POTASSAE COMPOSITUS.

Synonyms—Syrup of Rhubarb and Potassa Compound. Neutralizing Cordial.

This old Eclectic formula has attained such a wide notoriety—is in such general use in our own school, and is now so popular among the regular physicians and so generally adopted by them, that it deserves a conspicuous place in this book. It has no superior as a restorative to acute abnormal conditions of the stomach or bowels demanding an antacid. Prof. King's original formula is as follows, which happily combines the active virtues of its constituents. Suggestions and alterations for its improvement have not in all its factors produced a better compound.

Formula—Best India Rhubarb, Golden Seal, Cinnamon, each **one ounce;** Refined Sugar, **four pounds;** Brandy, **one gallon;** Oil of Peppermint, **twenty minims.** Macerate the Rhubarb, Golden Seal and Cinnamon, in half a gallon of the Brandy for six hours, with a gentle heat, then transfer the mass to a

A SUMMARY AND COMPARISON OF DIGESTIVE AGENTS.

	PEPSIN	PANCREATIN	CARICA PAPAYA	INGLUVIN	TAKADIASTASE
OCCURRENCE	A natural enzyme obtained from the glandular structure of the lining membrane of the fresh stomach of the hog.	Found in the fresh pancreas of warm-blooded animals; obtained from the hog; is a mixture of several enzymes.	The medicine is prepared by the evaporation of the juices of the unripe fruit of the papaw.	Prepared from the gizzards of domestic fowls.	Obtained by the action of a microscopic fungus developed in hydrolized wheat bran.
DESCRIPTION	Occurs as scales, or granules, or as an amorphous powder; acid, slightly bitter taste; soluble in 100 parts of water; freely soluble in dilute H. Cl. Acts best in an acid medium.	Occurs as a grayish or yellowish amorphous powder; has a characteristic odor and peculiar taste; is freely soluble in water; acts in an alkaline medium. Is destroyed in an acid medium.	Occurs as a white powder, nearly odorless and tasteless; is freely soluble in both water and glycerin. Acts in acid, alkaline and neutral mediæ.	Occurs in scales or coarse granular powder; is of a dark yellow color, slightly acid, but little odor. Is potent in all media, but acts best in one slightly acid.	Occurs in a form resembling finely broken shellac, or as a light brown powder, with but little taste; is soluble in water. Acts in all mediæ.
GENERAL INFLUENCE	Digests all kinds of foods; coagulates the albumins and then redissolves them; is serviceable at any time of life, especially in proper doses, with infants. Is of value in persistent diarrhea or malnutrition, from imperfect digestion.	Acts directly upon fats; is aided by the bile in changing chyme into chyle; is useful with both old and young; is given in intestinal dyspepsia where there is a failure in the digestion of fats; or in diarrhea with fat in the feces.	Is especially active in the digestion of nitrogenous foods, digests all the food principles, quite promptly; is serviceable both with adults and with infants.	While less active than pepsin as a digestive, its influence is quite wide. It is preferred by some practitioners; is serviceable at any time of life.	Is emphatically a diastatic digestive. Acts directly upon starchy food; is serviceable both in adults and infants.
SPECIFIC INFLUENCE	Is demanded when there is a deficiency of pepsin, a condition common in all acute disease which retards secretion and glandular action.	Is demanded in malnutrition and emaciation, and in incipient tuberculosis, rachitis, chlorosis, anemia, scrofula, and diabetes. Wherever intestinal digestion is impaired.	Acts promptly where there is pain from an acute or rather abrupt suspension of the digestive processes, from any cause, especially from the presence of excessive food, or indigestible food. It may be adjusted to most forms of indigestion.	Is especially demanded where nausea is present, especially if from undigested food; however, reflex nausea has been often controlled by it. Nausea with hysterical phenomena is benefited if combined with nerve sedatives. Useful in all vomiting of infants.	Is thus demanded in the imperfect digestion of starches, will correct diarrhea or vomiting caused by imperfect starch digestion.
INDICATIONS	Of quite general adaptation. In suspension of digestion from shock, from injury to the nervous system, from any disease of the stomach or of the intestinal tract, from neurasthenia or in protracted asthenic disease, it is applicable.	Is indicated by pain in the intestines, more or less persistent, especially an hour or more after eating; by eructation of fatty foods, and by the passage of undigested fats.	Is indicated by pain after eating, pain from undigested food, either in the stomach or bowels. In diarrhea, from undigested food; often immediately relieves pain in the stomach or bowels, except that caused by neuralgia, or structural disease.	Is indicated by persistent nausea, in full and frequent doses; is nearly specific in the vomiting of pregnancy; controls persistent vomiting in infancy, with relaxation, pallor, and cool skin.	Is of much service in neurasthenia, and in asthenic conditions with this form of indigestion; is of but little benefit in imperfect digestion of milk or albumin.
AS A PREDIGESTIVE	Useful in the pre-digestion of food, where the stomach is weak, where digestion is impaired, especially in infants and children.	Is of doubtful efficacy in the predigestion of foods.	Has been but little used as a predigesting agent.	Is not used as a pre-digesting agent.	Is seldom used as a pre-digesting agent.
OTHER ACTION	Has been used to dissolve the false membranes of croup and diphtheria, and to dissolve blood clots in the bladder.	Exercises a mild specific influence in diabetes mellitus, when induced directly by disease of the pancreas.	Will dissolve fibrin, hardened tissues, warts, tumors and the false membranes of croup and diphtheria. Properly prepared, it is a most powerful anthelmintic.	Has but little influence on conditions other than those above named.	Prevents or corrects constipation, flatulency, malaise, insomnia, nausea, vertigo, and headaches, which are induced by the ptomaines of decomposing undigested starches.
ADMINISTRATION AND DOSAGE	Is given in the form of a powder in from five to ten grain doses; as saccharated pepsin, from seven to fifteen grain doses; as the essence of pepsin in dram doses.	Is best given two or three hours after eating, as the gastric juice may destroy it. Dose from two to twenty grains.	Is given after eating in doses of from one to three grains, which may be repeated every half hour, if pain or discomfort persists.	Full dosage is demanded in adults. Fifteen grain doses may be repeated two or three times, an hour apart. For children, combine it with equal parts of bismuth subnitrate, and give in small frequent doses, in water.	From two to five grains may be given in a capsule during or at the end of a meal.

percolator and displace with the remaining half-gallon of Brandy. The remaining strength, if there be any, can be obtained by adding water until the liquor comes off tasteless. To this add one ounce of Carbonate of Potassa, the Sugar and Oil of Peppermint, this last having been previously rubbed with enough Sugar to absorb it, and mix the two liquors. The whole of the active properties of the ingredients may be obtained with more certainty by using Alcohol, seventy-six per cent, instead of Brandy, owing to the great want of uniformity in the quality of the latter.

Because of the possibility of the fermentation of the sugar in the above compound, Professor Lloyd has replaced this and enough of the water necessary to the above solution, with glycerine, preserving the valuable properties of the compound and increasing the field of its action. This preparation is called **Glyconda**, and is given for the same conditions, and in the same dosage as the above.

Administration—The syrup is given in doses of from half a dram to half an ounce, usually diluted with considerable water.

Therapy—While we advocate the use of single remedies for direct effects, we have obtained such marked results from this combination that we are impelled to teach students its use, especially in children's gastric disorders. A **sour stomach** is always benefited by it. It is specific when the tongue is coated uniformly white, and is broad, and the mucous membranes are pale, when there are eructations of sour gas or vomitings of acid matter. It never fails in these cases. It makes no difference whether there is diarrhœa or constipation.

A stomach filled with sour decomposed food can appropriate no medicine, and all specific remedies demand a stomach free from these conditions. This agent neutralizes excessive acidity without liberation of carbonic acid gas; it stimulates and soothes the stomach and promotes normal action. It may be given to neutralize excessive acidity before general medication is begun in any case.

It is the remedy for **children's summer disorders** *par excellence*. It is a safe remedy to use **ad libitum** in the family for deranged conditions of the stomach and bowels.

A tablespoonful, taken by an adult in summer when nausea, colic or diarrhœa declare a derangement of the organs of digestion, will usually immediately restore the normal condition. It is palatable and pleasant to children, especially if diluted. In **fevers or headaches from gastric acidity** the treatment should be begun with this syrup, the indicated remedies being given when excessive gastric acidity is in part neutralized and the normal condition stimulated by the rhubarb. It may be added to the vehicle in prescriptions for stomach and bowel troubles of an atonic character.

If **constipation** be present a mild laxative may be added. If much diarrhœa is present an astringent, such as geranium or epilobium will increase its value, and if there is extreme lack of tone, its value is enhanced by the tincture of xanthoxylum or capsicum. If there are sharp colicky pains, a few drops of the tincture of colocynth or the tincture of ginger, or even paregoric, or deodorized opium in severe cases, will be found valuable. It should be in constant use by every physician in stomach and intestinal disorders common during the heated term.

ALOES. ALOES SOCOTRINA.

Synonym—Aloe Perryi.

CONSTITUENTS—Aloin, resin, volatile oil.

Aloinum, Aloin. This is a crystalline substance obtained from Aloes, of a yellowish-brown color; odorless and with the taste of Aloes. It is twice as active as Aloes and produces less griping. Dose, from two to five grains.

Physiological Action—It is not rapid or so severe in its action as some other cathartics. Given at bedtime it operates upon rising in the morning. The action is not painful, and it increases the alvine discharges without any increase of the watery constituents. It increases the circulation of the blood in the intestine, improves the muscular tone and restores normal peristaltic action.

Aloes acts most freely on the lower bowel. It increases the activity of the muscular coat of the intestines, increasing peristalsis, especially of the colon. It causes soft dark colored feces. It is not to be used when there are hemorrhoids, or when there is irritation or inflammation of the colon, or pelvic organs, nor should it be freely used in pregnancy.

It increases the secretion of the liver, pancreas, and intestinal glands; also the mucous glands of the intestines. It causes some griping when given as a laxative, but belladonna, colocynth, or hyoscyamus will correct this colic.

Specific Symptomatology—Homeopathic indications for this remedy are headache across the forehead and over the eyes, nausea, gastro-intestinal irritation with coldness of the lower limbs; there is a bitter, sour or metallic taste in the mouth, the tongue yellowish white, somewhat dry, with thirst; bitter or sour eructations; heaviness over the liver; pulsation in the navel region; distention of the abdomen with gas with the above conditions. Gloomy patients suffering from constipation can take aloes to advantage.

Therapy—If administered to a **nursing mother** it will produce a cathartic effect upon the infant. It is a constituent of the larger proportion of the carthartic pills on the market.

If the liver is acting normally a much less dose will produce a cathartic effect than when there is a torpid or an inactive liver.

The agent should be used, if at all, with much care in inflammatory conditions, especially in those of the intestinal canal, as it is an irritant to the lower bowel. It increases the heart's action and the circulation of blood and raises the temperature.

The agent is **emmenagogue** and **abortive** in its action and **should not be given during pregnancy.** It will produce a full menstrual flux in some cases of suppression.

It may be given in **simple jaundice** with lack of tone; in constipation depending upon weakness of the intestinal tract; where there is plainly deficient peristaltic action, where the tongue is coated, the breath foul, the abdomen full and tumid; where there is inclination to impaction of the colon. It may be given in conjunction with nux vomica and hydrastis, or other good stomach tonics to excellent advantage when these are correctly indicated.

One one hundred and twentieth grain of aloin once every day or two will be of material benefit to those who eat too much, especially of starchy foods and sugar; those of phlegmatic temperament and beer drinkers.

SENNA. CASSIA ACUTIFOLIA.

Synonym—Alexandria Senna.

CONSTITUENTS—Cathartic acid, Sennacrol, sennapicrin, chrysophan, phæoretin, cathartomannit, mucilage.

PREPARATIONS—Confectio Sennæ, Confection of Senna. Dose, one to two drams.

Extractum Sennæ Fluidum, Fluid Extract of Senna. Dose, half to one dram.

Infusum Sennæ Compositum, Compound Infusion of Senna. Dose, one to three ounces.

Pulvis Glycyrrhizæ Compositus, Compound Powder of Liquorice. Dose, twenty to sixty grains.

Pulvis Jalapæ Compositus, Compound Powder of Jalap. (A. D.) Beach's Antibilious Physic. Dose, one dram.

Specific Medicine Senna. Dose, from one to thirty minims.

Therapy—Senna is an efficient remedy, mild, kindly, certain and uniform in its action. It is a constituent of the larger number of the proprietary laxative or cathartic compounds, syrups, cordials or elixirs.

It is used in all cases of **temporary constipation,** however induced. An infusion of the leaves is not unpalatable and is promptly active. It produces normal evacuations of the bowels and if used carefully there is but little griping. It is used after surgical operations, after confinement, in the constipation of the feeble, and in many cases of inactive bowels among infants and children. It is not used where a powerful derivative is needed, or where active cholagogue or hydragogue influence is demanded. It has a narrow but important sphere.

Co-Operatives—In combination with ginger, capsicum or black pepper it is useful in atonic conditions with inactivity of the bowels. With magnesium sulphate, or potassium bitartrate, it will induce more of a hydragogue effect. In combination with leptandra it acts more specifically upon the liver; with jalap and ginger it was long known as **antibilious physic** and was given whenever "biliousness" was diagnosed; with rhubarb and peppermint it is a tonic, laxative and carminative of greatly improved value. It is the active constituent of the well known and popular, **Compound liquorice powder.**

The composition of this powder is as follows: Senna and liquorice in fine powder, of each two ounces; fennel fruit, sublimed sulphur, of each one ounce; refined sugar, six ounces. Mix thoroughly. Dose, from one-fourth to one dram in water.

The following is an excellent simple laxative:

A strong infusion of senna leaves is made and strained. In the clear liquid good French prunes are stewed until thoroughly cooked. One of these three or four times daily will overcome many cases of constipation, especially when the tendency is only temporary, or due perhaps to other conditions, temporary in their character, as during tedious convalescence. Especially useful in pregnancy.

Figs and senna leaves, chopped together finely, have been long in use for laxative purposes.

RICINUS. RICINUS COMMUNIS.

Synonym—Castor Oil.

Part Employed—A fixed oil from the beans of the Ricinus Communis.

CONSTITUENTS—The fixed oil, ricinoleic or ricinic acid, ricinolein, palmitin, starch, mucilage, sugar.

PREPARATION—In the preparation of castor oil the seeds are crushed, kiln-dried, and subjected to a powerful pressure to remove the oil, which is heated in water to remove albuminous matters and drawn off into barrels.

Cold-pressed castor oil, **Oleum Ricini,** is viscid, nearly or quite transparent, with a mawkish odor and an offensive taste. Dose, from one to eight drams.

Administration—The taste of castor oil is disgusting to many and unpalatable to all. It is partially disguised when the dose is added to a teacupful

of hot milk and well stirred. Hot lemonade or hot coffee disguises its taste to a certain extent. Wine, ale and beer are suggested, probably because of a love for such auxiliaries.

Therapy—As a **cathartic** in domestic practice this agent has long taken first rank. Children are susceptible to its action. An inunction of the oil over the abdomen is usually sufficient to produce a full laxative effect in babes. It may be continued from day to day for the cure of **chronic constipation** in young children. A kneading or rubbing of the bowels will stimulate peristaltic action and increase the influence of the oil.

When **nervous irritation** in children occurs with **fever,** from undigested food or irritating substances in the stomach or bowels, a dose of castor oil sufficient to produce free evacuation without pain may be given at once. Its action will usually remove the irritating causes, and the fever and nerve irritation will quickly subside. **Diarrhœas** induced from such causes are at once controlled after its operation. It has a secondary action like rhubarb, and constipation usually follows its use for a day or two.

In the treatment of **dysentery** it is good practice to thoroughly evacuate the bowels with castor oil and to follow it with full doses of sweet oil. In infants the sweet oil alone may be sufficient. If the oil is administered early in the case and followed with the suggested remedies the disease often abates at once.

It seems in itself to exercise a mild sedative effect, not only that it quiets distress in the bowels and removes irritating substances, but it promotes quiet and sleep.

It is used in a few cases after surgical operations, after **labor** on the second or third day, and after taking **vermifuges,** and whenever a simple, prompt agent is needed to evacuate the primæ viæ.

OLIVE. OLEA EUROPŒA.

Part Employed—A fixed oil from the pericarp.

Therapy—Olive oil or sweet oil is a nutritive and laxative for children. It must be given in doses of one or two tablespoonfuls. It can be flavored and rendered palatable. It may be given whenever **irritating substances** are retained in the intestinal tract, and when **convulsions** are present from gastro-intestinal irritation. It can do no harm. Violent and profound **convulsions** with **acute enteritis,** from swallowing the seeds of grapes, have been controlled at once by the writer, with large doses of sweet oil internally, and by using rectal injections of the oil very warm, large quantities of the seeds being removed and the local irritation soothed.

It is now generally used internally and externally in the treatment of **appendicitis,** and it is a most efficacious remedy. It is given freely internally at regular intervals, and after its external application heat is kept constantly applied. Indicated remedies for the fever and for the prominent symptoms should not be overlooked.

It is of much value in the removal of **biliary calculi.** In these cases from six to twelve ounces is the necessary quantity for administration, repeated three or four times daily. The influence is often pronounced.

It is an excellent agent in **dysentery,** whether of infants or adults. It may be given per orem, and a quantity subsequently injected into the rectum after a bowel movement. If for an adult, two ounces, into which ten drops of laudanum has been rubbed, is injected, often the distress is so relieved that it need not be repeated.

The injection of sweet oil is essential in **impaction** of the **feces,** and where there is great deficiency of intestinal secretion, or where **scybala** form,

or where there are **ulcers** or fissures and great pain is induced by the presence of fecal matter in the rectum.

A feeble, newly born infant may be quickly bathed in warm sweet oil and wrapped in cotton, and surrounded by heat and not dressed for several days. The oil can be wiped off once daily with a soft linen cloth and fresh warm oil applied. In healthy infants it is better to apply warm oil freely, wipe it off once and apply more. The child should then be wrapped in warm wrappings and not dressed for twenty-four hours.

Olive oil is the best of lubricants, and the carbolized oil is used for chafing and upon hands and instruments in surgery, and in vaginal examinations, and in introducing bougies or catheters. If a stream of warm oil be forced into the urethra in spasmodic stricture just in advance of the catheter, the dilation may be made satisfactorily, and the catheter may be introduced when that act was previously impossible.

Olive oil is exceedingly valuable in the treatment of sprained, bruised or contused parts, applied warm on absorbent cotton and kept hot. It acts as nutrition to the part, diffuses the heat and is markedly soothing in its influence.

Olive oil is used to protect the mucous surfaces of the esophagus and stomach when poisoning has occurred from the caustic alkalies. It also forms a neutral innocuous soap with the alkali and can subsequently be removed. With acids it is of no service. In some cases a fatal loss of time occurs from depending upon this, when magnesia or lime water or soda or a soap solution should have been introduced to neutralize the acid.

PARAFFIN OIL.

This substance is now prepared from the mineral oils by a number of manufacturers and is quite commonly used.

It is given in doses of from a teaspoonful to two tablespoonfuls. It is devoid of taste or odor, and therefore not unpleasant to take. It is plainly an oil though of about the consistency of glycerine. This oily character is an objection to some.

This agent has been brought before the profession within the last few years as an important remedy in the treatment of intestinal disorders. It is not a laxative in the strict sense of the word.

The remedy has been useful further in simple stasis as well as in **constipation of infancy** and childhood. It is useful in **hemorrhoids,** and in **mucus coltis,** and **during pregnancy.** As stated, its place has not yet been determined; neither have all the objections been stated nor all the contraindications. These must be looked for.

Its entire influence is topical. It is used in the words of an English writer for the all essential indication for the **constant sanitation and sanitary toilet of the bowel.** If given in conjunction with small doses of castor oil, a laxative influence is sustained with this cleansing agent. It is claimed that it systematically and completely prevents septic culture in the ileum, leaving the bowel and stomach in a much healthier condition for the exercise of the alimentary function. It prevents the common occurrence of ulceration in the ileum and colon.

It prevents septic fecal retention, inducing a thorough cleansing throughout the course of any disease. The agent may be given in divided doses any time when a mild laxative influence is desired, but a tendency to constipation as stated, must be overcome at the same time with more active agents.

The use of the agent has been carried to extremes, and this will militate against determining its actual function. It contains no stimulant or irritating properties; it exercises no osmotic action. It is simply a lubricant, which supplements normal mucus and assists peristaltic action. Very little if any of it is absorbed. It removes irritation from hardened feces, and restores normal mucus. It facilitates evacuation and assists in re-establishing a habit of regular bowel movement. It covers fecal masses and prevents absorption of toxins from these.

CHAPTER II.

Agents Used as Liver Stimulants.

PODOPHYLLUM.	CHELIDONIUM.	GRINDELIA.
LEPTANDRA.	POPULUS.	MAGNOLIA.
IRIS.	BOLETUS.	MERCURY.
CHIONANTHUS.	BOLDUS.	SODIUM PHOSPHATE.

Note—There is hardly a group of remedies among all that we have studied, that exercise a more important influence or exercise that influence in a more satisfactory manner, than those of the organic group named in this chapter if prescribed by one who is thoroughly conversant with their influence, and able to prescribe them accurately. They should be persistently studied and the conditions to which they are applicable should be determined with great care.

PODOPHYLLUM. PODOPHYLLUM PELTATUM.

Synonym—Mandrake.

CONSTITUENTS—Picropodophyllin, picropodophyllic acid, podophylloquercetin, gum, starch, gallic acid, volatile oil, fixed oil, salts.

PREPARATIONS—Extractum Podophylli Fluidum, Fluid Extract of Podophyllum. Dose, from five to ten grains.

Resina Podophylli, Resin of Podophyllum, Podophyllin. Dose, one-eighth grain.

Specific Medicine Podophyllum. Dose, from one-fourth to ten minims.

This exclusively Eclectic remedy has occupied a prominent place in our literature for eighty-five years. John King isolated Podophyllin as a resinoid in 1833, and published a report of his method and observations on the remedy in 1844 in the Philosophical Medical Journal of New York. Following King's suggestions, Lewis made an analysis of the drug in 1847 which was first quoted by the U. S. Dispensatory in 1854, twenty-one years after King had first isolated the resinoid. It was called by the Eclectics of that time vegetable calomel because it was used to replace calomel in their therapeutics.

In malarial country regions this agent will be more often indicated than in the city, as the habits and environment of city life are more apt to induce extremely opposite conditions to those which indicate Podophyllin.

Administration—The physiological action does not suggest to a great degree the uses which our experience has taught us to make of this remedy. The drastic cathartic influence we do not need, as it is too harsh in its active influence. From five to thirty drops of the tincture in a four ounce mixture, or from one two hundredths to the one-twentieth grain of podophyllin, will be found sufficiently active.

Specific Symptomatology—This agent is demanded in inactive conditions of the gastro-intestinal tract, indicated by a heavily coated tongue, which is thick, broad and pale, and the coat of dirty yellow color especially at the base, together with perhaps vertigo, complete anorexia, and dull heavy headache. The circulation is full and sluggish, and the abdominal viscera is in a plethoric condition.

Therapy—These conditions will suggest the use of the agent whatever the name of the existing disease. In acute inflammatory conditions, or in irritable conditions of the stomach or bowels, it is contra-indicated in active doses.

In the condition known as **biliousness,** with markedly inactive liver, sallow skin and conjunctiva, constipation, highly colored urine containing uric acid, urates in great excess, and bile, it is of value. In these cases the following formula, although unpleasant to the taste, will be of great service:

Tincture of podophyllum, tincture of leptandra, of each half a dram; tincture of capsicum twenty minims; syrup of liquorice, half an ounce; port wine sufficient to make four ounces. Give a teaspoonful every two or three hours.

If there is **enlargement** of the **liver,** with general indisposition, soreness over the liver and pain through the right side and under the right scapula, it is the remedy.

In inactivity of the liver characterized by **constipation,** the feces when passed being solid or hard and of a grayish or clay color, and floating upon water, with general indisposition, podophyllin may be given in doses of one-fiftieth of a grain every two or three hours. If there is a great sluggishness with obstinate constipation, one-tenth of a grain may be given for two or three doses, the smaller doses to follow. It is given in **jaundice** with its marked indications to excellent advantage. If given for its cathartic influence it should be combined with hyoscyamus or belladonna, or it may be given in conjunction with leptandra virginica.

Podophyllin, in from one-half to one grain doses repeated once or twice, and followed by half a pint of pure olive oil, is reasonably sure treatment in the removal of **gall stones.** The results may be painful, but the patient will have subsequent relief.

The agent in minute doses will permanently cure some conditions which cause **chronic constipation,** but if desired for this purpose, like cascara, it must at no time be given in full active doses. Locke advises a teaspoonful of a mixture of thirty grains of the second decimal trituration in a half glass of water to be given a child three times each day for constipation.

In minute doses it will stimulate intestinal secretion and peristaltic action in children, and overcome **dry stools,** and constipation and bloated bowels, with erratic colicy pains.

In the treatment of **hemorrhoids** accompanied with constipation from deficient peristalsis and general abdominal plethora, podophyllum is of direct service. It can be given in conjunction with collinsonia and the effects are marked from the first.

The writer has prescribed the tincture or fluid extract of podophyllum for several years as an **alterative.** If the plethoric conditions named as indicating it are present, it is much more active, and is always to be given in doses sufficiently small to avoid any irritating or cathartic effects. In **skin diseases** of childhood, such as cracked and fissured conditions of the skin of the face, or **eczema,** or persistent **pustular conditions,** it is of value.

It may be prescribed with most happy results with other alteratives in **scrofula** or **syphilis,** or in the eruptions which result from these disorders.

Younkin is authority for the use of this agent in one-sixth of a grain doses, with ten grains of the potassium bitartrate, given every two hours in

gonorrhœal epididymitis, of which it relieves the pains and abridges the inflammation. Other indicated remedies are, however, not to be overlooked. It may be given with confidence in this condition.

LEPTANDRA. LEPTANDRA VIRGINICA.

Synonyms—Veronica Virginica, Linne; Culver's Root.

CONSTITUENTS—Leptandrin, resin, saponin, tannin, mannite, gum, citric acid, volatile oil.

PREPARATIONS—Resin of Leptandra, Leptandrin. Dose, from one-fourth to one grain.

Extractum Leptandræ Fluidum, Fluid Extract of Leptandra. Dose, from twenty to sixty minims.

Specific Medicine Leptandra. Dose, from one to twenty minims.

Specific Symptomatology—Malaise from malarial influence, soreness on pressure in the right hypochondrium, with wide dullness on percussion, constipation, full abdominal tissues with inactive intestinal glands, torpor of the liver, anorexia, dull headache. Also in cases in which there are marked vertigo, cold extremities and cool skin, dull pain in the bowels, gloominess or mental despondency and depression, disinclination to work or even move, great lassitude.

Therapy—In **malarial conditions** no cathartic is more efficient than leptandra. It may be given in full doses, and there is no irritation from its action. It certainly increases the discharge of bile and stimulates and greatly improves the function of the liver.

In **ague** when quinine is given as an antiperiodic, if from one-fourth to one grain of leptandra be given with each dose in the intermission, the effects are much more marked and the influence is more permanent. It is demanded in **malarial fevers** of all kinds, and especially in remittent fever. It is given alone at the onset of the attack as a laxative and in the remission, in small doses in conjunction with the antiperiodic, proving a most valuable auxiliary to the treatment. As an addition to vegetable tonics when malarial conditions prevail, it improves the **tone** of the entire **gastro-intestinal canal** and increases the functional activity of the **glandular organs.** In some cases small doses in wine will produce excellent results.

In the treatment of **jaundice** it is a valuable auxiliary, and combined with the tonics here indicated its influence is most desirable. It clears the skin, produces **black alvine evacuation,** and assists in overcoming the entire train of symptoms.

Leptandra has no superior in a case of this character and must be used freely to be appreciated. It is certainly under-estimated.

IRIS. IRIS VERSICOLOR.

Synonym—Blue Flag.

CONSTITUENTS—Acrid resinous matter, tannin, gum, starch.

PREPARATIONS—Oleoresina Iridis, Oleoresin of Iris. Dose, one to five grains. Extractum Iridis Fluidum, Fluid Extract of Iris. Dose, five to sixty minims. Specific Medicine Iris. Dose, one-fourth to five minims.

Physiological Action—Iris Versicolor has a bitter, nauseous, and rather acrid taste, and in full doses is apt to cause emesis. Recent experiments have demonstrated that preparations of the fresh root or the oleo-resin possess active, purgative and diuretic qualities, and under its influence there are in-

creased secretion and elimination of bile, its cholagogue powers having been abundantly demonstrated. It also directly stimulates the entire glandular system—the lymphatics and the skin.

It promotes waste and elimination of effete material from the blood.

Specific Symptomatology—This agent will prove serviceable when the stools are clay-colored, the urine scanty and the skin inactive and jaundiced. In small doses it is indicated in irritable conditions of the mucous membranes of the digestive tract, with altered secretion. This condition is characterized by a neuralgic pain over one eye, or involving one side of the face, usually the right side; nausea or vomiting of an acid liquid, with burning and distress in the esophagus or stomach; gastralgia and gastrodynia, with vomiting or regurgitation of food, especially after the eating of fats or rich pastry; diarrhœa, with a burning sensation after the passage; cholera morbus, with violent pain around the umbilicus, or in the lower part of the abdomen, and watery diarrhœa with great depression.

Therapy—The oleo-resin has been very successfully employed in hepatic and intestinal disorders, and the consequent dropsy. Chronic jaundice, arising from duodenal catarrh and obstruction of the biliary ducts, should be treated with Iris. It is said that malarial jaundice (so-called) may be cured by this drug alone, and that it exerts a favorable influence in bilious remittent fevers and **chronic** ague. This agent is directly indicated in that condition of the stomach which induces **sick headache.** It not only ameliorates the attack, but assists in the removal of the cause and in breaking up the tendency to recurrence of the condition.

This agent is employed in the treatment of syphilitic and strumous affections. In the treatment of **syphilis** this agent is a very useful remedy in those cases in which the glandular organs are inactive. Here the effects of Iris are strikingly conspicuous from the first. It will be found an excellent auxiliary also to the influence of other well known alteratives. It has also been largely employed in the successful treatment of many affections of the skin. Kinnett recommends it strongly in **psoriasis.**

In the treatment of certain cases of **eczema** of a persistent chronic character, as well as of other pustular and open ulcerating or oozing skin diseases, this agent, in from five to ten drop doses every two or three hours, will be found most useful. It may be diluted and applied externally also. Prurigo, crustalactea and tinea yield readily to its influence at times.

It is a favorite remedy in the treatment of enlargement of the thyroid and other glandular affections. In recent cases of **goiter,** iris is used to good advantage. With many, if used in the form of a recent preparation, it is believed to be specific.

Dr. H. P. Whitford gave iris and hyoscyamus with a very small dose of podophyllin for **headaches** in the back part of the head.

Dr. Laws reports the use of iris in a bad case of **eczema** where the attacks lasted six months, each worse than the previous one. The disease would begin at the ankle, finally cover the entire body. The itching was intolerable. He used the remedy both internally and externally with excellent results. Dr. Kinnett confirms these statements.

Both have great confidence in it in the treatment of **goiter,** and in the treatment of **syphilis** where they do not expect to have to use the iodides with it. They push it to a mild cathartic effect so that it will keep the bowels free.

CHIONANTHUS. CHIONANTHUS VIRGINICA.

Synonym—Fringe Tree.

CONSTITUENTS—Chionanthin, saponin.

PREPARATION—Specific Medicine Chionanthus. Dose, ten to twenty minims.

Specific Symptomatology—The specific influence of the agent is exerted upon the liver. It is a remedy for hepatic engorgement; jaundice more or less pronounced; pain over the region of the gall bladder; pain in the epigastrium; pain radiating from the navel over the abdomen; soreness in the region of the liver, extending to the umbilicus; enlargement of the liver, determined by percussion; nausea; occasional vomiting; constipation with dry feces; temperature slightly above normal; skin usually yellow. This latter indication—a distinctly yellow skin—has always been my immediate suggestion for chionanthus and I have rarely been disappointed.

Therapy—It is a cholagogue cathartic in full doses, but its best influence is in **acute congestion** of the **liver** with imperfect discharge of bile, or **catarrh** of the common **bile duct.** We have no agent more certain in its action when indicated. The indications are acute jaundice evidenced by yellowness of the conjunctiva first, subsequently of the skin, with distress in the right hypochondrium, with cramp-like pains in the abdomen.

It overcomes catarrh, liquefies the bile, prevents the formation of calculi, and promotes the discharge of those formed. It is a remedy for chronic forms of liver disease, but its influence is not so plainly apparent, being much slower in its operations. It is not indicated in jaundice from permanent occlusion of the duct, from impacted gall stones or foreign and malignant growths.

Bilious headaches resulting from liver faults especially if irregular or periodical are cured by chionanthus.

The action of chionanthus in the treatment of **tobacco habit** must be studied. It has an influence in many cases.

It will quickly overcome the **jaundice** of **childhood** and infancy, and especially sure in the jaundice of the pregnant term. It is an excellent remedy for **malarial conditions** with atonicity of the stomach and intestinal apparatus. It can be given during the chill and fever, and it assists greatly in the relief of both. The agent may be pushed to the maximum dose and given with full confidence when indicated, as it is absolutely certain in its action. It is sometimes best given in infusion.

Dr. Fearn claimed to have early made the discovery of the use of chionanthus in reducing the quantity of **sugar in the urine.** Patients with no appetite, losing flesh, listless, increasingly anemic with a little sugar in the urine were those to whom he first gave it, ten drops four times a day. Later he used it in severe cases of **diabetes mellitus.** Dr. A. P. Hauss, of New Albany, Ind., has had many years' experience in the observation of this remedy in the treatment of this disease. He has much confidence in it.

Dr. Halbert of Nashville confirms this influence.

Probably in those cases in which this remedy is beneficial in diabetes there is functional disease of the liver.

Whether the remedy would be equally beneficial in cases in which no liver fault could be diagnosed, might be questionable, and yet Hauss says that he has never treated a case of diabetes mellitus along the lines indicated that has not yielded to this treatment. He prescribes from ten to fifteen drop doses of chionanthus, four times daily. If no febrile condition is present or if there is general atonicity, with nervous depression, he adds from one-half to one drop of nux vomica. He has the patient drink from one to two pints of hot water each morning, before breakfast, to which he adds a small teaspoonful of the sulphate of magnesium, or in preference one-half wine glass of French Lick Pluto water

in a pint of hot water. This treatment, with proper dietary, he claims, has a rapid effect upon the glycosuria, immediately reducing the specific gravity of the urine.

The agent is beneficial in chronic splenitis, pancreatic disease and disease of the other glandular organs; also in the incipient stages of nephritis. In the line of its symptomatology, it is an exceedingly satisfactory remedy. It influences the stomach in the process of digestion; it exerts a beneficial, stimulating effect upon the entire glandular apparatus.

Prof. Ralph Morrill gives the following as important in the application of this remedy: In the **obstruction** of the **bile ducts,** due to inflammation of the duodenum, this remedy is directly indicated. He gives it as an intestinal antiseptic in **typhoid fever.** He believes its influence is exercised by its stimulating effect upon the flow of the bile. He has had clinical evidence of its undoubted value in many difficulties of the gastro-intestinal tract, which are cured by this important influence. He combines it in some cases of **gastro-intestinal atony,** with nux vomica and podophyllum, in the following prescription: Nux vomica, fifteen drops; chionanthus, two and a half drams; podophyllum, one and a half drams; elixir of lactated pepsin, sufficient quantity to make four ounces. Of this give one dram three times a day.

In perverted functional action of the liver, resulting in the excretion of an abnormal quantity of **uric acid,** which interferes with the evolution of proper metabolism present in the formation of urea, and its products, it is a valuable remedy. It is thus of much importance in the treatment of **acute lithemia—toxemia,** from excess of urea or uric acid, and the rheumatic diathesis.

CHELIDONIUM. CHELIDONIUM MAJUS.

Synonyms—Great Celandine, Garden Celandine, Tetterwort.

CONSTITUENTS—A bitter principle, and the alkaloids chelidonine, sanguinarine, protopine and chelerythrine. It also contains chelidonic and chelidoninic acids and chlorophyll.

PREPARATIONS—Extractum Chelidonium; Extract of Chelidonium; Extractum Chelidonium fluidum, expressed juice of Chelidonium; succus Chelidonium. Dose, ten to twenty drops. Specific Medicine Chelidonium. Dose, from one-tenth to ten minims.

Physiological Action—Drastic cathartic and violent local irritant, alterative, diuretic, diaphoretic and expectorant.

This agent stimulates the chylopoietic system, favorably influencing all of those organs which are supplied by the solar plexus of the great sympathetic.

Specific Symptomatology—The conditions to which chelidonium are especially applicable are found in fully developed abdominal plethora, inefficient functional action of the glandular organs of the abdominal cavity, and imperfect, sluggish and deficient circulation of the tissues, glands and organs of this cavity.

This agent operates in harmony with leptandra, podophyllum, iris versicolor, chionanthus and sodium phosphate, in the three following important conditions: Diminished secretion of bile, evidenced by grayish, clay-colored, or very light yellow stools, which will usually float. There may be no evidences of absorption of bile into the blood—no jaundice; or there may be absorption of the bile and jaundice, with its whole train of symptoms, with dark green and fetid stools and colic; or there may be the above grayish,

clay-colored stools and jaundice, with bile in the urine, which is dark yellow or red, very acid, charged with an excess of uric acid crystals.

Therapy—Sluggishness of the **portal circulation.** Defective liver circulation, is the cause of a long train of remote manifestations, among which are slow pulse, frequent palpitations, a feeling of weight, stiffness and swellings of the hands, feet and limbs, cold extremities, pallid and doughy skin, local and general, œdema, dull pain or constant aching in the limbs and muscles, aching in the front head and occiput, vertigo, weariness, irritability, inactivity, irregularity of the bowels—constipation, followed by diarrhœa, erratic colicky pains, sallowness, jaundice and other disorders. Chelidonium is an excellent remedy in a case with these manifestations.

In disease of the spleen, it relieves congestion and reduces **splenic hypertrophy,** acting in harmony with chionanthus and grindelia squarrosa. Its action upon the pancreatic glands is satisfactory, relieving congestion and engorgement and irritation, and inducing a better circulation. It will be found an excellent remedy in combination with helonias in the treatment of **diabetes mellitus.**

This agent was used thirty years ago with eminent success in the treatment of **biliary calculi.** It is now in use for that purpose among many phyicians, who consider it superior to any other agent known in preventing their formation.

Its influence upon the functional activity of the liver induces a thinner and more profuse secretion of the bile, and it is thus useful in promoting the expulsion of gall stones. It is available also in **simple biliousness, hepatic congestion,** acute or sub-acute inflammation of the liver, **jaundice,** due to catarrhal conditions of the ducts, or when dropsy depends upon hepatic trouble. When **migraine** or **supracrbital neuralgia** depend upon hepatic difficulties this remedy is indicated.

A patient suffering from a headache which began in the occiput before rising in the morning; poor appetite; cold hands and feet; tongue large, thick, pasty, with a grayish white coat; skin of a dusky hue, was materially benefited by chelidonium, five drops of the fluid extract every two hours.

Some of the old writers believe that this agent is superior to arnica or hamamelis, as an external application to **bruises and sprains.** It prevents the development of local inflammation from traumatic causes.

The specific use externally, is in the application of the juice to **warts, corns** and **epitheliomata,** for which it has been widely used, and much evidence accumulated in its favor. In these conditions and in the treatment also of **urticaria, eczema** and itching eruptions, its careful application, persisted in, cures within a short time.

In the treatment of **cancer,** Denissenko directs that from twenty-two to seventy-five grains of the extract shall be taken internally, dissolved in distilled water or peppermint water, every day throughout the treatment. Into the substance of the tumor, as close as possible to the boundary between it and the healthy tissue, he throws a number of injections of from two to four drops of a mixture of equal weights of the extract, glycerine and distilled water, not exceeding a syringeful in all. If the tumor is ulcerated, he paints its surface twice a day with a mixture of one or two parts of the extract and one part of glycerine. The painting of the ulcerated surfaces gives rise to a light and transitory burning. In all instances, after the injections, especially after the first one, there was a burning pain at the site of the operation, the patient felt weak, there was a more or less severe chill, and then the temperature rose to between 100 and 102 degrees. These symptoms disappeared on the following day.

As a result of the treatment the sallow hue of the skin disappeared and softening of the tumor set in. After from three to five days there formed at the points of injection, fistulous tracts about which the softening process went on with special rapidity. Other investigators have not been as satisfied with its influence in cancers, but it is doubtless of value and deserves further observation. Iron, quinine and other supporting remedies are employed according to the indications.

POPULUS. POPULUS TREMULOIDES.

Synonyms—American poplar, White poplar, Quaking aspen.

CONSTITUENTS—The important constituents are populin and salicin, a resin and essential oil. The buds contain an acid resin.

PREPARATIONS—Powdered bark. Dose, one dram two or three times a day. Saturated tincture of the bark, from one-half to twenty drops. Populin, one-tenth of a grain.

Therapy—The older writers were enthusiastic concerning the tonic and antiperiodic properties of this drug. They claimed that it would replace quinine in the treatment of intermittency. It has never come into general use. A recent writer says that he soon learned that a strong infusion of the bark would cure those forms of **intermittent fever,** of a chronic or irregular character. At the same time the pathological lesions of the liver, spleen and kidneys which accompanied the chronic disorder, would gradually disappear with the ultimate complete restoration of their physiological functions. These results were accomplished without the unpleasant effects that occur after the protracted use of quinine. This writer, passing through an epidemic of severe malarial disease, found that **malarial hematuria** was very common and very hard to cure. He put his patients upon the infusion of cottonwood bark, and found the symptoms to yield rapidly, not only the hemorrhage, but the **icterus,** and other conditions depending upon disarrangement of the liver and stomach. He found that results obtained by this remedy were more permanent than those obtained by the use of quinine in some cases.

Protracted fevers, with debility and emaciation, are greatly benefited by the use of this remedy, and the conditions remaining in early convalescence are quickly overcome. The agent is a tonic to the kidneys, increasing their functional activity, relieving **vesical** and **urethral tenesmus.** It will also overcome **prostatic hypertrophy** in some cases, and is available in uterine congestion. It is of service in impaired digestion, either gastric or intestinal, chronic diarrhœa, with general debility. Other specific remedies may here be given in conjunction with it. Dr. Alter says that it corrects errors of physiological metabolism, induced by malarial toxemia. It is a most powerful antiperiodic. It will not cause deafness. It will not cause abortion, but on the contrary will prevent **abortion,** which is threatened by the presence of malarial conditions. It shows its inflence best where there is **general debility,** very marked, with impairment of the nutritive functions of the body.

Dr. Fearn says, concerning populus, this remedy is a powerful stimulant, tonic, and diuretic. And this statement fixes its place in treatment, in the hands of the true specific medicationist. When we use this remedy as a tonic or diuretic, we should never use it in cases accompanied with irritation whether it be of the stomach, bowels, uterus, bladder, or prostate. In atonic conditions of all these different organs where we desire to stimulate and tone up the organ, populus is a grand remedy. When first I began to use this Sampson among remedies of its class, I had to use decoctions of the

bark—it was a nasty, bitter dose. How much better to use the specific medicine in from five to twenty drop doses.

Dr. Howe reported a case where a soldier had chronic diarrhœa which may have been caused by malaria. Howe put him on populus for a time and made a complete cure. If a little of the poplar bark be put into a cup and covered with boiling water, this will make a strong enough infusion for many conditions, taking only a teaspoonful or two at a time.

Dr. Alter of Arkansas has given it for many years for **swamp fever.** He also uses it in the **irregularities of women.** He thinks it acts somewhat as hydrastis in promoting a physiological action of all organs, and increasing the vital force within the system. It may be well given in conjunction with hydrastis. Dr. Alter used it very widely whether it was strictly indicated or not, and became convinced of its active therapeutic property.

BOLETUS. BOLETUS LARICIS.

Synonyms—White Agaric (Agaricus Albus), Larch Agaric, Purging Agaric, Fungus Agaric, Spunk.

CONSTITUENTS—There is found an excess of resin, agaric acid, agaricol, cholesterin, and agaricin.

PREPARATIONS—The tincture, dose from one to five drops. Agaracin, from one-sixteenth to one-fourth of a grain. Specific Boletus, from one-fourth of a drop to five drops.

Specific Symptomatology—Chilliness at regular intervals, followed by marked fever. Alternate chills and flushes of heat, with severe aching in the back, colliquative sweats, night sweats of phthisis.

Therapy—The remedy is applicable to all conditions of **malarial origin.** It is especially useful in those localities where malaria and the results of malaria prevail. The symptoms are languor, dullness, and general malaise, long continued, with the usual results, such as disordered digestion, lack of appetite, heavily coated tongue, pale mucous membranes. Usually there is a bitter taste in the mouth, often persistent, with constipation, and a dull, **persistent headache.** The temperature will be quite erratic. In some cases there is a little fever always present. In others, there is a marked intermission. The intermission, or remission, may be irregular, not only in time, but in amount.

The agent is astringent apparently, and overcomes all excessive secretion. The broncho-pulmonary secretion of incipient **phthisis,** or the **night sweats** of the protracted cases, are benefited by this reuedy. It also controls the rapid circulation and seems to exercise a favorable influence over the **hectic fever.** It also favorably influences the diarrhœa of this disease. It seems to allay the thirst and control the cough with many of these patients.

It will **arrest the flow of milk,** in the nursing woman, and will correct in many cases the tendency to **passive hemorrhages.** Some claim that it will check arterial hemorrhage, making the application of a ligature unnecessary.

Dr. Henderson uses boletus as a treatment for **alcoholism.** Those who are constantly under the influence of alcohol, trembling, weak with cold skin, he gives one or two drops of the specific medicine every two hours.

Agaricus acts upon the nerves of the skin, controlling involuntary twitching of the face and eyes. It is effective in night sweats and prostration. While **agaracin,** or **agaric acid,** is most commonly used in consumption,

and the observations have been made from its influence, it is doubtful if it is superior to the specific boletus if the latter remedy is given in proper doses, and persisted in.

Fly Agaric.

This agent is closely allied to the above in its physical characteristics. Scudder advised its use, but it has never been generally adopted.

Physiological Action—From this species a common alkaloid has been obtained, Muscarine, which has been used an an antagonist to atropine. It produces ptyalism, vomiting, depression of the circulation, general muscular weakness, paralysis, difficult breathing, followed by death in extreme cases. The pupils contract to a pin point, and subsequently dilate. It produces tetanic contraction of the spleen, bladder and intestines, with violent peristaltic movement.

Therapy—Muscarine is used in the **night sweats** of **phthisis,** in a manner similar to the agaricin. Also in **diabetes insipidus.** Scudder gave as specific indications for the fly agaric, involuntary twitchings of the face, forehead and eyes, pressing pain in the occiput, with a lack of muscular control. It seems indicated in the **typhoid** conditions where there is tremor and great restlessness, with a desire to get out of bed.

BOLDUS. PEUMUS BOLDUS.

Synonyms—Boldo. Boldu (Boldoa Fragrans, Gay).

CONSTITUENTS—The plant contains an essential oil, a volatile oil, and an alkaloid, boldine. A narcotic alkaloid called boldoglucin.

PREPARATIONS—A tincture is prepared. Dose, five to twenty drops. Boldine is given in doses of from one to five grains. The essential oil is given in capsules in three to five drops. Fluid extract, from ten to thirty minims.

Physiological Action—Dr. Holmes, from Florida, has written a very excellent article for the National Medical Association, in which he says the agent, in its influence upon the liver and kidneys, relieves **toxemia,** or **autoinfection,** which has resulted from retention of the bile. It favors the resumption of functional activity of the liver, when stagnant, without increasing the peristalic action of the bowels, as most liver remedies do. thus acting kindly upon the general intestinal canal. At the same time, it increases the functional power of the kidneys, so that their influence in carrying off morbific material, the products of retrograde metamorphosis, greatly facilitates the progress of recovery.

Therapy—The agent has not been in general use. The physicians of the south extol its virtues in the treatment of **liver diseases.** It is of excellent service in the treatment of chronic intestinal trouble where there is congestion and general inactivity of the liver. Present with this condition there may be painful digestion resulting from gastric debility, where there is also anemia with a general sallowness of the skin.

In the first case in which Dr. Holmes used the remedy, there was pain and tenderness over the right hypochondriac region. The skin was yellow, urine scanty, dark colored, almost coffee-ground color, the pain extended into the epigastric region. The tongue was heavily coated in the center, the tip and edges red, the pulse was between ninety and a hundred, and temperature 100. The patient dull, sleepy, indisposed to exercise, and the pain resembled that of gall stone. Pain, nausea and vomiting were present.

Chionanthus, chelodonium, iris, podophyllum, leptandra, euonymus, were all used and failed. The symptoms increased till the patient had a pulse of

one hundred and thirty and a temperature of one hundred and five, and was reduced to a skeleton. At the suggestion of a man from Chile, S. A., he gave this remedy in sixty-drop doses of the fluid extract, every four hours. The effect of the remedy was immediate, and the cure perfect.

The doctor reports four or five other cases where these symptoms were present with some variation, all cured by this remedy promptly, after our usual specifics had failed. The agent certainly demands careful investigation.

GRINDELIA SQUARROSA.

Grindelia squarrosa is closely allied to the grindelia robusta, but is in general a less leafy and bushy plant, and is smaller. Some authors are not satisfied that there is sufficient difference between them to make them distinct plants. In the West they are not recognized as the same.

Therapy—Dr. Webster is authority for the statement that grindelia squarrosa is specific in its **anti-malarial** properties. He is very positive concerning its influence upon **headaches,** and especially those of malarial origin. Headache present where there are masked intermittent symptoms, headache accompanied with dizziness, and some nausea, where the subject walks with the sensation that he is going to stagger. It seems as though his equilibrium were uncertain, or where there is mild staggering and irregular gait, where the head feels light and dizzy all the time. In this form, grindelia squarrosa is a positive and specific remedy, decided and satisfactory in its action.

Another form of headache which this agent will cure is one that seems to follow, and depend upon **slow autointoxication.** It is persistent, day after day, and there is **dullness, drowsiness,** and **dizziness.** There is apt to be torpor of the liver and spleen in these cases. There is lassitude, and the patient tires easily. A dull headache is present when he awakes in the morning, and with some exacerabations continues all day. This form is quickly cured with this remedy. A tincture made by covering the fresh plant with ninety-eight per cent alcohol is required to relieve this headache. Give from ten to fifteen drops of this tincture every two or three hours.

As a remedy for chronic **enlargement** of the **spleen,** and for the symptoms present in that condition, Webster claims that the agent is superior to polymnia. Where there are persistent attacks of malaria, and where the system needs a permanent tonic, this agent is of great importance. It promotes the appetite, increases the functional activity of both the liver and spleen, in a normal and very satisfactory manner, and in longstanding cases, the periodicity of all the symptoms, whether of the fever or chill, is overcome by this remedy in a manner superior either to quinine or arsenic. The remedy is best obtained from low, swampy, marshy ground. That which is found in Colusa County, Cal., where Dr. Bundy collected his specimens, is found to be the best.

MAGNOLIA. MAGNOLIA GLAUCA.

Synonyms—Beaver Tree, Sweet Magnolia, White Bay, Swamp Sassafras, White or Red Laurel.

PREPARATIONS—The powdered bark. Dose, from one-half to one dram, five or six times a day. Infusion, wine-glassful. Tincture from one-half to two drams.

A SUMMARY AND COMPARISON OF THE LIVER REMEDIES.

ACTION AND INDICATIONS	PODOPHYLLUM	LEPTANDRA	IRIS	CHIONANTHUS	CHELIDONIUM
ACTION ON THE LIVER	Active hepatic stimulant, inducing some irritation; causes free flow of bile. Stimulates the portal circulation, influences the entire glandular system. Indicated for enlargement with inactivity; tenderness on pressure, sharp, quick cutting pain under the scapula.	Tonic; mild but positive stimulant; increases liver secretions without irritation; valuable in chronic malarial disorders, which induce hepatic inactivity; valuable in acute and chronic hepatitis with atonicity. Relieves hepatic congestion.	Mild efficient stimulant in general functional inactivity; valuable in chronic disease where dropsy results from liver disorder; valuable in jaundice from chronic hepatic hyperemia. Valuable in skin disorder depending on hepatic inactivity.	Direct stimulant in hepatic congestion with hypertrophy, especially when the portal circulation is engorged; liquefies the bile; prevents formation of calculi. Indicated by fullness, weight and dull steady pain in the liver; especially indicated by severe acute pain from obstruction of the gall ducts.	Acts mildly upon the liver, especially when the spleen is involved; overcomes biliary catarrh and jaundice from obstruction, indicated by throbbing tensive pain in the right side, which extends backward beneath the right scapula; reduces cough which depends upon hepatic irritation.
ON STOMACH	Produces vomiting in overdoses; is a gastric irritant; stimulates glandular action, in atonicity; valuable for this influence, in small doses.	Mild stomach tonic; restores appetite; improves digestion; corrects persistent nausea when due to atonicity.	Induces no irritation, rather soothes irritation; controls mild vomiting and regurgitation, especially if of acid fluids; inhibits secretion of acids; beneficial in hyperchlorhydria, and in the consequent sick headache.	In overdoses, induces nausea and vomiting, sometimes violent; in proper doses, a mild, soothing stomach tonic.	A mild general stomach tonic, improving digestion. No specific action on the stomach.
ON INTESTINAL TRACT	Emetocathartic; induces griping and pain; in small doses improves intestinal glandular action; indicated in chronic constipation, with hard clay colored, dry stools. Bowels loaded and bloated; deficient peristalsis; impaction; atonicity with mild intestinal colic; abdominal plethora.	Induces mild cathartic action without debility; a sure tonic to intestinal glandular action, improving the function of all intestinal glands; acts freely upon the small intestine; in proper doses produces no irritation.	Increases intestinal glandular action; soothes intestinal irritation; relieves colic in the region of the umbilicus; relieves hyperperistalsis; valuable in duodenal catarrh, with constipation and clay colored stools. Is indicated in splenic enlargement.	Produces but little if any intestinal irritation, influences the normal functional action of the mucous glands of the intestinal tract. Indicated in constipation with hard stools; some colic, or when the feces are grayish or clay colored, and will float upon water; in choleraic diarrhea with green discharges, and in jaundice.	Indicated in intestinal disorders with marked atonicity, where there is a tendency to passive venous engorgement. Beneficial in mild constipation, with chronic glandular inactivity, especially if there be edema of the ankles.
TONGUE INDICATIONS	Tongue heavily coated, uniformly yellowish, or yellow center, a thick dirty coat, especially at the base; tongue pale and flabby.	Tongue pale, coated uniformly white, or grayish-white and moist; bitter taste in the mouth.	Is indicated when the tongue is narrow, pointed, somewhat red, with thin edges, especially if coated in the center with a yellowish coat; increases salivary secretion.	Tongue flabby, broad, coated white or yellowish, edges indented.	Tongue flabby, full and broad, pale, irregularly coated, mucous membrane pale, free mucous secretion.
BRAIN INDICATIONS	Dull headache; vertigo; uncertain gait; vision faults; patient dull, sluggish, listless, inactive.	Frontal headache from disordered stomach; general dull headache with confusion of ideas; mental depression; gloominess; foreboding; lassitude; some restlessness; and sleeplessness.	Exceedingly valuable in sick headache from gastric acidity; relieves vertigo with above indications.	Patient dull or fretful, inclined to sleep often, especially after eating; sleep heavy and not restful, with troubled dreams.	Indicated in persistent fulness of the cerebral circulation from liver faults; in bilious headaches; migraine; and headaches depending upon gastric disorders, also in supra-orbital neuralgia.
CIRCULATORY INDICATIONS	Pulse full, large, sluggish and oppressed; capillary circulation imperfect; fulness of superficial veins; extremities cool; oppressed heart action, occasionally irregular or intermittent pulse.	Improves circulation in the mucous membranes; relieves palpitation and irregular heart action, when due to stomach and liver disorders.	Relieves functional heart irregularity, and palpitation from gastric and intestinal disorders, or if they depend upon liver faults; valuable in heart disorders, accompanying goitre or exophthalmic goitre; relieves bilious headaches.	Acts directly upon the venous circulation; indicated when there is slight excess of temperature for some days, with hectic flushes, and mild jaundice.	Impeded capillary circulation of the mucous membranes, depending upon general plethora.
SKIN INDICATIONS	Skin of a dingy hue, dull, soggy, yellowish, flabby, cool; inclined to eruptions—furuncular, eczematous, or pustular; conjunctivæ dingy, yellowish; eyes dull.	Indicated when the skin is dry and hot, but when the extremities are cool or cold. Skin yellowish or dingy, but warm; conjunctivæ injected and yellowish.	Stimulates elimination; improves secretion, inproves rough, greasy skin, or abnormal pigmentation; relieves skin troubles depending on gastrointestinal disorders.	Skin dingy, yellowish, but warm, with cool extremities; capillary circulation of the skin irregular; conjunctivæ dingy.	Skin pallid, or sallow, flabby, cool, occasionally tinged yellowish green; valuable in skin disorders depending on imperfect elimination.

Therapy—In the treatment of **intermittent fevers,** after the active stage has passed, magnolia has been used. It is not an agent for inflammatory conditions, but restores the tone of the gastro-intestinal tract, which has been lost through the persistence of prostrating fevers, or active malarial conditions. In **chronic rheumatism,** accompanied with prostration, and loss of appetite, with **mal assimilation,** the remedy may be used to advantage. It is not an active remedy, but one that has a few enthusiastic advocates.

MERCURY.

Synonyms—Hydrargyrum, Quicksilver.

Mercuric Chloride.

Synonyms—Hydrargyri Chloridum Corrosivum, Corrosive Mercuric Chloride, Corrosive Chloride of Mercury, Corrosive Sublimate, Bichloride of Mercury, Perchloride of Mercury.

OCCURRENCE—Prepared by the sublimation and condensation of a mixture of manganese dioxide, mercuric sulphate and sodium chlorate.

DESCRIPTION—A crystalline body, colorless, odorless, with an acrid persistent metallic taste; soluble in sixteen parts of cold water, in two parts of boiling water, and in three parts of alcohol.

Dose, from the one-five-hundredth to the one-eighth of a grain.

Mercurous Chloride.

Synonyms—Hydrargyri Chloridum Mite, Mild Chloride of Mercury, Calomel.

OCCURRENCE—This is obtained from subliming the product of a trituration of the mercuric sulphate, mercury and sodium chloride in boiling water.

DESCRIPTION—An impalpable white powder, odorless, tasteless, and permanent, insoluble in water and alcohol and entirely volatile. Dose, from the one-sixtieth of a grain to fifteen grains.

Mercuric Iodide.

Synonyms—Hydrargyri Iodidum Rubrum, Red Mercuric Iodide, Bin-Iodide of Mercury, Red Iodide of Mercury.

This salt precipitates from solutions of the corrosive mercuric chloride and potassium iodide. It is without odor or taste, permanent and comparatively insoluble in water; soluble in 130 parts of alcohol. Dose, from the one-one-hundredth to the one-eighth of a grain.

Mercuric Oxide.

Synonyms—Hydrargyri Oxidum Rubrum, Red Oxide of Mercury, Red Precipitate.

The substance results from dissolving mercury in dilute nitric acid, the product being triturated with mercury. Dose, from one-one-hundredth to one-tenth of a grain.

Mercurial Ointment.

Synonyms—Blue Ointment, Unguentum Hydrargyri.

OCCURRENCE—This is formed of mercury, oleate of mercury, suet and lard rubbed thoroughly together.

Mercurous Salicylate.

Synonym—Salicylate of Mercury.
Dose, from the one-thirty-second to the one-eighth of a grain.

Mercury With Chalk.

Synonym—Hydrargyrum cum Creta.
OCCURRENCE—This substance is prepared by triturating prepared chalk and mercury together, and adding clarified honey and water.
DESCRIPTION—It is a gray, moist powder, without odor and should be free from grittiness. Dose, from two to ten grains.

Mass of Mercury.

Synonyms—Massa Hydrargyri, Pilula Hydrargyri, Blue Mass, Blue Pill.
OCCURRENCE—This is composed of mercury, powdered licorice, marshmallow and glycerine. Dose, from one-fourth of a grain to five grains.

Physiological Action—Notwithstanding the very general use of **Mercury** for more than two centuries, its action is not yet clearly defined and its use is entirely empirical. It is classed as a universal stimulant, and has been used perhaps in every known disease. All authorities now admit that it has been a greatly over-used remedy.

Taken into the system in the milder forms it produces fetid breath, spongy gums and tender, "sore" teeth. The gums bleed readily and the flow of saliva is greatly increased, finally to an inordinate quantity. The inhalation of the vapor of mercury produces the above symptoms rapidly and in a marked manner. These are conspicuous in workers with the metal in the arts in which it is employed. It affects all the special senses in a marked and serious manner; the teeth loosen and drop out, the patient becomes feeble, debilitated, with general physical and mental weakness; the corpuscular elements of the blood are destroyed, this fluid becoming greatly impoverished. The bones, especially the maxillaries, are subject to necrosis, and there is a general disintegration of tissue.

There are muscular trembling, paralysis agitans, chorea, and in some cases locomotor ataxia. The bichloride of mercury—corrosive sublimate—is violently poisonous and produces the most violent gastro-intestinal irritation, vomiting and purging of mucus and blood with the intestinal contents, collapse, with all of its phenomena and death.

In the consideration of mercury, and its compounds as therapeutic agents, the Eclectic school has in the past taken a unique position. The promiscuous, unscientific and excessive use of the agent in the latter part of the last and the early part of the present century, for any and every condition, with the dire results that occurred from such indiscriminate use, caused our earlier investigators to assume a position at the opposite extreme, and to declare that its deleterious influences greatly overbalanced any possible good that could result from its use and they decided to *exclude it entirely* from the list of medical agents, a course adopted in the matter of venesection. With this complete ostracism, they at once set about seeking for vegetable and other remedies to take the place of these agents, and so well have they succeeded that many of our physicians, eminently successful in practice, have never given a dose of mercury in any form or never opened a vein.

We have so thoroughly replaced mercury in the treatment of syphilis, that we expect even in the "saturated" cases to remove every trace of the disease in a year, and in cases taken at the onset, we expect only mild mani-

festations if any at all. In the experience of fifty years, in the practice of nearly ten thousand active vigilant practitioners, these results are constantly confirmed, and ninety-five per cent of our physicians do not know from cases developed in their own practice, as the fully developed cases have been brought under their observation, what the developing characteristics of bad cases are. Our physicians know but little of the constitutional effects of mercury, and have had opportunities of treating mercurial conditions, only as the deeply seated cases have come to them for treatment, and not as the results of their own use of the agent. The advantages of our method of treatment are that the patient quickly regains his full tone, is not kept from business, and usually after three or four months' treatment, he is with difficulty persuaded to continue the treatment, as he considers himself cured.

In its influence as a liver stimulant and as a cholagogue cathartic, mercury is now superseded to a great extent in all schools by agents more easily managed, and of more rapid and perfect elimination. For no condition is it given in such excessive doses, and by far the larger part of the profession who use it, use it in minute or fractional doses.

The antiseptic properties of the bi-chloride of mercury are generally acknowledged, and this agent as a germ destroyer is in constant use in surgery.

In the treatment of intestinal disorders and as a liver remedy, mercury with us is almost entirely replaced by such agents as podophyllum, leptandra virginica, iris versicolor, chelidonium and sodium phosphate. In the treatment of syphilis our most potent remedy is echinacea. The other well known vegetable alteratives are used in various combinations with iodide of potassium. Other specific conditions appearing during the course of the disease are promptly met with specific remedies.

Therapy—In a systematic consideration of the conditions under which mercury is now used in medicine, they are found to be capable of division into three classes: First, the use of the agent as a purgative and liver stimulant. Second, its use in the treatment of syphilis. Third, its use as an antiseptic and germicide. A fourth class has been considered, that of an antiphlogistic, but this influence is exercised by virtue of its antiseptic properties.

If the inflammation abates and the temperature falls after its use in typhoid fever and in diphtheria, it is because of the destruction of the bacillus in each case. This statement, however, is open to question in its application to all inflammatory conditions.

In the treatment of **inactivity** of the **liver,** and of the intestinal glands and intestinal obstructions, calomel has been long in use. In the past, calomel and blue mass were given in large doses for these conditions, but their use is now superseded by milder agents and is discouraged by almost the entire profession. Large doses of these agents were given, and then the bowel was cleared with large doses of salts or other alkaline purgatives. One of the most pernicious uses of these agents, which is still countenanced in certain localities, is their use in the forming stage of typhoid to produce violent evacuation of the bowels, the avowed object being to clear the canal of disease germs. The theory is fallacious in the extreme, and the results have been most serious in many cases which the writer has observed. In cases where so used the fever is apt to run from five to seven weeks. In such cases an absolutely non-irritating laxative only should be used which should be followed by a thorough colonic flushing by an antiseptic solution. The bichloride in dilute solution can be used to good advantage, but one of peroxide of hydrogen is preferable and devoid of danger. The internal use of the one-sixtieth of a grain of the corrosive chloride afterwards three or four

times daily will keep up the effects, but the peroxide or a vegetable antiseptic, will as effectually preserve asepis with no danger.

In the treatment of **syphilis,** this agent or its salts are considered by the old school to be specific. It is a matter of surprise that so much confidence is placed in it, to the exclusion of all other measures, when every writer narrates so long a train of dire results occurring from even its careful use. The time advised for its continuance is from two to five years, and measures are usually suggested for the treatment of its untoward effects, and for the treatment of the extreme debility in which the patient is left. A method entirely devoid of untoward effects, and completely successful in six months, in the worst cases in one year, that increases the vital tone of the patient from the first and leaves him in vigorous health, is much preferable and will ultimately receive general adoption.

In the treatment of syphilis blue mass and calomel are given internally; but the agent most popular, and used most persistently is probably the protiodide of mercury. The bichloride is advised in this disease hypodermically, in doses of one-twelfth to one-sixth of a grain.

Inunctions of mercury are made use of in all sanitariums and very generally in private practice. These are made of the oleate or the common ointment, and are applied in the axilla, or in the groins or over the abdomen.

Fumigations or inhalations of the vapor of calomel are also administered is the treatment of syphilis, a method that has been received with more or less general favor, but which must be used with caution.

Inhalations of the vapor of mercury are administered in the treatment of **membranous croup** and **diphtheria,** and if any internal use of the agent be considered rational, this method certainly could be so considered.

As **antiseptics** the bichloride and the bin-iodide of mercury are in common use. The argument of quickness of action and thoroughness is applicable to both, but the bichloride is in most common use. The strength of the solutions vary from one part in one thousand of water to one part in five thousand. Of the bin-iodide one part in four thousand to one part in twenty thousand of water is sufficient. The latter has the virtues of the former, and is less liable to produce poisonous effects because of the large quantity of water used.

The bichloride of mercury is less used as an antiseptic in surgical cases, than formerly.

It is considered a potent germicide in those cases in which it can be safely used. It will coagulate albumen and form with that substance inert compounds. The addition of a small quantity of a sodium chloride solution to the mercuric chloride solution will prevent such a decomposition. It is most commonly used upon the skin, to render it aseptic in preparation for surgical operation. It is used in the strength of one part to five hundred where a small surface only is to be dressed or where it is to be applied to the unbroken skin; where extensive use is to be made on open surfaces, from one part in five thousand, to one part in two thousand of water may be used. In some cases it will produce a characteristic mercurial dermatitis, some individuals being especially sensitive to its irritating influence. It is not used upon surgical instruments in any strength because of its corrosive action. It may be used as a gargle for the throat and mouth, and to wash putrid abscess cavities, as well as the vagina and bladder.

The bichloride in doses of from one-sixtieth to one-thirtieth of a grain every two hours has been used successfully in malignant **sore** throat and **diphtheria.** The patches are soon removed and the fever abates. We have so many other agents of equal efficiency that have no depressing influence upon the system that our practitioners seldom if ever use it for that purpose.

It is also used as an **intestinal antiseptic** in **typhoid** and other conditions of this character, as has been previously stated.

Triturated minutely with sugar of milk, the corrosive chloride is efficacious in **cholera infantum** with watery discharges and green stools. The one five hundredth of a grain is a sufficient dose. It is especially indicated where the choleric character is distinctly pronounced. It is similar in its action to arsenite of copper.

SODIUM PHOSPHATE.

Formula—Na_2 $H(PO_4)$.

Dose, from ten to one hundred grains.

Physiological Action—If the sodium phosphate, in from one dram to one and one-half dram doses, be taken in cold water before breakfast, it produces a full, satisfactory and painless bowel movement, neutralizes excessive gastric acidity, and promotes a sense of well-being. Its regular use overcomes many cases of chronic constipation due to inactivity of the liver.

It improves the tone and greatly increases the functional activity of the liver, and stimulates the functional activity of the glandular organs concerned in digestion and food appropriation. It is an excellent eliminative if given in doses of one-half dram three or four times daily. There is no cathartic effect, but its stimulant effects are maintained and an admirable general tonic influence induced. It is an actual brain and nerve food of rare value, a greatly underestimated remedy. To children it is given in doses of from three to ten grains in some convenient menstruum, the dose repeated every two hours. It may be given with the food of infants or dissolved in milk.

Specific Symptomatology—The Phosphate of Sodium in certain liver disorders of infancy is specific. The specific conditions are white pasty stools, often hard, sometimes spongy, so light in weight that they will sometimes float on water. This indication is present when there is a deficiency of the biliary secretion.

Therapy—The group of symptoms which this remedy will almost invariably cure are the following: **general inanition** and **malaise,** paleness of the mucous membranes, and almost complete **loss of appetite.**

The child cries if laid on its back, or whenever moved, because of **soreness** of the **muscles,** is dull, inclined to sleep most of the time, always irritable, or often restless during the night, not sleeping long at a time. The temperature is sometimes less than normal, but often there is a **variable temperature,** and sometimes there is a remittent fever with morning and evening exacerbations or an intermittent fever and usually a slight rise in temperature.

In all cases there is a **deficiency** of the **red blood corpuscles,** and gradual, sometimes rapid, emaciation; there is an excess of phosphates in the urine, because the phosphates of the system, which should supply the nutrition of the osseous structures, are not performing that function, but are being excreted as a waste product.

The symptoms above described suggest very many remedies or combinations of remedies, but the author has often dispensed with every other remedy, however strongly suggested, and depended upon the Phosphate of Sodium alone, and has seen the patient improve from the first. These symptoms are the precursors of disease of the **bones—caries, necrosis, rachitis,** in fact the above description accurately describes the earlier symptoms of rickets, which may be often prevented by the early and persistent use of this remedy.

Co-Operatives—It acts in harmony with cholagogue cathartics, with podophyllum, leptandrin, chionanthus and iris versicolor. In the conditions in which these agents are suggested, this sodium salt is sometimes of unmistakeable service.

CHAPTER III.

Agents Used as Mild Liver Stimulants.

TARAXACUM.	POLYMNIA.	EUONYMUS.
CEANOTHUS.	JUGLANS CINEREA.	SAPIUM SALICIFOLIUM.

TARAXACUM.

Synonym—Dandelion.

Part Employed—The root.

CONSTITUENTS—Taraxacin, taraxacerin, resin, inulin, pectin.

PREPARATIONS—Extractum Taraxaci, Extact of Taraxacum. Dose, from five to thirty grains.

Extractum Taraxaci Fluidum, Fluid Extract of Taraxacum. Dose, from one to four drams.

Specific Medicine Taraxacum. Dose, from five to sixty minims.

Physiological Action—This agent acts mildly upon the liver as a cholagogue, and in consequence its laxative influence is mild. It stimulates the flow of bile into the duodenum, and encourages the eliminative changes carried on by the liver. It encourages the proper elaboration and elimination of urea, and the excretion of uric acid.

Therapy—It is valuable in combination with other remedies of similar action, in **chronic jaundice,** in conditions attributable to **auto-intoxication, in rheumatism** and in **blood disorders,** as an alterative. It is especially an alterative for **chronic eruptions,** and unhealthy conditions of the skin.

It will stimulate the stomach, and is useful in chronic **catarrhal gastritis** with perversion of nutrition. In **aphthous ulcerations** of the mouth it is useful.

CEANOTHUS. CEANOTHUS AMERICANUS.

Synonyms—Red Root, New Jersey Tea.

PREPARATIONS—Extractum Ceanothi Fluidum, Fluid Extract of Ceanothus. Dose, from one-fourth to one dram.

Specific Medicine Ceanothus. Dose, from one-half minim to five minims every two to four hours.

Physiological Action—Astringent, stimulant tonic to mucous surfaces, and expectorant. It is to a certain extent mildly antiseptic. It is an alterative of much power in its influence over the portal circulation.

Specific Symptomatology—It has a specific influence upon the portal circle, influencing the circulation. In lymphatic patients, with sluggish circulation and inactivity of the liver of a chronic nature, with doughy-sallow skin, puffy and expressionless face, pain in the liver or spleen with hypertrophy of either or both organs, and constipation, it has a direct and satisfactory influence, especially if the conditions are of malarial origin.

Therapy—It overcomes indigestion and malassimilation under these circumstances, by its influence upon the portal circulation, and is thus a stomach remedy of much value.

It is not so direct a remedy in **acute inflammations** of the **liver** and spleen. When the above specific indications are present as a complication of any chronic condition, or with **syphilis** or **scrofula** or in general glandular disarrangements, the agent is indicated. Bronchitis, chronic pneumonitis and asthma are found present with the above general symptoms. Ovarian and uterine irregularities with such conditions will also be benefited by its use.

POLYMNIA. POLYMNIA UVEDALIA.

Synonyms—Bearsfoot, leaf-cup, yellow leaf-cup.

PREPARATIONS—Extractum Uvedaliæ Fluidum, Fluid Extract Uvedalia; not miscible with water. Dose, three to fifteen drops every three hours, gradually increased.

Specific Medicine Uvedalia. Dose, two to ten drops.

Physiological Action—Given in large doses polymnia acts as an emeto-cathartic, producing painful evacuations, with severe emesis, and if pushed produces gastro-intestinal inflammation, dizziness, convulsions and even death.

Specific Symptomatology—It is indicated in conditions of inactivity of the organs, with passive fullness of the circulation of the parts, or of surrounding tissues which may be of a sodden inelastic character. Inactive engorgements, or stagnations of the circulation, are general conditions pointing to the use of this agent. Scudder gave as its indications full, flabby, sallow tissues, impaired circulation, glandular enlargement and other impaired functions from lack of tone.

Therapy—The older writers of our school lauded this remedy as of much importance in **rheumatism.** Others spoke of it favorably in the same class of cases in which phytolacca is used. Dr. Pruitt used it in the form of an ointment, in **inflammation** of the **mammary glands,** and other glandular inflammations, especially if abscesses had formed. The specific influence of the remedy, however, as agreed by all writers, is upon **enlargement** of the **spleen.** This gland is influenced in chronic malarial conditions, in scrofulous diseases and in tubercular difficulties. It is upon the malarial form of splenic enlargement that it acts to the best advantage.

Therapy—It should be used freely internally, and externally the hot infusion must be applied. Other marked indications may be met with selected remedies.

It is indicated also in the **glandular** and structural **hypertrophy** of other organs. A chronically enlarged inactive engorged liver, with tenderness on pressure, is quickly and satisfactorily cured by it. A **womb enlarged** from **subinvolution** or other hypertrophy, yields satisfactorily to its influence.

It has been used in **mastitis** or "caked breast" so-called, to excellent advantage, but its prolonged use may suppress the secretion of milk. It is an active stimulant to the removal of waste in all the conditions mentioned. The removal of chronic inflammatory deposits stimulates the capillary circulation to better action and relieves the aching pain and soreness common to such conditions.

It has been praised most highly in the treatment of **rheumatism, lumbago, myalgia,** and other painful conditions dependent upon the imperfect removal of the products of retrograde metamorphosis. It is a remedy of much value in **scrofulous conditions** with glandular indurations or abscess.

Its external application has relieved many cases of severe **spinal irritation,** especially if present with the general conditions named above as indicating the use of this agent.

Dr. Scudder gave the following list of disorders, in which it had a direct influence: Chronic enlargement of the spleen, chronic enlargement of the liver, chronic hypertrophy of the cervix uteri, chronic gastritis, chronic metritis with hypertrophy, uterine subinvolution and general glandular enlargement. The remedy, no doubt, stands at the head of spleen remedies, but it is not used as it should be, the younger physicians paying but little attention to it. It influences all of the ductless glands.

Dr. Felter says, when dyspepsia depends upon a sluggish circulation in the gastric and hepatic arteries, and is attended with full, heavy, burning sensation, in the parts supplied by these arteries, this is our remedy. It has benefited **leucocythemia.** Its use should be persisted in for weeks. A common cause of failure in the treatment of chronic diseases is the lack of persistency.

The solid extract of polymnia is readily incorporated with any ointment base, and the external use of the agent over enlarged glands is often as important as its internal use.

Scudder claimed that it was the best **hair tonic** in the materia medica, in the proportions of four ounces of the tincture with twelve ounces of bay rum, to be rubbed thoroughly into the scalp. A good combination would be castor oil three parts, glycerine one part, lanolin three parts, extract uvedalia two parts, melted and rubbed together and cooled. This should be rubbed thoroughly into the roots of the hair. The addition of a very small quantity of cantharides improves this in stubborn cases.

JUGLANS. JUGLANS CINEREA.

Synonym—Butternut.

CONSTITUENTS—A resin, juglandin, a fixed oil, juglandic acid.

PREPARATIONS—Extractum Juglandis Fluidum, Fluid Extract of Juglans. Dose, from one minim to one-half dram.

Tinctura Juglandis, Tincture of Juglans. Dose, from five minims to one dram.

Specific Medicine Juglans. Dose, from one-third to one minim; prescribed from ten drops to one-half dram in four ounces of water, a teaspoonful every one, two or three hours.

Juglandin. Dose, from one-fifth of a grain to one grain.

Physiological Action—Experiments with the drug have ascertained that it influences, with great energy, the liver, small intestines, colon and rectum, causing an increased manufacture and elimination of bile, as well as increased activity of the glands of the intestinal tract. Full doses produce large bilious evacuations, without much pain or griping, in which respect its action very much resembles that of iris versicolor.

Therapy—It is said to be a valuable remedy in **duodenal catarrh,** with torpidity of the liver and **chronic jaundice.** Small doses have been successfully employed in **dysentery, bilious diarrhœa,** and in intestinal diseases, with symptoms indicating irritability, hyperæmia, or a tendency to inflammation. Chronic **constipation** can be successfully corrected by medium doses of the extract, if the affection depends upon defective elimination of bile, causing the stools to be clay-colored and dry from a lack of biliary and glandular secretion.

Combined with other agents, as hyoscyamus, belladonna, nux vomica, leptandra or capsicum, a most excellent pill can be made, which will cure many cases of the above conditions, and will stimulate the stomach and intestinal tract, in those atonic or debilitated conditions which induce chronic dyspepsia.

In the skin disorders named under dandelion, pustular and eczematous, it will act in the same manner as dandelion, and may be advantageously combined with that agent.

It is specifically adapted to **skin diseases** associated with some abnormal condition of the intestinal tract. **Eczema, herpes circinatus, acne, impetigo, pemphigus, rupia, prurigomoluscum, lichen** and chronic scaly skin diseases, yield to its influence with appropriate auxiliary measures. Irritation of mucous membranes, chronic inflammation of the throat, eruption over the body like that of scarlatina, **noli me tangere, scrofulous** enlargement of **glands,** congestion and irritation of the respiratory and gastric mucous membranes, nursing sore mouth, ulcers in the mouth with constipation, rheumatism of the muscles in the lumbar region, yield to its influence.

Juglans cinerea has proved to be curative of a great variety of **skin diseases,** whether scaly or pustular, whether characterized by papules or bullæ, as stated above, so long as the lesion is associated with some **disorder of digestion** and assimilation.

It is analagous to arsenic in its action in squamous affections, and to sulphide of calcium in pustular diseases of the skin.

It may be used to advantage, both locally and internally, in chronic and ill-conditioned ulcers, stimulating waste and improving nutrition.

In the treatment of skin diseases with Juglans, a saturated tincture of the fresh inner bark should be employed in small doses, at the same time that the remedy is used as a local application. In obstinate cases of **chronic eczema,** the local use of the juice of the fresh inner bark has hastened the cure.

In bowel complaints of infants and children, in the constipation of nursing women, and in the commencing stages of diarrhœa and dysentery the syrup may be used, while the extract is the best form of the remedy as a cathartic in intermittent fever, and whenever the remedy is employed as a cathartic.

Juglans may be given in conjunction with berberis, phytolacca, or podophyllin when there are disorders that are induced by **occipital headaches.**

EUONYMUS. EUONYMUS ATROPURPUREUS.

Synonym—Wahoo.

CONSTITUENTS—Euonymin, Atropurpurin, Asparagin, Euonic acid, resin, wax, fixed oil.

PREPARATIONS—Extractum Euonymi Siccum, dried Extract of Euonymus. Dose, from one to three grains.

Specific Medicine Euonymus. Dose, from five to thirty minims.

Extractum Euonymi Fluidum, Fluid Extract of Euonymus. Dose, from one to three drams.

Physiological Action—The agent is actively cathartic and alterative to an excellent extent, through its influence upon the function of the glandular organs. It exercises a distinct tonic influence.

Specific Symptomatology—Indigestion with biliousness, constipation, chronic intermittents with cachexia; pulmonary phthisis with night-sweats and great weakness; dropsical affections following acute disease; in convalescence from severe intermittent fever; enlargement of the liver; chronic bronchitis.

Therapy—Euonymus, or wahoo, is chiefly valuable as a tonic in **malarial cachexia.** It is antiperiodic, but much feebler than quinine. In those cases of indigestion and constipation with a yellowish tint of the conjunctiva, and

round the mouth, the tongue being coated and of a similar color, indicating a cholagogue, euonymus is a good remedy.

In large doses, it is a drastic cathartic, causing emeto-catharsis and great prostration.

It is a general **nutritive tonic,** and may be employed where mandrake is beneficial, in torpid liver and bilious states, with weak digestion, constipation, and lithæmic neuralgia.

It acts as a **hepatic stimulant,** improving the protoplasmic function of the liver, and increasing the production of bile.

Its cholagogue power has been demonstrated by experiments on dogs, as well as when employed in the treatment of the human subject.

In **malarial disease,** after the fever has been broken, and in protracted convalescence, it is especially valuable as a tonic.

In chronic **pulmonary complaints,** it improves digestion, and gives tone to the respiratory organs, acting as an expectorant.

SAPIUM. SAPIUM SALICIFOLIUM.

Synonym—Yerba de la flecha.

PART EMPLOYED—The root, bark and leaves.

LOCALITY—Mexico, New Mexico and Arizona.

PREPARATIONS—Powdered Root. Dose, from one-half to one grain.

Fluid Extract. Dose, from one to five minims.

Infusion. Two ounces of the root to one pint of water. Dose, from twenty to thirty minims.

Physiological Action—In large doses it is poisonous, produces dysentery, vertigo and death from prostration and nervous exhaustion.

Sapium Salicifolium is an energetic cathartic and diuretic, produces copious liquid discharges without griping. In minute doses at intervals of four hours it stimulates the torpid liver up to its normal action, also increases the flow of urine and exerts a direct influence on the kidneys and urinary passages.

Therapy—In bilious colic caused by presence of calculous matter, sapium salicifolium combined with mono-bromated camphor promptly dislodges the gravel, calms the nervous system and quiets the distressed stomach.

The principal advantage the drug has over other cathartics and diuretics is its superior efficacy, its pleasing taste, besides its antilithic properties; the agent is not widely known. The small and pleasant dose and kindly action will give it a place as an efficient cathartic, if the above statements are confirmed.

CHAPTER IV.

Agents Used as Hydragogue Cathartics.

ELATERIUM. HELLEBORE. CROTON OIL.
JALAP. MAGNESIUM SULPHATE.

ELATERIUM. ECBALLIUM ELATERIUM.

Synonym—Squirting Cucumber.

CONSTITUENTS—Elaterin, prophetin, ecballin, hydroelaterin, elaterid, chlorophyll.

PREPARATIONS—Trituratiæ Elaterii, Trituration of Elaterin. Dose, grain one-half.

Specific Medicine Elaterium. Dose, one-third to fifteen minims.

The specific medicine is one of the most energetic of all ordinary preparations. It precipitates upon addition to water, and to avoid a concentrated dose, a mixture must be thoroughly shaken each time before administration. It has a characteristic clear green color.

Physiological Action—Hydragogue cathartic, diuretic. Large doses may kill by causing inflammation of the stomach and bowels.

Therapy—Dropsies of a general character are relieved at once by elaterium. It produces such hydragogue action as to at once unload the cellular tissues, of serum. It produces such gastro-intestinal irritation, however, in excessive doses, that caution must always be exercised in its administration. If violent vomiting is produced, its influence upon the dropsy is not marked. It exercises a powerful derivative influence and is a depleting agent of marked potency. It is in almost universal use in the treatment of dropsy among old school physicians.

In the treatment of **cystitis,** elaterium in small doses is used with excellent results by many physicians.

Both King and Scudder recommended it in chronic and acute cystitis and in nephritis, especially in inflammation of the neck of the bladder. They produced its hydragogue action for its derivative influence first, by half drachm doses of the tincture until its full influence was obtained, subsequently they gave smaller doses. Recent authorities claim cures of a satisfactory character by the use of from ten to twenty drops of the specific remedy in four ounces of water, a teaspoonful every two or three hours. It is deserving of extended trial.

JALAP. IPOMŒA JALAPA.

Part Employed—The tuberous root.

CONSTITUENTS—Convolvulin, jalapin, gum, albumen, salts.

PREPARATION.—Extractum Jalapæ, Extract of Jalap. Dose, from five to fifteen grains.

Pulvis Jalapæ Compositus, U. S. P. Dose, from ten to thirty grains.

Pulvis Jalapæ Compositus, A. D., Compound Powder of Jalap, Beach's Antibilious Physic. Dose, one dram.

Therapy—Jalap is an active cathartic. With the older physicians it was commonly used, but the modern school apparently does not often find a need for it. It produces large alvine or watery evacuations with griping, and extreme nausea in some cases. Hypercatharsis and continued colic are induced by it. It influences the small intestines most directly. In cases of chronic inactivity of the intestinal tract, with persistent constipation and inactivity of the glandular organs, it will increase their action; will cleanse the entire tract and stimulate normal action. It is an old remedy for dropsy. It is superseded by other and more satisfactory agents.

HELLEBORUS. HELLEBORUS NIGER.

Synonym—Black Hellebore.

CONSTITUENTS—Helleborin, helleborein, gum, resin, fat.

PREPARATIONS—Vinum Hellebori Compositum, Compound Wine of Hellebore. Dose, one-half ounce to two ounces.

Specific Medicine Hellebore. Dose, one-tenth to three minims.

Physiological Action—Black Hellebore, when locally applied, causes irritation of mucous membranes and of the conjunctiva, inducing redness,

swelling and increased secretion. A moderate dose taken internally produces no effect, but a considerable quantity causes loss of appetite, nausea, vomiting, pain and inflammation of the stomach and bowels. Medicinal doses strengthen the heart and increase the force of the pulse; while toxic doses cause paralysis with rapid pulse and sudden arrest of the heart. The effect on the nervous system is partial paralysis with tremors, followed by violent convulsions.

The agent in its maximum dosage is a drastic hydragogue cathartic in its fresh active form. It is emetic also and emmenagogue. In overdoses it readily produces hyper-catharsis and hyper-emesis. It is a constituent of proprietary pills, but is not widely used in general medicine. In small doses it acts as a stimulant to the liver and to the secretory glands of the gastro-intestinal tract.

Therapy—In **hysteria, melancholy, mania** and other mental conditions in which the **abdominal organs** are seriously at fault, it is prescribed with benefit.

The agent is prescribed in dropsical conditions where there is great inactivity on the part of the liver, with torpidity of bowels, with general anasarca or pericarditis or hydrothorax. It is not always the best remedy even in these conditions.

The agent is a local anæsthetic, especially to the conjunctiva. Helleborein, a crystalline glucoside, in solution dropped into the eye, will produce anæthesia of the structures through the cornea while the sensibility of the contiguous structures is not impaired. It is not in general use for this purpose.

Where there is burning of the skin, sensitiveness in distinct areas, especially of the nates and thighs or flashes of heat, hellebore is specific. It is given from five to twenty drops in four ounces of water; a teaspoonful every hour.

Physiological Action—This is a drastic hydragogue cathartic. It is exceedingly irritating and produces a profound revulsive or derivative effect.

Therapy—In **apoplexy** or in sudden **paralysis** from cerebral hyperæmia, or from rupture of the cerebral vessels, a profound derivative influence may be at once obtained from an active dose of croton oil. In acute **cerebritis, or in meningitis,** or in violent delirium, or furious mania in adults, it is sometimes beneficial. Its use in accordance with present methods of treatment is very limited, many physicians finding no place for it at all.

Its external use produces active counter-irritation. This pronounced influence was once thought a necessary measure in **pneumonitis** and **pleuritis,** and it was freely used in inflammatory rheumatism, and in sciatica and other **persistent neuralgias.** It was used in cerebral and cerebro-spinal meningitis, and in cases of excitable delirium and acute mania.

Its influence is too irritating and prostrating for dropsical cases which are usually enfeebled from disease.

MAGNESIUM SULPHATE.

Formula—$MgSO_4 7H_2O$.

Synonyms—Epsom Salt, Sulphate of Magnesium.

Administration—For general administration it is better to give this agent in a hot solution. Usually one-half of the otherwise necessary dose will accomplish the same result if hot. It is stated that if an ounce be boiled for a short time in a pint of water to which a grain or two of tannic acid is added, it will be entirely deprived of its bitterness. In solution in hot milk, it is of value in debilitated patients. The dose as a hydragogue is from half an ounce to an ounce, well diluted. As an aperient and antacid, from ten to thirty grains will prove satisfactory.

Physiological Action—By osmotic processes, this agent abstracts water directly from the intestinal capillaries. This explains the efficient influence of the remedy in dropsy. Its solutions are not readily absorbed, and it directly stimulates intestinal peristaltic action. Concentrated solutions of the agent are more active in abstracting water, and thus more efficient when given for the reduction of dropsical effusions. The solutions so concentrated must be avoided if there be no dropsy. While epsom salt is considered perfectly safe, it has produced death in overdoses. Concentrated solutions when dropsy is not present occasionally produce from rapid absorption of the drug, marked constitutional effects, and death may occur, from convulsions or from suppression of urine. There has been extreme vomiting and paralysis. The agent is also poisonous when solutions are injected directly into the blood stream. There is a pronounced influence upon the respiratory apparatus with sudden respiratory failure.

Therapy—This agent is demanded when a non-irritating **cathartic** is needed, which will produce copious watery stools without nausea or pain. It is of much service in abdominal surgery, thoroughly evacuating the intestinal canal prior to an operation. Given in small doses it stimulates normal secretion, causes liquid feces and prevents any possible impaction. This is accomplished without stimulating the peristalsis to any great extent, or otherwise disturbing the muscular structure of the bowels.

It is a most available remedy in **dropsy.** If the skin is cool, it eliminates large quantities of water through the kidneys as well as from the intestinal canal.

If the character of the **kidney disease** is such that active elimination is undesirable, it will cause active transpiration through the skin instead, if the skin be thoroughly warm and moist at the time of its administration.

If the patient is greatly debilitated, it will not produce increased weakness, if it is given in conjunction with the carbonate of iron or some other mild, well selected tonic. If given when the stomach is empty, it seems to act more directly upon the kidneys, as a diuretic.

In the treatment of **dysentery,** given in small doses, it is an efficient remedy. It apparently has a soothing instead of an irritating effect, as have most cathartics in this disease.

It is valuable in **impaction** of the bowels from any cause. In this case fifteen grains of the salt with an equal amount of the bitartrate of potassium every two hours will produce satisfactory results. This combination is also useful as an antacid and refrigerant in many of the disordered conditions of the stomach and bowels during hot weather.

If the agent be administered in full doses in **colica pictonum** it will serve an excellent purpose. Inasmuch as sulphuric acid is a direct antidote in **lead poisoning,** the dilute acid may be added in small quantities to a solution of this remedy.

Dr. Vogler claims that it will **produce sleep** where the cause depends upon indigestion or constipation if given in dram doses. It is used both internally and externally in **rheumatism.**

I have had many reports during the last two years of the application of a solution of an ounce of epsom salt in a pint of boiling water to which ten or fifteen drops of carbolic acid has been added. This is not only beneficial wherever a fomentation is required but is a **superior application,** Dr. Gordon says, in the treatment of erysipelas.

There is a **peculiar disease of the skin** in old people characterized by a hard incrusted condition, dusky red or purplish, which cracks and bleeds, and fissures with a slimy exudate at times, which Dr. Waterhouse cures satisfactorily with the above solution.

Where the patient has a large number of warts which persist in spite of treatment, from two to five grains of epsom salts four or five times a day with a drop or two of thuja will cure, Dr. Webster says, in a short time.

As a pain reliever, this agent has come into prominence during the past few years, through the teachings of many observers: Burgess of Chattanooga claims it to be distinctly anesthetic. Externally applied in concentrated hot solutions, it often exhibits this influence satisfactorily for local inflammations. It was suggested for **intra-spinal injections** to control **tetanus,** and at one time to induce temporary anesthesia of the extremities and of the pelvic organs, but serious results followed its use in so many cases that it has now been largely abandoned.

Dr. Cooper advises the agent in ounce doses of the saturated solution every two hours in the treatment of **amebic dysentery.** After the first active operations, he gives thirty drops of this solution until the patient has entirely recovered, using starch water and laudanum, if necessary for the tenesmus, and aconite in fever.

When salt rheum so called is present on the hands and fingers, he immerses the parts in warm solution for ten or fifteen minutes, at bedtime. Then draws on clean white cotton gloves for the night, repeating this each night until cured.

Where the urine scalds or burns in passing from high acidity, he cures with teaspoonful doses of this solution four times a day. Extreme **gastric acidity** is relieved by small doses frequently repeated.

He treats simple conjunctivitis by dropping a few drops of the saturated solution into the eye, to which is added two grains of cocaine to the ounce, He treats ascaris scabei with hot concentrated solutions applied at bedtime.

Dr. Burgess advised the use of this agent **to reduce excessive fat.** He treated a patient weighing 238 pounds, reducing him to his normal weight, 178 pounds at the rate of about ten pounds per month. His method was to bathe the body night and morning with a solution of one ounce of the salt to a pint of water. At the same time a teaspoonful of the same strength solution was taken internally three times a day.

The above course is recommended to reduce the quantity of uric acid in the system when excessive.

To unsightly and disfiguring scars, he applied the same solution preferably hot, twice daily. By so doing, he reduced them to a great degree, sometimes removing them entirely. Dr. Broadnax suggested that this treatment might prevent cancers, which develop in scars.

CROTON OIL. TIGLII OLEUM.

Part Employed—A fixed oil expressed from the seeds of the croton tiglium.

CONSTITUENTS—Glucosides of tiglinic, formic, isobutyric and other acids. The vesicating principle is soluble in alcohol, while the purgative principle is insoluble.

Administration—The dose of the oil is from one to two minims, best administered in emulsion or pill form. It is not to be administered if there is gastric or intestinal irritation or inflammation, or if there is great weakness or prostration.

A single drop is usually a sufficient dose. This may be administered disguised in anything the patient can be made to take. Dropped on the tongue it acts quickly. Two drops will produce violent action in most cases.

CHAPTER V.

Agents Used in the Neutralization of Acids, and for Their Characteristic Alkaline Influence Within the Gastro-Intestinal Tract.

SODIUM CARBONATE.	SODIUM CHLORIDE.	POTASSIUM BITARTRATE.
SODIUM BICARBONATE.	LIQUOR POTASSÆ.	LIQUOR CALCIS.
SODIUM SULPHATE.	POTASSIUM CARBONATE.	MAGNESIUM OXIDE.
SODIUM SULPHITE.	POTASSIUM BICARBONATE.	SODIUM TARTRATE.
SODIUM HYPOSULPHITE.	POTASSIUM CITRATE.	MAGNESIUM CARBONATE.

POTASSIUM AND SODIUM TARTRATE.

The Comparative Action of Sodium and Potassium Salts.

The physician, in his study of the compounds of sodium and potassium, finds himself considering the action of the substance with which these elements are combined, rather than the influence of the element itself. All the elements entering into the construction of a chemical compound influence the therapeutic action of that compound to a greater or less extent, although the influence for which the compound is usually prescribed, is that of the most active element in the compound.

Of the two elements, sodium is much milder in its influence upon the system than potassium, and yet the compounds of the latter have long been most commonly used. Potassium in large doses is an irritant poison, and its salts produce effects by virtue of this action, which may be avoided by using the same compounds of sodium, which, although an irritant, is not so to any extent comparable with potassium.

The influence of potassium in its compounds is to suspend the functional operations of the muscular and nervous structures. This is plainly apparent in its action upon muscular contractility, notably that of the heart, the action of which is retarded and its power of contractility reduced by the potassium salts to an extent from ten to fifteen times greater than by the sodium salts. When in combination with bromine, this property would, in many cases, increase the action of the bromine, and thus prove desirable, as when administered for an excitable condition of the heart, in sthenic conditions, or in over-sexual excitement, or conditions where there is excitability of the circulation, local or general, with hyperæmia, with greatly increased muscular and arterial tension.

The influence of potassium upon the mucous membranes and glandular structures of the stomach and intestinal canal is more irritating, and interferes with the functional action of these structures to a much greater extent than sodium. The sodium salt is appropriated much more readily and is more kindly received, and can be given with a satisfactory influence upon the stomach when disorders of that organ complicate the general condition.

This fact is confirmed by the common use of the sodium compounds instead of those of potassium in gastric acidity, and in general disorders of the stomach and intestinal canal.

It will be observed that where the general functions of the organs of the gastro-intestinal tract are impaired, the sodium compounds, for whatever purpose prescribed, will exercise a more desirable influence, but in conditions where these organs are intact, and there is exalted heart action and an exaggerated arterial tonus, the potassium compounds may be preferable.

The more soothing influence of the sodium compounds upon the mucous structures facilitates their absorption, and this perceptibly promotes their action. It is often observed that the same results are obtained from the use of five or six grain doses of the sodium bromide or iodide, as are accom-

plished by no less than ten grains of similar potassium compounds, because of the more ready appropriation of the sodium compounds. Their lack of irritable properties facilitates their elimination also.

SODIUM CARBONATE.

Formula—$Na_2CO_3 10H_2O$.

Synonyms—Sal soda, washing soda.

The agent is freely soluble in water, but insoluble in alcohol and ether. Its **physiological properties** are similar to those of the other salts of sodium and potassium. Its general influence is considered under the consideration of alkaline agents.

It is the analogue of potassium carbonate, as efficient and milder in its action than that salt, in specific application.

SODIUM BICARBONATE.

Formula—$NaHCO_3$.

Synonym—Acid Sodium Carbonate.

Physiological Action—This agent increases the alkalinity of the blood. It is readily diffusible and rapidly neutralizes excess of acidity. It increases the alkalinity of the urine during the presence of the salt in the system, but usually after its withdrawal the acidity is considerably increased. This increase of acidity is apparent when the agent is administered continuously in the treatment of gastric hyperacidity. Its free continuous administration is apt to be injurious to the stomach.

Therapy—It is beneficial if given after meals in **hyperacidity** due to fermentation. In cases of **deficient secretion** of the gastric juice it should be given half an hour before meals.

Dr. Sternberg treated thirty cases of **yellow fever** by the use of this salt alone, with recovery in every case. In all cases of severe **diarrhœa** with excessive acid reaction it will produce good results.

It is an old remedy in the treatment of **inflammation** of the **bladder**. Woodbury advised ten grains in half an ounce of an infusion of uva-ursi, given every two hours. He claimed immediate results in acute cystic inflammation. In such a case, however, it will be important to consider the reaction of the urine and administer the agent before or after meals as indicated by the reaction.

Externally the agent seems to possess antiseptic properties. Because of the presence of carbon, with its alkaline reaction the agent is applicable to **burns**; applied in the form of a moist paste it will relieve the pain at once in most cases. It may be removed after a few hours and proper dressing applied.

It is considered a beneficial remedy in the treatment of **eczema**, many authorities advising its use. A strong solution applied to a surface **poisoned** by **rhus toxicodendron** will usually give quick relief.

In the treatment of some forms of **indolent ulcer** its persistent application will relieve pain, reduce swelling, and check the formation of pus.

In a general way the agent is advantageous in the treatment of **leucorrhœa**, especially if the discharge has an acid reaction. It is freely used in solution as a douche.

It is also useful as an irrigating fluid in cases of **cystitis** where there is a strong acid reaction with a deposit of urates and uric acid.

SODIUM SULPHATE.

Formula—$Na_2SO_4 10H_2O$.

Synonym—Glauber's salt.

Physiological Action—It has long been in use as an active, hydragogue cathartic. In small doses it is laxative, aperient and diuretic. When the powder is given, one-half the usual dose only is needed, as it has lost one-half its weight in the loss of its water of crystallization.

Its action is in every way similar to that of the magnesium sulphate, which is preferable because of its superior palatability and more kindly action. It was at one time advised as a specific remedy for **opacity** of the cornea. The dry, powdered crystals were applied directly to the eyeball, once or twice daily. This salt was popular with the fathers of our school in the compound known as **white liquid physic.** This preparation was made by dissolving half a pound of the sodium sulphate in one and one-half pints of water; to this, an ounce each of nitric and hydrochloric acids was added. Of this a tablespoonful was given every hour until free evacuation occurred.

Although very efficacious in many conditions, this compound would blast the reputation of the modern physician, by its disagreeable taste.

Therapy—Sodium sulphate is given in **hepatic congestion** with suppression of the bile. It is a good agent in **chronic jaundice** and in catarrh of the bile ducts where there is constipation with clay-colored feces.

It is valuable in **biliary** and **renal calculi.** It has a modifying influence upon the urine and is beneficial in **catarrh** of the **bladder,** where the urine is of a strongly acid reaction.

SODIUM SULPHITE.

Formula—Na_2So_3. $7H_2O$.

Administration—The dose of the salt is from two to twenty grains. Ten grains in solution is about the maximum for usual prescription. It may be given every two or three hours. The principal objection to its use is its unpleasant taste, which is difficult to conceal.

Specific Symptomatology—Scudder laid great stress upon the use of this remedy when there is pallor of the tissues of the tongue, which is broad and coated with a dirty fur, or with a whitish or yellowish thick, moist coat.

This agent prevents fermentation in the gastro-intestinal canal. It is specific for vomiting of frothy or yeasty matter because it destroys the microscopic fungi **torula cerevisiæ** and **sarcina ventriculi** which are present in this vomited matter. Under these circumstances, the cause being removed, nervous excitement abates, the pulse and temperature are reduced, digestion and appropriation are encouraged. The condition may be present in all acute, eruptive or inflammatory fevers. It should not be depended upon to fulfill other than the conditions named. The other evidences should be met in each case with the properly indicated remedy.

Therapy—When the indications for the use of the remedy are present with general indisposition, without the presence of any recognized disease, this agent alone may be all that is necessary for a cure.

In aphthous conditions of the mouth, or of other mucous surfaces due to parasitic causes, this agent acts with extreme rapidity.

A solution of this salt is sometimes applied to foul smelling ulcers, to phlegmonous abscesses where vegetation is apt to be present, or where gangrene is threatened.

In the treatment of small-pox, erysipelas, and in some cases of typhus and typhoid fevers with all the indications present, this agent performs a very important service.

SODIUM HYPOSULPHITE.

Formula—$Na_2S_2O_3$. $5H_2O$.

Synonym—Sodium thiosulphate.

Physiological Action—In physiological action, this agent has all the properties of the sulphite, intensified. It is specifically opposed to fermentation. It is exceedingly popular among veterinarians because of its influence over this process, which is a common source of disease in horses and cattle. The fermentation of large masses of food in the stomach of these animals is the common cause for **flatulent colic.** It is indicated also in diseases which result from fermentation or zymosis in the blood. It decreases the uric acid and sulphates and causes the appearance of oxalic acid in the urine.

Therapy—It is an active agent in parasitic skin disease or in ulcerations of the skin or mucous membrane due to this cause, such as **cycosis, impetigo, scabies** and **favus.** It is specific in **yeasty vomiting,** and will serve an excellent purpose in the treatment of parasitic disease of the mouth.

Solutions of this salt may be atomized or vaporized and inhaled in fetid **bronchitis,** in **pulmonary inflammation** with purulent discharge, and more especially in **gangrene** of the **lungs.**

The dose of this salt is from two to fifteen grains, repeated often if necessary.

As a single remedy in the treatment of **small pox,** this agent has been recommended very strongly, used both internally, and externally in the form of a saturated solution applied freely over the eruption. Used in the early stages, the disease is rendered mild. Twenty-grain doses four times a day for adults, and from two to five grains for children is about the correct dosage.

SODIUM CHLORIDE.

Formula—NaCl.

Synonyms—Common table salt, Sea Salt, Muriate of Soda—white crystalline powder, permanent in the air, soluble in two and eight-tenths parts of cold water and in two and one-half parts of boiling water. Very slightly soluble in alcohol. Insoluble in ether and chloroform.

Physiological Action—Salt is an essential constituent in the animal economy. It is in the strictest sense of the word a trophic. It is more than a tonic because a food.

Therapeutically in large doses it is emetic and cathartic. It is refrigerant, and in small doses antiseptic, astringent, and anthelmintic.

Therapy—In **narcotic poisoning** it is dissolved in warm water and produces immediate emesis. It is a chemical antidote to the nitrate of silver. Doses of ten or fifteen grains in solution five or six times a day will cure some cases of **obstinate constipation.**

It has been used with good effect in **intermittent fever** given in the intermission in doses of half an ounce to an ounce. In hemoptysis, half a teaspoonful taken dry will frequently stop the hemorrhage.

In its external use, it has a wider field. Hot solutions of salt persisted in are of unfailing benefit in **local inflammation** of the lungs, liver, spleen, pleura or peritoneum, and especially of the **kidneys.** It is most serviceable in inflammation of the **joints,** either traumatic, rheumatic or tubercular in character, and in inflammation of the **throat** or tonsils, either malignant or benign. Hot saturated compresses are applied. The solution may be used as a gargle, and is sometimes of greater value if a small quantity of vinegar is added. It is useful in the inflammation of the **brain** and **spinal cord,** and in **glandular inflammations.**

In some cases of granular **opthalmia,** dilute solutions applied are of service. It is a popular domestic remedy in the treatment of **catarrh,** acute and chronic. It is an essential constituent of nearly all advertised catarrh cures.

A few grains dissolved in hot water, drawn into the nostrils from the palm of the hand, or applied with a douche, will benefit atrophic rhinitis. One pound of salt dissolved in about four gallons of water produces a salt bath of about the same consistency as sea water.

Physiological Salt Solution.

Occurrence—A solution of sodium chloride, which represents in relative strength the fluids of the body, and which is known as the physiological salt solution is made by adding one part of salt to 130 parts of water. It is extemporaneously approximated by adding one drachm of salt to one pint of sterilized water.

However, recent careful observation has determined the necessity of a greater accuracy in preparing this solution. Furthermore, the presence of both calcium and potassium in small quantities have been found to increase the efficiency of the solution. The following formula from Hare's Materia Medica is now determined to be more nearly correct:

Calcium chloride	0.25
Potassium chloride	0.1
Sodium chloride	9.0
Sterilized water	1000 Cc.

The above authority has suggested a concentrated solution which can be found upon the market containing the proper ingredients in the proper quantities from which an accurate normal saline solution can be immediately prepared.

Therapy—This solution is indicated where **sudden shock** suspends the function of the medulla oblongata, and the heart's action, or where there is **acute anæmia** from sudden loss of a large quantity of blood, either from primary or secondary hemorrhage, or in **violent diarrhœas** where the circulation is suddenly deprived of a large proportion of its fluid constituent, as in **epidemic cholera.** It was first thought to be beneficial only when injected slowly into a large vein. This is the most direct method of introduction, and should be resorted to when death seems imminent. If there seem to be a few moments to spare, it may be carefully injected into the cellular tissue beneath the skin, anywhere in the body, usually in the abdomen, slowly injecting ounce after ounce, until six or eight ounces every two hours are injected, changing the point of injection and carefully rubbing the swelling produced by its introduction. In some cases it will do much good by its introduction into the rectum in larger quantity, if it is held by a compress over the anus.

Its temperature could range from 98 to 104 degrees, according to the method of introduction adopted, and the condition of the patient.

Dr. John B. Murphy of Chicago has suggested a method for the introduction of the normal salt solution into the rectum. It has been found to be superior in many cases to the immediate introduction of a large quantity of the fluid. An apparatus is devised so that the flow of the liquid can be controlled and the patient being placed in a recumbent position, the solution is introduced continuously drop by drop at a temperature of about 102 degrees. The apparatus used is difficult of description, and cannot be illustrated here, but it can now be found in most surgical instrument stores.

A simpler form of apparatus is suggested by Dr. Neuman of St. Louis in which a glass percolator is held in position, as the fountain, by an ordinary percolator stand. The fluid is placed in an upper percolator dropping directly into the lower percolator. The fluid retained in this percolator by a stop cock on the outgoing tube below is heated by an electric bulb, which is placed into it, whenever necessary and for as long a time as necessary, to retain the heat at the desired point. From the tube on the lower percolator compressed as desired, the fluid flows drop by drop into the rectum over a continuous period of time.

It is important that the solution be carefully prepared, as variations from about eight-tenths of a one per cent solution will vary the osmotic influence of the solution. The slow delivery of the fluid will not require that the lower funnel on the percolator rack shall be even as high as twelve inches above the anus. It is found desirable in cases of inflammation of the perineum or **acute colitis,** but this solution should be continued day by day.

LIQUOR POTASSÆ.

A solution of potassium hydrate in water. It contains five per cent of the salt.

Therapy—it is caustic—irritating and acrid in its influence upon mucous surfaces or upon the skin. It is replaced for internal use to a superior advantage, by salts of potassium or by aqua calcis. It is serviceable as a clinical reagent.

POTASSIUM CARBONATE.

Formula—K_2CO_3.

Synonym—Salt of tartar.

Therapy—Its uses are the same as those of potassium bicarbonate, but it is more harsh and irritating in its action. It neutralizes excess of acid in the stomach, prevents the excessive formation of **uric acid,** is an active **diuretic,** stimulates the action of the **liver** by exciting the function of that organ, and produces watery discharges.

It corrects **heartburn, pyrosis, morning sickness** of **pregnancy,** when due to acidity, and **acid dyspepsia.**

The agent is an antilithic of some value. It is an old time remedy for **gout,** and corrects the free deposit of crystallized uric acid in the urine. It was long called a remedy for gravel, but the uric acid gravel, not the gravel of alkaline urine, is corrected by it. It is not apt to produce flatulence. It is given in rheumatism only when the excessive acid conditions named are present.

POTASSIUM BICARBONATE.

Formula—$KHCO_3$.
Synonyms—Kali Bicarbonicum, Acid Carbonate of Potassium.
Physiological Action—The presence of an organic acid in this class of compounds in union with the basic radical renders them direct in appropriation and efficient in action. This agent is similar in manner of action to the carbonate, but it is more acceptable to the stomach, and of mild taste. It is not as agreeable as the sodium bicarbonate, which will replace it in all particulars. It prevents the formation of an excess of uric acid and opposes lithæmia.
Therapy—It is given in **rheumatism** and **gout,** and in all conditions where there is chronic acidity of the stomach. The salt is given in doses of from five to sixty grains in solution. Smaller doses persisted in are better than occasional large ones.

POTASSIUM CITRATE.

Formula—$K_3C_6H_5O_9H_2O$.
Synonym—Citrate of Potassium.
Therapy—It is a cooling diaphoretic, and has long been used in the treatment of **fevers.** If it is dissolved in an excess of lemon juice, its virtues are enhanced. Such a solution is of value in **rheumatism,** in rheumatic fevers, and in all **lithæmic conditions.**

POTASSIUM BITARTRATE.

Formula—$KHC_4H_4O_6$.
Synonyms—Bitartrate of Potassium, Cream of Tartar, Acid Tartrate of Potassium.
Therapy—This agent is a very mild laxative, and must be given in sufficient doses to produce its effect. It produces watery discharges, and in adequate doses acts as a stimulating diuretic. In small doses, it is a cooling aperient.
It is an irritant to the gastro-intestinal apparatus if its use be persisted in. Because of its hydragogue effect, this agent is in common use in reducing **dropsical effusions.** It is especially useful when the urine has an ammoniacal odor, is alkaline in reaction, and deposits a thick heavy sediment. An infusion of juniper or digitalis will sometimes enhance its effects in dropsy. If a teaspoonful of this salt be added to half a pint of water, to which the juice of half a lemon be added, the whole well-sweetened with white sugar, a cooling, palatable drink is prepared, which is of much service in **fevers.**
Combined with equal parts of sulphur, and given in teaspoonful doses, the agent was once commonly used in **constipation,** where the intestinal secretion was deficient. It is beneficial in **hemorrhoids** under the same circumstances.

POTASSIUM AND SODIUM TARTRATE.

Formula—$KNaC_4H_4O_6 . 4H_2O$.
Synonym—Rochelle salt.
Therapy—This agent is a mild purgative, and is especially useful in that class of cases, in which an alkaline salt is needed to relax the bowels where irritation exists and violent action must be avoided.

It is not unpleasant to the taste, and is most kindly in its action. In small doses, it neutralizes excessive **acidity** of the **urine.** Combined with the bi-carbonate of soda and tartaric acid in fine powder, it forms the well known **Seidlitz powder.** The sodium bicarbonate and this salt are mixed intimately and wrapped in blue papers, the tartaric acid in white paper. These are dissolved separately in cold water and then mixed, and the solution is drunk during effervescence.

Half an ounce of the potassium and sodium tartrate is necessary to produce purgative action, operating more quickly if dissolved in hot water.

LIQUOR CALCIS.

Synonyms—Aqua Calcis, solution of Calcium Hydrate, Lime Water.

Therapy—This solution is a common neutralizing agent, antacid, slightly astringent, commonly given in acid **dyspepsia,** and in acid conditions attended with **diarrhœa.** It is a domestic agent in the treatment of infantile disorders. It is the common belief that all stomach disorders are due to excess of acid, and the agent is often given without discrimination. In cases where milk coagulates in hard curds, it will neutralize the excess of acid and retard the coagulation.

The remedy is said to be of value as a spray in **diphtheria** and **croup,** but we have so many more efficient remedies that it is not used. The vapor of lime water is inhaled to excellent advantage in cases of membranous croup by throwing large pieces of lime into an open vessel, containing hot water, and continuing the steam with the patient under a cover.

A soapy mixture of lime water and linseed oil, known as **carron oil,** is the old treatment for burns and scalds. Lime water internally for crops of **boils** was once in common use.

MAGNESIUM OXIDE.

Formula—MgO.

Synonyms—Magnesia, Calcined Magnesia, Light Magnesia, Magnesia usta.

Therapy—This substance is a mild laxative. It is antacid to a practicable degree and in no way objectionable, if it is not permitted to accumulate in the intestinal canal. It is indicated in **sick headaches,** when the tongue is thick and uniformly covered with a white coating, and the mucous membranes are pale. There are sour eructations and nausea, **constipation,** general lassitude and indisposition and recurring headache, in acute attacks the headache persisting for days.

In such a condition, antacids of any character—the sodium, potassium, calcium, or magnesium salts are positively indicated, but the calcined magnesia is, perhaps, most commonly used.

The agent exerts but little effect if there is no excess of acid. In its relaxing influence, it acts slowly, and if excessive acid is present, the bowel movements are watery, and, usually, more or less feculent. The agent is given in all diseases complicated with derangement of the stomach from **hyperacidity,** as the progress of a disease is always encouraged and recovery greatly delayed, by a seriously deranged condition of the stomach and assimilative organs.

The alkaline reaction of this substance renders it valuable in neutralizing the concentrated acids when poisoning has occurred from them. It should be

used in every case, if possible, instead of the carbonate, as the latter substance gives off its carbonic acid gas during the process of neutralization so freely that in some cases, where the disintegration of the coats of the stomach has been sufficiently great, rupture or perforation of these have occurred from distention.

It is useful in arsenic poisoning, but is not as reliable as the iron sesquioxide.

If the administration of this agent be persisted in, when no excess of the acid is present in the stomach or bowels, it will neutralize the normal acid, and accumulate within the canal, acid drinks being sometimes necessary for its removal.

MAGNESIUM CARBONATE.

Formula—$Mg.CO_3$.

Administration—As an **antacid** from ten to twenty grains is the dose, and if repeated at intervals of once an hour it acts as a physic and purgative. If first rubbed up thoroughly with a little syrup or glycerine, it can be easily combined with water for administration, otherwise it does not readily mix in water.

In regard to its action the statements made concerning calcined magnesia, are in nearly every case applicable to this agent. It is a pleasant remedy, agreeable and efficacious in its administration in all acid conditions. It is actively antacid, laxative in **acid diarrhœas,** but inert and accumulative in alkaline conditions.

Therapy—It is applicable where the calcined magnesia is indicated. The objection to its use, which renders calcined magnesia preferable, is that it must of necessity liberate its carbonic acid in the stomach or intestinal canal, and thus produce flatulence, and, in some cases, temporarily painful distention, an especially objectionable feature in children. In **sick headaches** and in **persistent nausea** and **vomiting** from extreme acidity, in adults, however, this is sometimes a desirable feature, the gas acting as a stimulant and the distention arousing the muscular action of the stomach.

Effervescent Magnesium Citrate.

This popular salt is prepared by first intimately mixing magnesium carbonate and citric acid with a few minims of water, to form a thick paste. This is dried at a low temperature and finely powdered. This powder is then intimately mixed with sodium bicarbonate, more powdered citric acid, and a little sugar. The whole is dampened with a little alcohol and rubbed through a coarse sieve and dried. It is kept dry in well closed vessels. It is in the form of a coarse, granular powder, white, deliquescent in the air with liberation of the carbonic acid, very soluble in water, with active effervescence. The solution is active in its reactions. From one-half to two drams is the dose, stirred into a glass of water, and drunk while effervescing, usually administered in doses of from one-half to three teaspoonfuls in sufficient water.

Solution Magnesium Citrate.

In the manufacture of the solution of the citrate—**Liquor Magnesii Citratis**—the constituents, except sodium bicarbonate, are mixed in a strong

bottle with the syrup of citric acid. The bottle is nearly filled with water, and when ready to seal, sodium bicarbonate is added, and the bottle securely closed. The action of this solution, and the salt in solution is the same.

Therapy—This preparation is probably the most pleasant of this class of cathartics. It is a palatable solution, and is acceptable to almost any condition of the stomach. It produces a free watery movement from the bowels without pain if given as a purgative. In smaller doses the bowels may be kept in a soluble or mildly relaxed condition. It is an antacid and refrigerant. The solution is dispensed in strong twelve-ounce bottles, the entire quantity being necessary to produce thorough evacuation. As a laxative, the contents of one bottle may be given in two, three or four doses.

CHAPTER VI.

Agents Acting as Direct Intestinal Astringents.

EPILOBIUM. COTO. KINO.
RUBUS VILLOSUS. CATECHU.

EPILOBIUM. EPILOBIUM ANGUSTIFOLIUM.

Synonyms—Wickup, Willow herb.

PREPARATIONS—Extractum Epilobii Fluidum. Fluid Extract of Epilobium. Dose, from five to sixty minims. Specific Medicine Epilobium. Dose, from ten to sixty minims.

Physiological Action—The several species of epilobium are astringent, tonic, emollient, and demulcent, and have a specific influence on the intestinal mucous membrane. The epilobium palustre has a well established reputation as a remedy in intractable cases of camp dysentery and diarrhœa, cases having been cured by it when other means had failed.

Specific Symptomatology—Chronic diarrhœa with general emaciation, and a persistent enfeebled condition with dry, dingy, rough, harsh skin. If no great structural change, and no tubercular or cancerous conditions are present, this agent is the most satisfactory remedy we have. It is suggested where the abdomen is contracted, and where the diarrhœa is feculent in character with sharp colicky pains.

Therapy—It will be curative also in general relaxed, subacute or acute cases of **diarrhœa,** after the stage of inflammation has passed, but is not as reliable a remedy at that time as geranium.

In **muco-enteritis** it is of some service in conjunction with the indicated remedies. It is very useful in the diarrhœa of typhoid fever; it acts kindly and surely. The author seldom uses any other astringent when these conditions are present. It exercises an apparent tonic influence upon the mucous and glandular structures of the entire intestinal canal, overcoming ulceration, and being of material benefit in the more speedy restoration of normal function.

In the treatment of **chronic eczema,** epilobium was strongly advocated by one of our best physicians. He often gave it in conjunction with juglans. In that class of inveterate cases that was at first papular and finally squamous, he got excellent results. Dr. Goss had great faith in epilobium as **a skin remedy.** He gave it in doses from fifteen to twenty minims, and in persistent cases he would make an infusion of the herb, having the patient drink it freely.

RUBUS. RUBUS VILLOSUS.

Synonym—Blackberry.

CONSTITUENTS—Villosin, tannin, gallic acid.

PREPARATIONS—Extractum Rubi Fluidum, Fluid Extract of Rubus. Dose, from ten to sixty minims.

Specific Medicine Rubus. Dose, from five to thirty minims.

Specific Symptomatology—The tonic and astringent properties of this remedy are underestimated. It is an acceptable and prompt astringent in **diarrhœas** of infancy, where the evidences of relaxation and enfeeblement of the mucous coats of the stomach and bowels are marked, and where there is deficient action of all glandular organs, especially of the liver, the patient being pale, feeble, without appetite.

Therapy—In those cases of diarrhœa where there are large, watery, clay-colored discharges three or four times each day, an infusion of blackberry root will sometimes correct this entire train of symptoms. A syrup of blackberry will also answer an excellent purpose.

COTO BARK.

Origin—The botanical source of coto bark is not certainly known, but it is supposed to be obtained from a species of nectandra, a tree growing in Bolivia.

CONSTITUENTS—A volatile alkaloid, volatile oil, resin, starch, gum, sugar, calcium oxalate, tannin, formic, butyric and acetic acids, cotoin, para-cotoin, oxyleucotin, leucolin, hydrocotin, dibenzoylhydrocotin, peperonylic acid.

PREPARATIONS—Fluid Extract of Coto Bark. Dose, from five to twenty minims.

Specific Symptomatology—Epidemic diarrhœa, attacks occurring at night suddenly, or in early morning stools frequent, ten to twenty in a few hours; colliquative, rice-water stools, nausea and vomiting with great distress, sharp, cutting pain in the bowels, involuntary evacuations, extreme prostration, surface bathed in cold clammy perspiration, collapse, febrile reaction.

Therapy—It is a carminative, stimulant and astringent. It has a specific effect on the alimentary canal but is not a suitable remedy where inflammation exists or is threatened, but rather should be employed in relaxed states, and where some poisonous element has been taken into the system in the food or drinking water. It is antiseptic or promotes asepsis.

It acts favorably in the **diarrhœa** of **typhoid fever,** in colliquative diarrhœa from whatever cause, in the diarrhœa of consumptives and in atonic and catarrhal diarrhœa.

It possesses astringent properties and contracts the relaxed vessels. It is one of our most efficient remedies in the exhaustive sweats of consumptive patients. It may be given in ten drop doses of the fluid extract, repeated according to the urgency of the case.

The best results have been obtained from rather large doses, and it is a good rule where relief does not follow the prescribed dose to increase it.

Dr. Edison of Indiana was quite enthusiastic on the action of coto. He claimed that there was not only an astringent but a positive nerve sedative influence from its action; that it controlled **intestinal pain** and soothed the nervous system, and in one case he thought that its influence amounted to a temporary paresis. The agent deserves further study.

CATECHU. ACACIA CATECHU.

Synonym—Terra Japonica.

CONSTITUENTS—Catechu, tannic acid, catechin, quercetin, Catechu-red, gum.

PREPARATIONS—Tinctura Catechu Composita. Compound Tincture of Catechu. Dose, from ten to forty minims.

Therapy—A tonic astringent indicated in diarrhœas where the discharges are serous, very watery in character—large fluid discharges, with mucus. It will relieve **intestinal hemorrhage,** when the above diarrhœas are present, and the mucous membranes are relaxed, and out of tone. If combined with stimulant tonics or aromatics it is more serviceable. With special uterine tonics, it will be found advantageous in **menorrhagia.**

KINO. PTEROCARPUS MARSUPIUM.

Part Employed—The juice dried without artificial heat.

CONSTITUENTS—Pyrocatechin, kino-tannic acid, kino-red, kinoin.

PREPARATIONS—Tinctura Kino, Tincture of Kino. Dose, from ten to sixty minims.

Physiological Action—This agent produces a slight hardening and mild discoloration of the unbroken skin. Its astringent influence upon mucous membranes is more pronounced. Upon raw surfaces it contracts tissues, checks the flow of blood, coagulates albuminoids, and in some cases produces local irritation. It is positive and immediate in its action upon the mucous structures of the gastro-intestinal tract, acting as a persistent tonic astringent. It is almost entirely devoid of irritating properties.

Therapy—Kino is less used than formerly. It may be given whenever there is excessive secretion or excretion. In **inordinate night sweats,** either during convalescence from prostrating disease, or those of phthisis pulmonalis, it is a useful remedy. In the treatment of **polyuria,** kino is advised as an active agent with which to control the excessive output of water. It is also used in **diabetes mellitus,** and in protracted **watery diarrhœas** without pain, characterized by relaxation and flabbiness of tissues, and general feebleness. It may be prescribed in the **diarrhœa** of **typhoid,** also, with good results, especially if hemorrhage be present.

The powder may be blown into the nostrils in **epistaxis,** and it may be dusted on ulcers and bleeding surfaces. An injection of a strong solution is useful in **leucorrhœa** and in other discharges either of a specific or non-specific character. It is of some service in **pharyngitis** or in **elongated uvula,** also in simple acute sore throats.

CHAPTER VII.

Agents Acting as Gastro-intestinal Astringents with Marked Tonic Stimulant Properties.

GERANIUM.	CAJUPUT.	VERATRUM ALBUM.
QUERCUS.	ABIES CANADENIS.	GUAIACUM.

GERANIUM. GERANIUM MACULATUM.

Synonyms—Cranesbill, Crow Foot, Alumn Root.

CONSTITUENTS—Tannic acid, gallic acid, red coloring matter, a resinoid.

PREPARATIONS—Extractum Geranii Fluidum, Fluid Extract of Geranium. Dose, from ten to sixty minims.

Specific Medicine Geranium. Dose, from one to ten minims.

Physiological Action—A tonic astringent, with alterative properties. It influences the mucous structures, directly improving their tone and function, overcoming relaxation and debility with a marked improvement of the capillary circulation.

From long experience, I have learned to esteem geranium more highly than any other vegetable astringent, where a simple tonic astringent action is needed. It is palatable, prompt, efficient, and invariable in its effects, and entirely devoid of unpleasant influences.

Specific Symptomatology—Where there are relaxed, atonic or enfeebled mucous membranes, **in the absence of inflammatory action;** debilitated conditions remaining after inflammation has subsided; excessive discharges of mucus, serum or blood with these conditions, this agent is indicated.

Therapy—In **sub-acute diarrhœa** geranium exercises an immediate influence, a single full dose producing a marked impression and improving the tone of the entire gastro-intestinal tract from the first. In **chronic diarrhœa,** no matter how stubborn, it may be given with confidence if the specific conditions are present. In doses of ten drops every two hours, diarrhœas of the above described character will promptly subside. Active inflammation must be subdued before the agent will act readily. It is the remedy for the general relaxation of the gastro-intestinal tract in childhood, with protracted diarrhœa. Any extreme activity, or hyper-activity of the liver, must be corrected, and this agent will usually do the rest. In **catarrhal gastritis,** where there is profuse secretion with a tendency to ulceration, with, perhaps a mild hemorrhage, this agent is very useful.

It has been claimed that **incipient gastric cancer** has been cured with geranium, and there is no doubt that it takes precedence over many other remedies, when a diagnosis between severe gastric ulcer and incipient cancer cannot be made without exploratory operation. Its range seems much wider than that of a simple astringent, as it controls pain and rapidly improves the general condition. Half of a dram may be given every three hours, but smaller doses may do as well.

It has an influence over **passive hemorrhage** unlike that of other agents, but in violent cases of recent origin it is not the best remedy. The author treated a case of **hæmaturia** for nearly two years with absolutely no permanent impression upon the condition. Tubercular bacilli were found in abundance in the blood, which was usually arterial in character and steady in quantity. All of the usual remedies were used. Finally fifteen drops of geranium were given every two hours, and in two weeks the blood was absent and had not returned at the end of three years, except mildly when the patient persistently overworked. The patient improved slowly in general health and so continued after several years.

Others of our writers refer to its use in **phthisis pulmonalis.** They claim that all the symptoms are retarded by its use, and that it improves the general tone and overcomes **night sweats.** It may have a subtle influence upon tubercular bacilli or the conditions induced by them, not understood, which would account for its phenomenal action in the conditions referred to.

One physician gives geranium in **chronic dysentery** by enema. He uses a dram in sufficient warm water, repeating it as often as necessary. If it induces colic, he adds a little colocynth to the enema. It does not check gastric secretions, nor suspend peristalsis. It is a positive tonic to the mucous linings of the entire intestinal tract, especially in colliquative diarrhœa.

I used geranium in a case of **cirrhosis of the liver** with **ulceration of the duodenum,** with fine results. The disease was held in check for many months.

Dr. Davy treated a case of **habitual menorrhagia** with geranium associated with trillium. Of all concentrations, he would add one-half to one grain to each dose rubbed up with a little sugar, three or four times a day during the menstrual periods, continuing through the period in bad cases in slightly increased doses.

QUERCUS. QUERCUS ALBA.

Synonym—White Oak.

CONSTITUENTS—Tannin, quercin.

PREPARATIONS—Extractum Quercus Albæ Fluidum, Fluid Extract of Quercus Alba. Dose, from a half to one dram.

Specific Medicine Quercus. Dose, from five to thirty minims.

Therapy—The agent is of value in epidemic dysentery, acute and chronic diarrhœa, obstinate intermittents, pulmonary and laryngeal phthisis, tabes mesenterica, great exhaustion of the vital powers from disease, profuse, exhausting night sweats, colliquative sweats in the advanced stages of adynamic **fevers,** and debility, and severe diarrhœa in sickly children, scrofula, gangrene, ulcerated sore throat, fetid, ill-conditioned and gangrenous ulcers, relaxed mucous membranes with profuse discharges, **bronchorrhœa, passive hemorrhages, relaxed uvula** and sore throat, **spongy granulations, diabetes,** prolapsus ani, bleeding hemorrhoids, leucorrhœa, menorrhagia, hæmoptysis.

Generally white oak bark is used locally, in decoction, for the general purpose of an astringent, but it is also tonic and antiseptic, and possesses specific powers.

In severe **epidemic dysentery,** a strong decoction of white oak bark, given internally, in doses of a wineglassful every hour or two, the bowels being first evacuated by a cathartic of castor oil and turpentine, has effected cures where other treatment had proved of little or no avail.

In **marasmus, cholera infantum,** scrofula, and diseases attended with great exhaustion, baths medicated with white oak bark, accompanied by brisk friction, have restored the waning powers of life.

When employed as a local application to **ill-conditioned ulcers** and gangrene, either a poultice of the ground bark, or cloths wet with the decoction may be applied.

In pulmonary and laryngeal phthisis a very fine powder of the bark may be inhaled.

I have depended upon a decoction of white oak bark one ounce to the pint of boiling water, to which I have added after straining, a dram of boric acid for all ulcerations of the mouth or throat, both in the early stages and in many chronic cases. It is surprising how many simple early throat troubles this will abort, and how frequently it will prevent suppuration in tonsil-

litis. Combined with Yellow Dock, it has cured for me the severest cases of nursing sore mouth that I have had, after other lauded remedies had signally failed.

When the remedy is given internally in **diarrhœa** and dysentery, it should be combined with cinnamon or other astringent aromatic.

CAJUPUT. MELALEUCA CAJUPUTI.

Part Employed—The volatile oil. Solvent, alcohol. Dose, from two to ten minims.

CONSTITUENTS—Cajeputene, iso-cajeputene, and para-cajeputene.

PREPARATIONS—Spiritus Cajuputi, Spirit of Cajuput. Dose, one fluid dram. Mistura Cajuputi Composita, compound Cajuput Mixture. (Hunn's Life Drops.) Dose, from one to two fluid drams. Tinctura Camphoræ Composita, Compound Tincture of Camphor. Dose, twenty drops.

Therapy—It is used in the typhoid state, in the stage of collapse in Asiatic cholera, in exhaustion from cholera infantum, the typhoid condition in malignant scarlet fever.

Oil of cajuput is a diffusible stimulant of great power, and is indicated in all depressed and collapsed states of disease where there is no inflammation; such as we find in the advanced stage of adynamic **fevers** and **malignant diseases.**

Cajuput is a vermifuge, and may be used to destroy intestinal worms. It is antispasmodic, and is one of the most successful remedies ever employed in the painful cramps of **Asiatic cholera.** It is equally efficient in **cholera morbus, cholera infantum,** nervous vomiting, hysteria, and wherever there is depression of the vital powers associated with spasmodic action.

It is important that there should be no inflammation present when cajuput is employed; and when it is given internally in such complaints as cholera morbus, or spasms of the bowels, care should be taken not to excite inflammation of the stomach by a too free use of the remedy.

Its action is similar to prickly ash as a stimulant.

In the combinations known as Hunn's Drops and the compound liniment of camphor it has been employed.

In Asiatic cholera, oil of cajuput, in various combinations, was an established means of treatment among the older Eclectics. It stops the spasms, overcomes the collapsed condition, and in many cases effects complete reaction. In like manner it controls the vomiting, cramps and diarrhœa in cholera morbus and allied diseases.

In acne rosacea, psoriasis and other scaly skin diseases the oil, undiluted, should be applied to the diseased skin three times a day.

In toothache the oil should be applied to the cavity of the tooth on cotton.

In neuralgia the oil should be applied to the seat of pain.

In rheumatism, bruises, sprains, contusions, chilblaims, lameness, and other painful affections, the compound tincture (liniment) of camphor, well rubbed in before the fire, will be found to afford relief.

The oil of cajuput and its preparations may be given on sugar, or mixed with honey, or in an emulsion, or in warm brandy and water.

ABIES. ABIES CANADENSIS.

Synonym—Hemlock spruce.

CONSTITUENTS—Tannic acid, resin, volatile oil.

Canada pitch, or gum hemlock, is the prepared concrete juice of the pinus canadensis. The juice exudes from the tree, and is collected by boiling the bark in water, or boiling the hemlock knots, which are rich in resin. It is composed of one or more resins, and a minute quantity of volatile oil. Canada pitch of commerce is in reddish-brown, brittle masses, of a faint odor, and slight taste.

Oil of hemlock is obtained by distilling the branches with water. It is a volatile liquid, having a terebinthinate odor and taste.

PREPARATIONS—Canada Pitch Plaster, Tincture of the fresh hemlock boughs, Tincture of the fresh inner bark.

Specific Medicine Pinus. Dose, from five to sixty minims.

The hemlock spruce produces three medicines; the gum, used in the form of a plaster as a rubifacient in rheumatism and kindred complaints; the volatile oil—oil of hemlock—or a tincture of the fresh boughs, used as a diuretic in diseases of the urinary organs, and wherever a terebinthinate remedy is indicated; and a tincture of the fresh inner bark, an astringent with specific properties, used locally, and internally in catarrh.

Therapy—Gastric irritation and vomiting in cholera morbus, leucorrhœa, prolapsus uteri, chronic diarrhœa and dysentery, irritation of the urinary organs, croup, rheumatism, eczema asthenic catarrhal conditions, with feeble digestion, and pallid mucous membranes, profuse bronchial secretion.

A tincture from the fresh boughs, or the oil, is a diaphoretic and diuretic, and may be employed internally, and as a medicated vapor bath in rheumatism, pleurisy, orchitis from mumps, peritonitis, and all inflammations caused by cold. Internally it may be given in the gastric irritation of cholera morbus, and an irritation of the urinary organs. The oil, full strength, may be applied with advantage to all sprains and bruises and to lumbago, rheumatism and sciatica, also in herpes, moist eczema, fevers and psoriasis. It is also a good stimulating expectorant in chronic bronchitis and chronic coughs.

A tincture of the fresh inner bark of the hemlock may be employed in obstinate leucorrhœa, diluted with two parts of water, being applied to the vagina on cotton, at intervals of several hours to secure a continuous effect.

VERATRUM ALBUM. WHITE HELLEBORE.

Synonyms—White Veratrum.

CONSTITUENTS—Jervine, pseudojervine, and protoveratrine.

PREPARATIONS—The dose of the powder, from one to eight grains. A preparation of thirty drops of the tincture in four ounces of water, may be given in teaspoonful doses, to infants. Twenty drops of an ordinary tincture is the dose.

Specific Symptomatology—Diarrhœa with large watery discharges expelled with violence, spasmodic pains in the bowels, cramps, cramp colic, pain producing prostration, with cold skin, cold sweat and sunken eyes.

Therapy—This remedy, in small doses frequently repeated, is specific in **cholera infantum, cholera morbus,** and in various forms of acute **diarrhœa.** It has some of the indications of arsenite of copper. It has been found beneficial in **Asiatic cholera.** It is not in general use. It was at one time given to act upon the skin and as an emetic. It is said to be found beneficial in some forms of **nervous headache** and in cases of **mental derangement.**

It has been long in use, to destroy lice, and as an insect powder.

GUAIACUM. GUAIACUM OFFICINALE.

Synonyms—Guaiacum wood, Lignum vitæ, Lignum sanctum, Lignum benedictum.

CONSTITUENTS—A resin and essential oil.

PREPARATIONS—Tincture. The resin or gum guaiac. While we have described the wood and the tree from which the resin is obtained, the medicinal principle is located in the gum from the wood, which is procured by natural exudation. A wound in the bark of the tree will permit the exudation of the juice. The gum can also be obtained from the chips of the wood boiled in salt and water. At other times large pieces of the wood are heated, the heat causing the gum to exude. The gum is met with, in amorphous hard dense masses, of varying sizes. It has a sweetish, faintly bitter taste, somewhat acrid. It becomes tough when chewed and may be melted with a moderate heat. When cold it may be readily reduced to powder. It is practically insoluble in water. The resin contains guaiacol, guaiacolum, kersol and protocate-chuic acid.

The dose of the powdered resin is from one to twenty grains. The dose of the tincture is from one to four drams. The ammoniated tincture may be given in doses of from ten to forty minims.

Specific Symptomatology—Inflamed tonsils, swollen, tumid and painful. Painful deglutitions. Dribbling of saliva. Persistent dryness of the throat, with difficulty in swallowing. **Rheumatic** dfficulty, accompanying **tonsilitis.** Rheumatic disease, accompanied with any soreness of the throat.

Therapy—This remedy is a most active astringent in full doses, and yet in overdoses it acts as a cathartic. In medium doses it influences **acute dysentery** and **diarrhœa,** and other relaxed conditions of the bowels. In very small doses, from the one-twenty-fifth to the one-tenth of a grain of the resin, it is said to cure some cases of **habitual constipation,** those depending upon extreme atonicity.

Prof. Locke says the remedy is not available when there is a high degree of inflammation, with great vascular excitement.

The agent has long been used as a remedy for **chronic rheumatism.** It seems to influence the elimination in a satisfactory manner. In **rheumatic sore throat** and **rheumatic pharyngitis,** it is a good remedy. The indications for rhus toxicodendron will often be found present with the indications for this agent. Guaiacum of old, had a reputation in the cure of **syphilis.** It has alterative properties and is useful in some cases of skin disease of a chronic character, but we have superior remedies.

CHAPTER VIII.

Agents Used as Astringents with Marked Styptic Properties.

ERIGERON.	GALLIC ACID.	ACHILLEA.
CINNAMON.	ALUMEN.	TANNIC ACID.
CAPSELLA.	URTICA	

ERIGERON. ERIGERON CANADENSE.

Synonym—Fleabane.

CONSTITUENTS—A bitter principle, tannin, volatile oil.

PREPARATIONS—Specific Erigeron. Dose, from five to thirty minims.

Oleum Erigeronitis, Oil of Erigeron. This oil, which is obtained by distillation, is a pale-yellow liquid, with a peculiar aromatic odor and a pungent aromatic taste. Soluble in an equal quantity of alcohol. Dose, from five to ten minims.

Specific Symptomatology—The agent is given in **post-partum hemorrhage,** abortion with alarming flow, **menorrhagia** with profuse flow of bright-red blood, **dysmenorrhœa** with **blood clots, bloody lochia** increased by movements, **epistaxis, hæmoptysis, hematuria, hæmatemesis,** bleeding from the socket of an extracted tooth, incipient phthisis with **bloody expectoration, local bleeding from wounds,** bleeding from ulceration of the coats of arteries, **hemorrhage from the bowels** in typhoid fever—in all passive hemorrhages where there is no fever or constitutional irritation.

Therapy—It is used also in diarrhœa and dysentery with discharges of bloody mucous after the bowels have been evacuated by a proper cathartic, blood-specked and profuse watery discharges of **cholera infantum, ecchymosis** from injury, **chronic gonorrhœa** with increased discharge of mucus, gleet, **leucorrhœa, chronic dysentery, chronic diarrhœa, uterine leucorrhœa,** catarrh of the bladder, painful micturition, the urine being acrid, inflaming the parts, **gravel dysuria.**

One doctor used the oil of erigeron in the treatment of **leucorrhœa.** If the patient was anemic, and plethoric, he would give iron in conjunction, five drops four or five times a day on a square of loaf sugar. Others confirm the action of erigeron in the treatment of albuminuria or **Bright's disease.** They have found it to reduce the quantity of albumin, lower vascular tension, control nausea, headache, and other uremic symptoms.

The oil of erigeron may be diluted and employed as a gargle in sore throat and tonsillitis, while it may be applied externally to the throat.

In chronic rheumatic inflammations of joints, and painful swellings, a liniment of oil of erigeron may be used with advantage.

Its action in promptly controlling uterine hemorrhage shows that it is more than an astringent—that it contracts involuntary muscular fibre in the uterus; in like manner it acts on the muscular coats of the bowels, on the arteries and the capillary vessels, controlling hemorrhage and increased mucous discharges.

As an astringent it acts like turpentine, but it is much less irritating. It is chiefly composed of terpene, a hydrocarbon which constitutes pure oil of turpentine. In chronic phthisis and in chronic bronchitis with profuse secretion, it lessens the discharge, modifies the cough and gives tone to the respiratory mucous membrane.

In the treatment of **goiter,** especially in the early stage, the application of oil of erigeron has been very beneficial. One-half of an ounce of the oil is dissolved in one and one-half ounces of alcohol and painted freely over the enlarged glands. If an occasional application of iodine is made with this and phytolacca given internally, satisfactory results should be obtained.

An infusion, or dilution of the tincture in water, is effective as a local application in **ophthalmia** after the acute stage, as an injection in **gleet, chronic gonorrhœa,** and locally in **prolapsus uteri, prolapsus ani,** and **indolent ulcers.** In all these cases the remedy should be given internally for its specific action.

In **cytitis** from calculous concretions in the bladder, it relieves the irritation, it also acts favorably in **chronic nephritis** and albuminuria, in chronic cystitis and in chronic urethritis.

In flatulent colic and in the tympanites of typhoid fever it should be given internally and by enema.

The volatile oil, the tincture, or the infusion may be employed; and the dose, to be efficient, need not be large.

CINNAMON. CINNAMOMUM ZEYLANICUM.

Synonyms—Cinnamon bark, Ceylon cinnamon.

CONSTITUENTS—Volatile oil, tannin, sugar, mannit, starch, mucilage.

PREPARATIONS—Tinctura cinnamomi, tincture of cinnamon. Dose, from a half to two drams. Specific cinnamon. Dose, from ten to thirty minims.

Physiological Action—This agent has long been used as a carminative and local gastric stimulant. It has a mild influence which is grateful and soothing. It has been used to check **nausea** and **vomiting** and to relieve **flatulence.**

Its rare properties have been overlooked by the profession and it has been assigned to its exact position by the masses of the people. Midwives and old nurses have long given a strong infusion of cinnamon to control **post-partum hemorrhage,** and it has been advised in "**nose-bleed**" and in flooding **during miscarriage** and in **menorrhagia.** It has been useful in domestic practice, also in **diarrhœa** and **dysentery.**

Therapy—Cinnamon, in the experience of the writer, is a hæmostatic of much power and is positively reliable in all passive hemorrhages. It is not advisable to combine it with the usual astringents, as ergot, geranium or epilobium, but it acts in perfect harmony with erigeron and to a certain extent with turpentine. German authorities claim that as soon as the menses or any **uterine hemorrhage** becomes excessive and produces exhaustion or causes alarm the decoction should be administered freely. It works to a better advantage in hemorrhage due to atonic conditions of the non-gravid womb, or where there is muscular relaxation, or a general flaccid state of the womb after delivery.

It certainly restores tone to the uterine muscular structure and induces tonic contraction. It will also, Hale says, moderate hemorrhage not dependent on plethora, anæmia or organic uterine disease. In some cases, during labor, it promotes the normal labor pains and materially increases uterine contraction, and prevents post-partum hemorrhage.

The writer, for nearly thirty-five years, has used an extemporaneous prescription, which is his first resort in passive hemorrhage, if the stomach is not seriously disordered. It is somewhat of an irritant to the stomach, especially if full doses be given for a protracted period.

It is a superb case-remedy for emergencies.

It is made by combining a dram each of the oils of cinnamon and erigeron, and adding enough alcohol to make two ounces. Of this, from ten to thirty drops on sugar, or dropped at once on water, will control nearly every controllable passive hemorrhage. He has used it in all the uterine conditions named above, in extreme **pulmonary hemorrhage**—persistent hæmoptysis, in the gastric and intestinal hemorrhages of alcoholics. In all forms of hæmaturia, especially in renal tuberculosis and in habitual nasal hemorrhage, in many cases, a single dose accomplishes the object. As stated, it is not well combined with ergot, but works harmoniously with ergot or gallic acid, if given in alternation.

Two of our physicians at least advise the use of cinnamon in **simple diabetes** of a chronic character. Dr. Houts used it for himself after he had had this disease for months, and found all the conditions improving.

CAPSELLA. CAPSELLA BURSA PASTORIS.

Synonym—Shepherd's Purse.

CONSTITUENTS—Volatile oil, fixed oil, resin.

PREPARATIONS—Fluid Extract. Dose, from fifteen to sixty minims.

Tincture. Dose, from one to two drams.

Specific Medicine Capsella. Dose, from five to thirty drops.

Therapy—The agent has been noted for its influence in **hæmaturia** and other mild forms of **passive hemorrhage.** It is of some benefit as a mild diuretic, soothing irritation of the renal or vesical organs. In cases of uncomplicated **chronic menorrhagia** it has accomplished permanent cures, especially if the discharge be persistent and devoid of much color. The agent is also useful where uric acid or insoluble phosphates or carbonates produce irritation of the urinary tract.

In the treatment of mild forms of **intestinal hemorrhage** or **gastric hemorrhage** from simple ulceration, the agent has been used with some benefit, also in **atonic dyspepsia, diarrhœa,** both acute and chronic, and in **dysentery** and **bleeding piles.**

Externally the bruised herb has been applied to bruised and strained parts, to **rheumatic joints,** and where there was **ecchymosis** or extravasations within or beneath the skin.

Dr. Heinen of Toledo treats **non-malignant abdominal tumors** in women with better results by adding five drops of capsella three times a day to the other indicated treatment.

ALUMEN. ALUM.

Synonyms—Aluminum and potassium sulphate, alum, sulphate of aluminum and potassium.

Alumen Exsiccatum.

Synonyms—Dried alum, burnt alum.

Aluminum and Ammonium Sulphate.

Synonyms—Sulphate of aluminum and ammonium, ammonia, alum.

Physiological Action—Alum is actively astringent. It coagulates the albumin in the tissues and in the blood, produces local contraction of the capillaries, is somewhat escharotic, and produces induration of the skin and tissues. It at first excites and subsequently diminishes the salivary secretion and the secretions of the mucous surfaces of the mouth and stomach, diminishing the secretion of the gastric fluids, and precipitating pepsin. It produces constipation from the suppression of the intestinal secretion. In large doses it has irritant properties which are in excess of its astringent properties, and may produce nausea, vomiting, diarrhœa, and stomach and intestinal pains. The method of its action as an astringent is not well defined.

Therapy—By its local action it is used to control **passive hemorrhage.** The powdered alum is thrown into the nostrils, or applied to a tooth cavity, or to the open blood vessels in a bleeding wound. The solution has been introduced into the uterus to control **post-partum hemorrhage,** and solutions are in common use for the treatment of **passive uterine hemorrhage and leucorrhœa.**

URTICA. URTICA DIOICA.

Synonym—Nettle.

CONSTITUENTS—Formic acid, or a substance closely allied to it, volatile oil, gum, starch, albumen, sugar, salts.

PREPARATIONS—Specific Urtica. Dose, from one to ten minims. Fluid Extract Urtica Dioica. Dose, from one to twenty minims.

Therapy—Urtica has been employed for the general purposes of an astringent, both internally and externally, in hemorrhages, **ill-conditioned ulcers,** and in chronic disease of the mucous membranes of the bronchi, bowels and urinary organs, and it is generally agreed to be an efficient remedy. It, however, appears to have a dynamic action, as in **post-partum hemorrhage, suppression** of the **milk** in **nursing women, retrocedent eruptions,** urticaria, jaundice, dropsy, ague and corpulency its influence in small doses is reliable.

The fresh leaves have been used as a powerful revulsive in lethargy, paralysis, intoxication, congestion of the brain, and hysterical insensibility.

From a half to one ounce of the expressed juice of the fresh plant has been given at intervals of a few hours without untoward results.

In the treatment of **eczema** which includes the face, head and scalp, one case was entirely cleansed and anointed with olive oil, leaving the oil on until the crusts could be softened and removed. Specific urtica dioica was added, two drams to an ounce of rosewater, and applied freely over the parts. The cure was very prompt, especially when the condition of the stomach and intestinal tract was made normal.

This agent is also used when there is **excessive mucous discharge** from the bowels, a drop or two at a dose. Persistent watery diarrheas are controlled by it.

ACHILLEA. ACHILLEA MILLEFOLIUM.

Synonym—Yarrow.

CONSTITUENTS—Achillein, volatile oil, tannin, achilleic acid.

PREPARATIONS—Specific Achillea. Dose, from five to sixty minims.

Specific Symptomatology—The following indications will guide in the selection of this remedy: Hot, dry burning skin, at the beginning of acute asthenic fevers, with suppressed secretion; deficient renal action, with vesical renal or urethral irritation; acute or chronic **Bright's disease** in its incipient stage. **Leucorrhœa,** with relaxed vaginal walls. **Menorrhagia** and **amenorrhœa; hemorrhoids,** with bloody discharge, atonic gastric and intestinal dyspepsia; passive hemorrhages.

Of specific achillea the dose is from five to ten minims.

Therapy—While the profession has used yarrow but little, we find an individual physician occasionally who depends upon it for some very important conditions. Dr. Lakin of England uses it in **hematuria.** He claims that it is good in all forms of passive hemorrhage, whether of the lungs or of the kidneys, or **uterine hemorrhage.** Yarrow is advised by Webster in **uterine hemorrhage.** It is a mild astringent, probably acting also as a tonic. It is useful in passive hemorrhage when not persistent in character.

It is a beneficial remedy in diseases of the mucous surfaces, relieving irritation and profuse secretion. It soothes **intestinal irritation** and overcomes mild forms of diarrhœa. It is of benefit in improving the **tone** of the **urinary apparatus,** relieving irritation, overcoming strangury and suppression of the urine.

It acts best in strong infusion and its use must be persisted in. In general relaxed conditions it is a cure for **leucorrhœa,** where there is a profuse discharge, or thick, heavy mucus from enfeebled mucous membranes.

Dr. John Fearn, of Oakland, California, claims that it has but few superiors in its **influence** upon the **skin.** He says it has a stimulating action which will be a revelation to those who have not used it. It causes the sudoriferous glands to literally pour out their secretions, and with but little depression.

He claims that it will take the place of pilocarpine, with less unpleasant results, and no danger. In **fevers,** he says, especially of the **sthenic** type, when we desire to arouse the skin, nothing can surpass this remedy. The patient is covered warmly in bed and a hot infusion of yarrow is given in frequent doses. When the skin begins to soften the medicine is continued, but in less doses. If there are evidences of autoinfection, from retained secretion, a little capsicum can be added to the infusion. In cases of severe fever, in the first stage, intermittent or bilious fever, it will cause the secretions to be poured out so freely as to discolor the bed clothes.

A syrup made from the leaves relieves chronic cough, especially if there be bloody sputum.

Where there is deficient kidney action, with evidence of **uremic poisoning,** with or without **œdema,** this remedy is a very active eliminant. It will take the place of a vapor bath, and that without exhaustion, the patient being very comfortable all the while. It will abort **fevers, reduce high temperatures,** in sthenic cases will relieve local and general **congestion,** will restore the secretions, will open the sluce gates of the skin, and eliminate morbific materials.

It was one of the remedies which the ancients used in the healing of wounds. Lakin quotes from an old volume, published in 1633, "The leaves of yarrow do close wounds and keep them from inflammation or fiery swelling. It stauncheth blood in any part of the body, and helpeth bloody flux. The leaves put into the nose, relieve headache. It taketh away the pain of cholic."

Dr. Cole of Seattle has confirmed in a practical manner the action of achillea on the skin. He has proved its action in indeterminate cases of **incipient fever,** where infection is the cause, but the character is not determined. Achillea and phytolacca he has used in **tonsillitis.** He has given it in dropsy with good advantage. In old standing cases with organic disease, he has used hair cap moss with it. He uses it in autotoxemia for its active elimination.

In acute **epididymitis** the temperature of 104 degrees, the condition was controlled in twenty-four hours with achillea. When there is no abnormal temperature, he believes that it has little but a diuretic action. Where there is a temperature of 100 or above, he has never failed to get profuse diaphoresis without depression. He considers it a certain remedy.

ACIDUM GALLICUM.

Synonyms—Gallic acid, Trioxybenzoic, Dioxysalicylic acid.

Specific Symptomatology—This is specifically a remedy for passive hemorrhages, when the patient is greatly enfeebled, the functions of the body at low ebb, the skin and extremities cold, with relaxation of the capillaries. It has proved in the writer's hands an exceedingly valuable remedy in the treatment of **hematuria.** I usually combine it with other indicated remedies.

Therapy—In **acute Bright's disease,** where the patient is growing rapidly worse, with a very large quantity of albumen in the urine, and where blood

is found persistently present, this agent has first place. In no case has it failed to produce some beneficial results. Ten grains should be given in water every one and a half or two hours, sometimes alternated with ten minims of the tincture of the chloride of iron. The patient should be placed in bed and kept comfortably warm, and fed with a very mild diet. The administration of large quantities of skimmed milk will aid the influence of the remedy.

In **chronic Bright's disease,** where there is a small quantity of urine, with a large quantity of white albumen precipitated, this agent will sometimes restrain the excretion of the albumen. The writer has obtained no benefit from it in those cases where there was but little albumen in the urine. In passive **hemorrhages** from the **stomach** or intestinal canal, resulting from **chronic ulceration,** good results are obtained from this remedy. Like geranium, it exercises a beneficial influence upon the stomach, as it does not interfere with the processes of digestion, but rather facilitates them. Where there is **pyrosis,** or other excessive discharges from the stomach or from the intestinal canal, it may be satisfactorily administered.

A number of writers claim to have obtained good results in the treatment of **diabetes insipidus,** or **diabetes mellitus,** but it is doubtful if it permanently influences these conditions.

The most satisfactory field of action of the remedy will be found, as we have stated, in its influence upon the various forms of passive hemorrhage. Externally tannic acid is a more active remedy than this, but internally administered this agent is in every way superior, as there is but little doubt that tannic acid sustains a chemical change within the system and is changed into gallic acid.

ACIDUM TANNICUM.

Synonyms—Tannic acid, Tannin, Gallotannic acid, Digallic acid.

PREPARATIONS—The powdered acid or the crystallized acid is administered in doses of from three to ten grains.

Specific Symptomatology—Passive hemorrhages, relaxed conditions of mucous membranes, which result in the free outpour of mucous; excessive secretions from all organs, leucorrhœa with much vaginal relaxation.

Therapy—The agent is not given commonly, where there is active inflammation present. It is not as commonly used at present as in the past. It was freely given in **non-irritative diarrhœas,** in the **diarrhœa** of **consumption,** as well as for the **night sweats** of that disease. It is given for all forms of **chronic hemorrhage,** especially passive hemorrhage. It was given in all cases of **catarrh** where there was an excessive outpour of mucous. The chronic forms of **specific urethritis** are still treated with it by many physicians. It has had at one time a wide reputation in the treatment of **Asiatic cholera. Sporadic cholera** is also treated by it.

Externally it is applied to excoriations, piles, fissure of the anus or rectum, prolapsed rectum and apthous ulceration of the mouth. It is commonly used as an application to **ulcerated and fissured nipples** and to chronic ulceration in any location, **chronic granular conjunctivitis,** and **ulceration** of the **cornea,** purulent conjunctivitis, with **ophthalmia neonatorum.**

This agent is an antidote to **poisoning** by mushrooms and poisonous fungi and to strychnine poisoning.

For internal use, because of its ready and direct appropriation, gallic acid is no doubt superior to tannic acid.

GROUP VI.

Agents Influencing the Character of the Blood.

CHAPTER I.

Alteratives with Antiseptic Properties.

ECHINACEA.	BERBERIS.	SCROPHULARIA.
BAPTISIA.	DULCAMARA.	ANACARDUM.
AILANTHUS.	SARSAPARILLA.	CASCARA.

ECHINACEA. ECHINACEA ANGUSTIFOLIA.

Synonym—Black Sampson, cone flower, purple cone flower.

PART EMPLOYED—The root.

This plant grows throughout the central and western portions of the United States, especially on the elevated tablelands, and in the northern portions, where it was known to the Indians as a cure for snake poison.

There is considerable confusion concerning the identity of the active medicinal species of echinacea. The echinacea purpurea of the Eastern States has been thought to be identical with the echinacea angustifolia of the Western States. It is often used for the same purposes, but is universally disappointing. King introduced it into his dispensatory as rudebeckia purpurea.

PREPARATIONS—Fluid Extract of the root, miscible with water without material precipitation. Dose, one-fourth to one-half fluid dram.

Specific Medicine Echinacea. Dose, five to forty or even sixty drops.

Echafolta is a purified, assayed form of Echinacea. The dosage of both is the same. Externally or for surgical purposes it is advised as superior to the other preparations of Echinacea. It is prescribed for the same conditions.

For from twenty to twenty-five years, Echinacea has been passing through the stages of critical experimentation under the observation of several thousand physicians, and its remarkable properties are receiving positive confirmation. As yet, but few disparaging statements have been made. All who use it correctly fall quickly into line as enthusiasts in its praise; the experience of the writer is similar to that of the rest, the results in nearly all cases having been satisfactory. The laboratory observations have been extensive but are not yet complete.

Physiological Action—The following laboratory observations of its action upon the blood were made by Victor von Unruh, M. D., of New York City:

More than one hundred blood counts were made in cases of infectious diseases, mainly in tuberculosis. The results showed that echinacea increases the phagocytic power of the leukocytes; it normalizes the percentage count of the neutrophiles (Arneth count). Hyperleukocytosis and leukopenia are directly improved by echinacea; the proportion of white to red cells is rendered normal; and the elimination of waste products is stimulated to a degree which puts this drug in the first rank among all alteratives. The stimulation toward phagocytosis become very evident in cases where it was impossible to

find any evidence of phagocytosis before echinacea was administered, and where after the use of this drug for a period of only a few days the phagocytes were seen to contain as many as eight bacilli within the cell. In all cases where the percentage count among the neutrophiles (polymorphonuclears) has been such as give an unfavorable prognosis inasmuch as those neutrophiles containing one and two nuclei predominated over those containing three, relatively and absolutely, the administration of echinacea for only two weeks has normalized the percentage so as to give to the class containing three nuclei the absolute and relative majority over those containing one and two nuclei. Echinacea thus gives to the class normally strongest in phagocytosis the power where it obtains in the normal condition of the leukocytes. "**Subculoid Echinacea**" was used for these experiments.

I have long been assured from the observation of this remedy that it directly influences the opsonic index. I wrote von Unruh directly, asking him for his opinion from his long experience and from his laboratory observations of the action of this remedy. He replied as follows: "Quoting from McFarland's Pathogenic Bacteria, the opsonic theory teaches that the leukocytes are disinclined to take up bacteria unless they are prepared for phagocytosis by contact with certain substances in the serum, that in some manner modify them. This modifying substance is the opsonin. I have definitely demonstrated and am continuing to observe, that the action of echinacea on the leukocytes is such that it will raise phagocytosis to its possible maximum." The logical deduction, therefore, is that the opsonic index is correspondingly raised by this agent.

When a half teaspoonful dose of the tincture is taken into the mouth, a pungent warmth is at once experienced which increases to a tingling, and remains for half an hour after the agent is ejected. It is similar to that of aconite, but not so much solely of the nerve-end organs. The sensation is partly of nerve tingling, and more from an apparent mild nerve irritant effect. It much more resembles the action of xanthoxylum. If a small quantity be swallowed undiluted, it produces an apparent constriction of the throat, sensation of irritation, and strangulation, much greater in some patients than in others, and always disagreeable. The sensation persists for some minutes, notwithstanding the throat is gargled, water is drunk, and the agent entirely removed.

The toxic effect of this agent is manifested by reduction of temperature, the frequency of the pulse is diminished, the mucous membrane becomes dry and parched, accompanied with a prickly sensation; there is headache of a bursting character, and a tendency to fainting is observed if the patient assumes an erect posture. After poisonous doses, these symptoms are more intensified. The face and upper portion of the trunk are flushed, there is pain throughout the body, which is more marked in the large articulations. There is dimness of vision, intense thirst, gastric pains followed by vomiting and watery diarrhœa. No fatal case of poisoning is recorded, to our knowledge, and only when given in extreme doses are any of the above undesirable influences observed.

The physiological effects are manifested by its action upon the blood, and upon the mucous surfaces. The natural secretions are at first augmented, the temperature is then lowered, the pulse is slowed, and the capillary circulation restored. It exerts a peculiar affinity over local debilitated inflammatory conditions, attended with blood dyscrasis. It has its greatest field in adynamic fevers, reducing the pulse and temperature and subduing delirium.

It promotes the flow of saliva in an active manner. The warmth and tingling extend down the esophagus to the stomach, but no further unpleasant influence is observed. In a short time diaphoresis is observed, and the con-

tinuation of the remedy stimulates the kidneys to increased action. All of the glandular organs seem to feel the stimulating influence, and their functional activity is increased. The stomach is improved in its function, the bowels operate better, and absorption, assimilation, and general nutrition are materially improved. It encourages secretion and excretion, preventing further auto-intoxication, and quickly correcting the influence in the system of any that has occurred. It stimulates retrograde metabolism, or tissue waste, more markedly than any other single remedy known. It influences the entire lymphatic system, and the condition of the blood suggests that the patient has been taking stimulants. Its influence upon the capillary circulation is not comparable with that of any other known remedy, for while it is a stimulant to the circulation in these vessels, it also seems to endow them with a certain amount of recuperative power or formative force by which it is constituted, not only a general stimulant and tonic to the circulation, but also peculiarly so, to local inflammations of a debilitating character, as when administering liver and iron remedies in abundance. Sallow, pallid and dingy conditions of the skin of the face quickly disappear, and the rosy hue of health is apparent. Anæmic conditions improve with increased nerve tone. There are but few subjective symptoms from large doses of this agent. It is apparently non-toxic, and to any unpleasant extent non-irritant. The agent certainly has a marked effect upon the nervous system, but its specific influence upon the central organs has not yet been determined.

This agent is markedly anesthetic in its local influence. Applied to open wounds and to painful swellings, while the alcohol may at first induce a burning sensation, this is quickly followed by entire relief from pain in many cases. So marked is this influence that it could well be used for an antiseptic local anesthetic.

I am convinced that success in certain cases depends upon the fact that the patient must have at times, a sufficiently large quantity of this remedy in order to produce full antitoxic effects on the virulent infections. I would therefore emphasize the statement which I have previously made that it is perfectly safe to give echinacea in massive doses—from two drams to half an ounce every two or three hours—for a time at least, when the system is overwhelmed with these toxins. This applies to tetanus, anthrax, actinomycosis, pyemia, diphtheria, hydrophobia, and meningitis.

Specific Symptomatology—It is the remedy for **blood poisoning**, if there is one in the Materia Medica. Its field covers acute auto-infection, slow progressive blood taint, faults of the blood from imperfect elimination of all possible character, and from the development of disease germs within the blood. It acts equally well, whether the profound influence be exerted upon the nervous system, as in puerperal sepsis, and uræmia, or whether there is prostration and exhaustion, as in pernicious malarial and septic fevers, or whether its influence is shown by anæmia, glandular ulceration or skin disease.

It is especially indicated where there is a tendency to gangrenous states and sloughing of the soft tissues, throat dark and full, tongue full, with dirty, dark-brown or black coat, in all cases where there are sepsis and zymosis.

It undoubtedly exercises a direct sedative influence over all of the fever processes in typhoid, cerebro-spinal meningitis, malarial fevers, asthenic diphtheria, etc., for while it equalizes the circulation, it also acts as a sedative to abnormal vascular excitement and lowers the temperature, if this be elevated, while if this be subnormal, the singular effect upon the vital forces conspires toward a restoration of the normal condition. As a sedative it is comparable in some respects with baptisia, rhus and bryonia.

I think this sedative influence is largely exercised through its power to destroy the germs of the infection, thus removing the cause.

Therapy—Echinacea is par excellence a corrector of any deprivation of the body fluids. It influences those conditions included under the terms septic, fermentative and zymotic. Those which manifest themselves in a disturbed balance of the fluids, resulting in alterations of the tissues such as are exhibited in **boils, carbuncles, abscesses** and cellular and glandular inflammations. These same conditions result from the introduction of the venom of serpents and poisonous insects of every character, also from the introduction of disease germs from pus and other putrid and infectious sources.

As an **intestinal antiseptic** the agent is bound to take first rank with all physicians when once known. Experiments with it to determine its immediate influence upon the fevers caused by continued absorption of septic material, such as **typhoid fever, puerperal fever,** and the fever of the after-stages of diphtheria, show that its influence upon the pernicious germs begins at once.

In several cases reported, where special sedatives were not given, the temperature has declined from one-half to two degrees within a few hours after its use was begun, and has not increased until the agent was discontinued.

It has then slowly increased toward the previous high point until the remedy was again taken, when a decline was soon apparent.

It does not produce abrupt drops in the temperature, as often follows the curetting of a septic womb, or as the removal of a quantity of septic material often causes, but it effects an almost immediate stop in germ development, and a steady restoration from its pernicious influence. In the treatment of typhoid fever in the Cook County Hospital, Chicago, it was used in the Eclectic wards for about two years, or more, and twenty-one days was the extreme extent of the fever, and the mortality was the lowest known. In many cases taken early, the fever was limited to fourteen days without delirium.

In private practice the reports of many physicians are much more enthusiastic, claiming that when given in the initial stage the fever has disappeared in seven days, and that fourteen days is the extreme limit.

The blood does not become impaired, the assimilation and nutrition are remarkably increased, the nerve force is retained, elimination from all organs is improved, ulceration of Peyer's glands ceases, the enteric symptoms abate, there is but little, if any, tympanites, and there has as yet been no case of **hemorrhage or perforation** reported as having occurred after the agent was begun. It certainly is a valuable acquisition to **typhoid** therapeutics. All recent reports confirm these statements.

Its influence in **septic fevers** is the same as in typhoid. It seems to act as a nerve stimulant upon the vital forces depressed by the poison. This fact was especially true in a case where extreme septic absorption after a badly conducted abortion caused acute nephritis and suppression of the urine. Uræmia supervened, with delirium and mild convulsions. Twenty drops of the fluid extract of echinacea were given every two hours continuously. Extreme heat was applied over the kidneys, and a single dose of an antispasmodic was given, the echinacea alone being continued. The fever dropped in two days, the mind cleared, the urinary secretion was restored, and the patient made a rapid and uninterrupted recovery.

It is a most important remedy in **uræmic poisoning,** and will supersede all other single remedies.

It has been in constant use in **diphtheria** for three years. It is used locally as well as internally. The exudates contract and disappear, the local evidences of septic absorption are gone, the fever declines, the vital forces increase, depression, mental and physical, disappears, and the improvement is continual. In **ulcerated sore throat** of any character, in **ulcerated sore mouth,**

in **stomatitis materni,** in **post-nasal** or **catarrhal ulcerations** it is prompt and effectual. It is preferred in these cases by those who use it.

In local inflammation of any portion of the intestinal tract, it has given excellent satisfaction. It quickly overcomes local blood stasis, prevents or cures ulceration, and retards pus formation by determining resolution. Reports of its use in **appendicitis** have been satisfactory, indeed. One writer treated several cases of unmistakable diagnosis, and sastisfactory cure resulted. The writer treated one marked case of appendicitis where pus formation and future operation seemed inevitable. The improvement was apparent after the agent had been taken in a few hours, and recovery was complete in twelve days from attack.

Its use in **cholera infantum** has been satisfactory, especially if nervous phenomena are present. The frequent discharges gradually cease, the patient is soothed and the nerve force increases as the fever abates. Extreme nervous phenomena do not appear.

Webster, of San Francisco, in 1892, suggested the use of echinacea in **spinal meningitis.** It should be especially valuable if any blood dyscrasia lies at the bottom of the difficulty. Following Webster's suggestions, other physicians, from their personal observations, have been able to ascribe undoubted curative virtues to this agent in this and other convulsive and inflammatory disorders of the brain and cord. It directly antidotes the infection.

As a sedative in cerebro-spinal meningitis, Webster is disposed to believe that it specifically influences the vascular area concerned in the nutrition of the cerebro-spinal meninges.

Since the above was first written the use of echinacea for **cerebro-spinal meningitis** has been established among those who have been experimenting with the remedy in this disease. There is no doubt whatever that its influence in destroying the virus is specific, and effectual if given in sufficient doses. Five drops is about the ordinary dose for a child, but even this can be increased to twenty in extreme cases. It may be used in conjunction with hexymethylenamine.

At the same time, it must not be forgotten that in all spasmodic diseases, depending upon infection both conditions must be treated together, and gelsemium in full physiologic doses must be given with echinacea.

In the treatment of **erysipelas** it has given more than ordinary satisfaction, and has established itself permanently in that disorder. It is especially needed when sloughing and tissue disintegration occur, its external influence being most reliable.

In the pain of **mammary cancer** and in the **chronic inflammation** of the mammary gland, the result of badly treated puerperal mastitis, where the part has become reddened and congested, the remedy has worked satisfactorily.

In **bed sores, fever sores,** and in **chronic ulcerations** it is exceedingly useful. It is diluted and applied directly, while it is given internally. It is of much value in **old tibial ulcers,** in **chronic glandular indurations,** and in **scrofulous** and **syphilitic nodules** and other specific skin disorders. The extract or the fluid extract can be combined with an ointment base such as lanolin in the proportion of one part to one, two, or three parts of the base, and freely applied. It can be injected into the **sinuses** of **carbuncles,** or into the structure of the diseased parts with only good results.

Logan treated ten cases of stubborn skin disease of undoubted syphlitic origin with this remedy alone. It was applied externally and given in full doses internally, with a satisfactory cure in every case.

In the treatment of **syphilis** very many observations have been reported. It has been used entirely alone and also in conjunction with alterative syrups, but in no case yet reported has mercury been used with it. The longest time of all cases yet reported, needed to perfect the cure, was nine months.

The writer's observations, in all cases he has treated, are that the patient begins to feel a general improved condition after taking the remedy a few days. Some of them are enthusiastic concerning the **sense of well-being** they experience. It begins by removing all the sensations of discomfort, and the patient's mind becomes hopeful and encouraged. The specific fever in the first stages soon declines, and there is a permanent abatement of the evidences of the disease. There are absolutely no undesirable influences observed, and no after effects, and no undesirable side influences to overcome. I have not, however, depended upon this agent alone, in all cases. There are too many definite conditions present to be met with one remedy. I think results are hastened by correct adjustments of three or four other vegetable alteratives with this.

The influences of echinacea are not always enhanced by the use of the iodides. On the other hand, I have had satisfactory results, where the iodides, having previously been given in conjunction with it, were withdrawn, and the echinacea continued alone. The rapid amelioration of the disorders of the skin, after the withdrawal of the iodides, was especially remarked if berberis was substituted for them.

The following most remarkable case occurred in my practice:

A gentleman, aged about forty-five years, in apparently good health, was vaccinated, and as the result of supposed impure virus a most unusual train of the symptoms supervened. His vitality began to wane, and he became so weak that he could not sit up. His hair came out, and a skin disease pronounced by experts to be psoriasis, appeared upon his extremities first, and afterward upon his body. In the writer's opinion, the condition had but little resemblance to psoriasis. It seemed more like an acute development of leprosy than any other known condition.

This advanced rapidly, his nails began to fall off, he lost flesh, and a violent iritis of the left eye developed and ulceration of the cornea in the right set in, and for this difficulty he was referred to Prof. H. M. Martin, President of the Chicago Ophthalmic College.

Dr. Martin gave him ten grains of the iodide of potassium three times daily, and fed him freely upon phospho-albumin. The loss of hair was stopped, but no other favorable results were obtained. The condition progressed rapidly towards an apparently fatal termination. At this juncture, Dr. Martin asked the writer to see the case with him. It looked as if there was no possible salvation for the patient, but as a *dernier ressort*, the writer suggested **Echinacea** twenty drops every two hours, and the phospho-albumin to be continued. With this treatment, in from four to six weeks, the patient regained his normal weight of more than one hundred and fifty pounds and enjoyed afterward as good health as ever in his life.

Echinacea has been used with great success in aggravated and prolonged cases of **rhus poisoning**, both locally and internally.

The agent has been long in use among the Indians in the West as a sure cure for **snake bite**. It has created a furor among the practitioners, who have used it in the **bites of poisonous animals**, that has made the reports, apparently, too exaggerated to establish credulity on the part of the inexperienced. Cases that seemed hopeless have rapidly improved after the agent was applied and administered. There is at present no abatement in the enthusiasm. One physician controlled the violent symptoms from the

bite of a tarantula, and quickly eliminated all trace of the poison with its use.

Dr. Banta of California treated a man **bitten by a scorpion,** reported in the Eclectic Medical Journal, with echinacea with rapid cure.

In a paper read at the Ohio State Eclectic Medical Society in 1895, Dr. Gregory Smith stated that in 1871 Dr. H. C. F. Meyer commenced the use of this remedy.

He says: "In malarial troubles it has no superior." He also recommends it as a remedy for **hemorrhoids;** twenty-five drops of the pure tincture injected into the rectum three times a day promptly effect a cure. "It is also prompt in stings from insects and in poisoning by contact with certain plants." As an antidote to the venom of the crotalus horridus it stands without a peer. He gives the history of 613 cases of rattlesnake bite in men and animals, all successfully treated. With the courage of his convictions upon him he injected the venom of the crotalus into the first finger of his left hand; the swelling was rapid and in six hours was up to the elbow. At this time he took a dose of the remedy, bathed the part thoroughly, and laid down to pleasant dreams. On awakening in four hours the pain and swelling were gone.

The fresh root scraped and given freely is the treatment used by the Sioux Indians for snake bite. Recoveries from crotalus poisoning are effected in from two to twelve hours.

By far the most difficult reports to credit are those of the individuals bitten by **rabid animals;** there are between twenty and thirty reports at the present time. In no case has **hydrophobia** yet occurred, and this was the only remedy used in many of the cases. In five or six cases, animals bitten at the same time as the patient had developed rabies, and had even conveyed it to other animals, and yet the patient showed no evidence of poisoning, if the remedy was used at once. One case exhibited the developing symptoms of hydrophobia before the agent was begun. They disappeared shortly after treatment. In no case has an opportunity offered to try the remedy after the symptoms were actually developed. One poorly nourished anæmic and jaundiced child was badly bitten and the treatment improved the general condition in a marked manner. In the treatment of **hydrophobia,** a case is reported, which was bitten by a rabid animal out of a litter of six half-grown pups, all of which showed signs of hydrophobia and were killed. A number of parties were bitten by these pups. Two who were bitten died of hydrophobia, three were treated at the Pasteur institute and cured, one was treated with echinacea and cured.

The doctor prescribed teaspoonful doses of echafolta, every three hours. The remedy was introduced on saturated gauze into the wounds, and covered all the injured surfaces. This was secured by a roller bandage. Prior to the administration of the remedy the symptoms of nervous irritation and incipient hydrophobia were strongly marked. These symptoms abated rapidly, and the patient recovered in a satisfactory manner.

A large amount of satisfactory evidence has accumulated confirmatory of our statements concerning the curative action of the remedy in **tetanus.** Dr. John Herring reported one marked cure. Dr. Lewis reports three cases, where the remedy was injected into the wound after tetanic symptoms had shown themselves. All the tissues surrounding the wound were filled with the remedy by hypodermic injection and gauze saturated with a full strength preparation was kept constantly applied. The agent was also administered in half-dram doses internally, every two or three hours.

Another physician has reported the observation of quite a number of cases, where tetanus had either markedly developed, or was anticipated.

The use of the remedy satisfactorily overcame all apparent symptoms where present, and where not present, no tetanic phenomena developed. In the diagnosis of this disease the physician may confuse septic phenomena sometimes with those of developing tetanus, and the cure of the septic conditions may have been taken for a cure of tetanus.

In the treatment of **tetanus,** I am confident that no antiseptic alone will cover the entire pathology of this disease. There must be a powerful antispasmodic given in conjunction with the germ destroying agent, and vice versa. Echinacea or phenol hypodermically, or both, with gelsemium, lobelia, or veratrum carefully selected and adjusted should meet the indications of all early cases.

These same facts should apply to cases bitten by dogs and wherever convulsions result from infection.

The agent has had a most marvelous influence in overcoming **pyemia.** We have had some extreme cases reported, where it would seem that the patient was positively beyond all help, where amelioration of the symptoms was pronounced, and the restoration satisfactory.

In the treatment of small-pox conclusive proofs are now furnished us which declare the remedy to be of great efficacy, not only in ameliorating all the phenomena of the disease, but in preventing sequela. When applied to the skin in a form of a lotion, the pustules are benign in their character, and terminate with a minimum of scar.

In the treatment of **erysipelas** the remedy has proven itself all we anticipated for it.

Dr. Wilkenloh reports the treatment of at least five cases of **goitre,** three of which had **exophthalmic** complications, and all were cured, with this remedy alone. The doctor gave the remedy internally in full doses, and injected from five to fifteen minims directly into the thyroid gland, and kept gauze, saturated and applied externally. As no other remedy than this was used, there could be no doubt about its positive influence.

Applied to painful surfaces, to local acute and painful inflammations of the integument, or to painful wounds, its anæsthetic influence is soon pronounced, and is of great benefit, in preserving freedom from pain during the active healing processes, which are stimulated and encouraged by this remedy. Prof. Farnum is enthusiastic over the action of the remedy in overcoming the odor of **cancer,** whether in the early stages, or in the latter stage of the development of this serious disease. He advises its persistent administration in all cases where there is a **cancerous cachexia,** believing that it retards the development of cancer and greatly prolongs the patient's life.

We have already referred to its specific use in the treatment of **phlegmenous swellings, old sores, dissecting** and **surgical wounds,** and where there are pus cavities of long standing. Also as a very positive remedy, applied to all cases where **gangrene** is anticipated, or has appeared.

Its influence in gangrene of the extremities has been very pronounced. In gangrene of the fingers the curative benefits are observable from the first application. It is useful in **dermatitis venenata,** in **erysipelas** with sloughing phagedena, and in **phlegmasia alba dolens,** or **phlebitis.** In this latter condition its external use will greatly assist the internal medication.

In the treatment of **Anthrax,** echinacea has proven in a number of cases to be an exceedingly reliable remedy. Dr. Lewis of Canton, Pa., first reported on it in 1907 in Ellingwood's Therapeutist, and Dr. Aylesworth of Collingwood, Canada, confirmed all of his statements, the observations of the two doctors having been made about the same time, each without knowledge of the other. In these cases, very large doses from one to two drams, frequently repeated, are required.

Twenty to forty minims of echinacea every two hours with proper local treatment, such as iodine locally, will cure **actinomycosis.**

In the treatment of **catarrh,** it is used internally, and applied locally in the form of a spray, if necessary. It is not only an important remedy in nasal catarrh, but it is important in intestinal catarrh. I used it with excellent advantage in a so-called incurable case of ulcerative colitis with heavy discharge of mucus and pus.

Dr. Fair is emphatic in his statements that patients **exposed to diphtheria** should take echinacea in from ten to twenty drop doses every two hours with the positive expectation of preventing the disease. If the first symptoms appear as the usual premonitory evidences, the dose should be increased and other indicated remedies will ward off the disease. I have much confidence in this statement and would suggest that it be carried out fully.

The use of echinacea in the treatment of **impetigo contagiosa** is confirmed. One doctor treated several very severe cases and the rational action of the remedy suggests that its use externally and internally in this disease will prove highly satisfactory.

Another physician whose name is not given treated **infection** and a **purulent discharge from the urethra** where there was urinary retention for two days, with this remedy. He passed a catheter as far down as possible, and then combined one part of echinacea with six parts of sterilized water. He forced this slowly against the constriction. Relaxation took place probably from the local anesthetic influence of the remedy in a few minutes. The catheter was withdrawn, and the water passed freely. He repeated the treatment once or twice a day to a complete cure.

Dr. Rounseville reported to the Wisconsin State Medical Society that he had used echinacea with excellent results in both **diabetes mellitus,** and diabetes insipidus, and also in some forms of albuminuria, and in each of the cases he obtained results that confirmed his opinion that the agent was one that would be a material assistance combined with other measures.

Stubborn **diabetic ulcers** have been treated by Dr. Thomas Owens very successfully with the internal and external use of echinacea.

Dr. Hewitt used echinacea in **alopecia.** He made a strong solution and combined with it agents that would assist in stimulating the nutritive functions of the hair follicles. He was well satisfied with the result.

A directly curative influence from this agent alone has been secured, where from vaccination a general infection has been induced. I am confident that no other single medicine will accomplish as much in these cases, immediately, and as satisfactorily as this remedy.

Dr. Hall of Clearwater, Neb., obtained the same results from injecting the full strength remedy where there was **renal hemorrhage** with very **painful piles.** The curative effect was pronounced. Others agree with him in the treatment of piles with echinacea. I am convinced that it would be good practice to use collinsonia, hamamelis or æsculus in conjunction with this remedy.

Dr. Yates treated an **eruptive disease** with purulent discharge which we call **nettle rash** with echinacea internally, and permanganate of potassium solution externally. The results were exceedingly prompt.

Many cases of **tibial ulcer** treated with echinacea with curative results, are reported. The agent is used both internally and externally, associated often with other successful measures.

One doctor had an opportunity to observe the action of echinacea in some fowl that had taken **strychnine** which was used to poison animals. Those that received the medicine, lived. All those that did not get it, died.

This is simply a suggestion in favor of trying echinacea as an antidote for strychnine poisoning.

BAPTISIA. BAPTISIA TINCTORIA.

Synonym—Wild indigo.

CONSTITUENTS—Baptisin (a bitter glucoside), baptin (a purgative glucoside), baptitoxin (a poisonous alkaloid), resin, fixed oil.

PREPARATIONS—Extractum Baptisiæ Alcoholicum, Alcoholic Extract of Baptisia. Dose, from one to four grains.

Specific Medicine Baptisia. Dose, from one-fourth to ten minims.

Physiological Action—When fresh and taken in a sufficiently large dose Baptisia causes violent vomiting and purging. In poisonous doses there is an acceleration of respiration and reflex activity followed by death from central paralytic asphyxia.

The agent has a bitter, somewhat acrid and astringent taste. In large doses it is somewhat violent in its influence upon the gastro-intestinal tract, producing increased intestinal secretion of the entire glandular apparatus. It especially influences the liver. In overdoses it is emetic and cathartic, in some cases causing an excessive flow of viscid saliva. It is laxative in small doses, producing soft, unformed stools. It increases the biliary secretion, sometimes most excessively. It exercises its influence more satisfactorily in asthenic fevers than in sthenic fevers.

Specific Symptomatology—It is especially indicated where, with **suppressed secretion** and marked evidence of **sepsis,** there is ulceration of the mucous membranes of the mouth, or **intestinal ulceration.**

In **low fevers** with dark or purplish mucous membranes of the mouth, tongue dry and thin, with a dark coating, face dusky and suffused, circulation feeble.

Fyfe gives as its specific indications those much the same as were given in the previous writing on this remedy—dusky discoloration of the tongue and mucous membranes; full and purplish face, like one who has long been exposed to the cold; protracted **typhoid conditions,** with continued moist, pasty coating on the tongue; sleek tongue, looking much like raw beef; dark, tar-like fetid discharges from the bowels—prune juice discharges; general putrid secretions.

Dr. Fearn called attention to the indication of a dusky, purplish color often distinctly marked in typhoid patients upon one side of the face. Ten or fifteen drops of baptisia in water during twenty-four hours has corrected that condition quickly for him, improving the patient.

The indications for baptisia are often present in infectious exanthema such as **smallpox** or **scarlet fever.**

These indications resemble those also which call for acids. Selections should be made between hydrochloric, nitric, hydrobromic, or hydriodic acid, to be given in conjunction as required.

Therapy—With the above indications the agent has been widely used for many years by our practitioners in the treatment of typhoid conditions, and has established its position as an important remedy.

It has an apparent dynamic influence upon the glandular structure of the intestinal canal, directly antagonizing disease influences here, and reenforcing the character of the blood, prevents the destruction of the red corpuscles, and carries off waste material. In malignant tonsillitis and diphtheritic laryngitis it has been long used with excellent results. In **phagedena** with gangrenous tendencies wherever located, it has exercised a markedly curative influence.

It is useful in **dysentery** where there is offensive breath and fetid discharges of a dark prune juice character.

In scarlet fever, with its specific indications, it is a useful remedy. Large doses are not necessary, but it should be employed early and the use persisted in.

In the treatment of **low fevers** this agent is said to exercise marked sedative power over the fever. Homeopathic physicians prescribe it to control the fever. There is no doubt that in proportion as the cause of the fever is destroyed, the temperature abates. Any inhibitory influence directly upon the heart and circulation cannot be attributed to it, yet it soothes cerebral excitement to a certain extent, having a beneficial influence upon delirium.

It is advised in all diseases of the glandular system, and in **hepatic derangements** especially, with symptoms of this character. In the various forms of **stomatitis, putrid sore throat** and **scarlatina maligna; in inflammation of the bowels,** where there is a tendency to typhoid conditions, especially ulcerative inflammation of any of the internal organs; in **dyspepsia,** with great irritability and offensive decomposition of food; in **scrofula** and in cutaneous infections, the agent should be long continued. In the long protracted and sluggish forms of fevers, with great depression of the vital forces; in **ulceration** of the **nipples** or **mammary glands,** or of the cervix uteri, it is spoken highly of.

There is a dynamic influence exercised by baptisia upon the entire glandular structure of the body when adynamia is present, more particularly upon the **intestinal glands.** This influence directly reinforces the blood in its effort to throw off the disease, and restore normal conditions. It is because of this influence that it is of value in typhoid.

Dr. Hainey says that in whatever condition the patient complains of **difficult respiration,** where the lungs feel compressed, where the patient cannot lie down because of fear of suffocation, if he sleeps, he has found baptisia in small doses every hour positively curative. He got this suggestion from a homeopathist, and he has proven it to be reliable.

Others have found **typhoid cases** with the characteristic symptoms, where the brain seems to be overwhelmed with toxines, where the patient has times where the breathing is rapid or panting, alternated with slow respiration, in which this remedy is very prompt. The condition may also be present in diphtheria, and in the so-called black measles or other highly infectious disorders.

Fyfe advises it in all diseases of the glandular system, and in **hepatic derangements** especially, with symptoms of this character, in the various forms of **stomatitis, putrid sore throat** and **scarlatina maligna,** and in **inflammation** of **the bowels,** where there is a tendency to typhoid conditions, especially ulcerative inflammation of any of the internal organs. In **dyspepsia,** with great irritability and offensive decomposition of food. In scrofula and in cutaneous infections the agent should be long continued. In the long protracted and sluggish forms of fevers, with great depression of the vital forces, in **ulceration** of the **nipples** or **mammary glands,** or of the cervix uteri, it is spoken highly of.

It will thus be seen that the agent is properly classed among the alteratives, as its alterative properties stand first, but its pronounced tonic influence will be quickly observed. It overcomes weariness, "that tired feeling," produces a sense of vigor and general improved tone and well-being.

BERBERIS. BERBERIS AQUIFOLIUM.

Syonyms—Oregon grape, mountain grape.

Constituents—Berberine, oxyacanthine, berbamine, tannin, fat, resin.

Preparations—Extractum berberidis aquifolii fluidum. Fluid extract of berberis aquifolium. Dose, from five to twenty minims.

Administration—The active principle of the agent is apt to precipitate if a combination is made with the iodide of potassium, as is often done with other vegetable alteratives. To avoid this the iodide solution should be rendered slightly alkaline by adding a few drops of the liquor potassæ before the combination is made.

Physiological Action—In overdoses in some cases the agent produces tremor of the limbs, lack of muscular power, dullness of the mind, drowsiness and active diuresis. It is not a poisonous agent.

Its influence upon the secretion of the entire glandular structure of the digestive and intestinal tract is steady, sure, and permanent, although not always as immediately marked as some other agents.

It stimulates all the glandular organs of the body. It stimulates digestion and absorption, and thus improves general nutrition. It materially stimulates waste and repair.

John Aulde in 1911 advised this remedy for its immediate influence upon the digestive apparatus, the blood, and the secretions. He said constipation is relieved and the bowel movements become regular and natural. The **complexion clears,** the muscular strength increases, and **the skin** and urinary organs become more active. I have found it indeed serviceable in **syphilis** and in **scrofula,** the general indications being peculiar to indigestion such as coated tongue, fetid breath, and a general feeling of malaise from blood disorders. This is strictly in line with our own teachings.

Specific Symptomatology—The specific action of this agent is in scaly, pustular and other skin diseases due to the disordered condition of the blood. It is the most reliable alterative when the influence of the dyscrasia is apparent in the skin. It is given freely during the treatment of skin diseases where an alterative is considered an essential part of the treatment.

Therapy—It has cured persistent acne for the writer, when no local treatment was used. It contributes to the removal of **pimples** and **roughness** and promotes a clear complexion, a soft, smooth and naturally moist skin in sensitive young ladies, when the cause is not a reflex one from **ovarian** or **uterine** irritation, or menstrual irregularity.

It seems of especial value in scaly skin diseases and in disorders of a non-inflammatory type, and yet it works nicely in some cases of the moist variety.

It has cured very many cases of **salt rheum** even when the symptoms were chronic in character and greatly exaggerated.

In moist eczema it has acted most satisfactorily, but has usually been given in conjunction with other treatment. Dr. Soper, in 1884, reported in the Therapeutic Gazette a most intractable case of moist eczema of an acute character covering the entire body. No other alterative was given. The case was cured in four weeks. In **eczema capitis, eczema genitalis,** with **pruritus** and in **scaly eczema** of all kinds, it has been given alone and has acted promptly and surely.

It has cured cases of **scald head,** so called, in a few weeks, restoring tone and vigor to the hair.

It has been often used in **acne,** and has worked nicely when local or reflex irritation was not the cause.

In **psoriasis** and in **pityriasis** it has won the praise of many doctors. For **dandruff** it has been given internally and has produced cures in a number of cases,

In many instances various forms of **chronic dermatosis** have yielded to its influence when other treatment has failed.

It should be prescribed in glandular **indurations** and chronic **ulcerations,** both of a scrofulous and syphilitic type, giving excellent results in these cases. It is lauded highly in **syphilis,** though it has seldom been given alone in this condition, but usually with other vegetable alteratives, the value of which, however, it has seemed to greatly enhance. Of this fact, I am positively convinced because of the rapid disappearance of the characteristic eruption, and the marvelously smooth condition of the skin which has followed with my patients when this agent is given in this disease.

When first introduced it was recommended in chronic malarial conditions, in **intermittent fevers,** and in the stomach, liver, intestinal and general glandular disorders of these fevers. It was claimed that its tonic influence was conspicuous in these conditions and that in certain cases it exercised marked antiperiodic properties. It certainly acts as a tonic and corrective to disorders of the liver, an influence that has been often remarked when given for skin diseases.

AILANTHUS — AILANTHUS GLANDULOSA

Synonym—Chinese Sumach, Tree of Heaven.

Administration—The powder is of greenish yellow color, strongly narcotic odor, nauseating, strongly bitter taste. The dose is from five to thirty grains.

Specific Medicine ailanthus is prescribed twenty drops in four ounces of water; a teaspoonful every hour or two hours.

The extract is given in doses of from one to five grains. The fluid extract in from five to twenty minims.

Physiological Action—In overdoses ailanthus causes vertigo, severe headache, pains in the back and limbs, together with great prostration, tingling and numbness; it reduces the pulse-beat and the respiration and causes great weakness, cold sweats and shivering. If it be given too frequently, or in too large doses, it causes death by paralyzing the respiratory center, its influence resembling that of tobacco. It is said that both quassia and gentian intensify its action, and that it should not be administered with either iron or lead compounds.

The presence of ailanthus in a malarial locality, like eucalyptus, will correct the malarial influence of that locality.

Specific Symptomatology—Its indications are similar to those of rhus tox. It is a valuable agent, but its therapeutic influence is not fully determined. It is yet in the experimental stage to a certain extent.

It is indicated in cases in which all the evidences of sepsis are quite pronounced or prominent, such as a dusky eruption, dirty, dry, cracked tongue malignant sore throat and tonsils, with sordes on the teeth, and excoriating discharges from the nose and mouth, bad respiration, and adynamic persistence of disagreeable symptoms telling of blood-poison; in atonic conditions of the nerves, or of the mucous membranes of the body, or great general weakness and prostration. It should be classed as an antiseptic, and in the same class with baptisia, echinacea, etc.

Therapy—It is of much service in **scarlet fever,** especially the malignant form, in **typhoid,** and other types of low fever and in low forms of acute in-

flammation. With special reference to the action of ailanthus as a tonic to the nervous system, it is efficient as a remedy in some cases of **asthma** as well as in **epilepsy,** and in many cases of epileptiform contraction of the muscles, etc. Frequently ailanthus will relieve nervous palpitations and severe cases of singultus, that for a long time have withstood other remedies.

With the Chinese, a decoction of ailanthus is a most favored remedy in **tapeworm, dysentery** and **diarrhœa.** Because of its special tonic effect on mucous membranes it is an excellent remedy in some cases of leucorrhœa, etc. For the same reason it has been praised as a remedy in many dyspeptic troubles.

DULCAMARA. SOLANUM DULCAMARA.

Synonyms—Bitter-sweet, woody nightshade.

CONSTITUENTS—Dulcamarin, solanine, gum, resin, wax.

PREPARATIONS—Extractum Dulcamaræ Fluidum, Fluid Extract of Dulcamara. Dose, from half to one dram.

Specific Medicine Dulcamara. Dose, from one-half to ten minims.

Potatoes and tomatoes belong to this family, and although the fruit is edible, the vines are usually poisonous.

Solanine may be obtained from the new sprouts of the ordinary potato.

Physiological Action—This agent is a powerful poison to all living protoplasm. It coagulates the blood and destroys the integrity of the corpuscles.

Injected into the veins it causes dyspnœa, thrombosis in the vessels and arrest of respiration. Toxic doses produce tremors, muscular contractions, central paralysis, collapse, coma, a violent fall of the temperature and death.

It is a narcotic, and in toxic doses causes nausea, vomiting, faintness, pain in the joints, numbness of the limbs, dryness of the mouth, convulsive movements, a small hard pulse, paralysis of the tongue, a purplish color of the face and hands, twitching of the eyelids and lips, trembling of the limbs, erythematous eruption, suppression of venereal desire, though recovery has followed after very large doses. Clarus administered six grains of solanine, which produced general cephalic distress, with occipital pain, increase of the frequency and loss of the force of the pulse, followed after some hours by sudden vomiting, diarrhœa, great weakness, and marked dyspnœa.

Therapy—Dulcamara is a remedy for all conditions resulting from **suppression of secretion,** from **exposure to cold and dampness.** It will restore normal excretion and secretion.

In acute **coryza,** in **bronchial** and **nasal catarrh,** in lung congestion and bronchial cough, with pain in the chest, all from cold, in bronchial **asthma,** and in **acute bronchitis** it is an excellent auxiliary remedy.

In **eruptive fevers** it assists in determining the eruption to the surface, especially if there is retrocession. It has a direct action upon the skin also, being given in **pustular eczemas** and vesicular disorders quite freely. It has produced good results in **psoriasis, pityriasis, lepra,** and other scaly skin disorders. It acts as an alterative in such cases, and will influence the skin derangements of scrofula and syphilis to a certain extent. It is available in the various skin disorders of childhood from disordered blood and deranged stomach.

It is an excellent alterative, if administered with care, and is therefore valuable in syphilis, scrofula, and other blood disorders. In acute and chronic rheumatism from exposure to dampness and cold, and in gout, it has been advantageously used.

Nervous irritation with depression, with hyperesthesia of the organs, and pruritus pudendi are relieved by it. It may be used in spermatorrhœa with undue excitement, priapism, nymphomania and satyriasis. It should be given first in small doses, increased to full amount if necessary. In suppression of the menses with headache and nausea and acute ovarian congestion, it will work well.

It is advised in the treatment of catarrh of the bladder, and as a stimulant to the urinary secretion.

SARSAPARILLA. SMILAX OFFICINALIS.

Synonyms—Jamaica, Honduras or Spanish Sarsaparilla.

CONSTITUENTS—Parillin, sarsa-saponin, saponin, volatile oil.

PREPARATIONS—Extractum Sarsaparillæ Fluidum. Fluid Extract of Sarsaparilla. Dose, from one-half to one dram.

Extractum Sarsaparillæ Fluidum Compositum, Compound Fluid Extract of Sarsaparilla. Dose, from one-half to one dram.

Therapy—This agent is an active eliminant, possessing diuretic and alterative properties to a marked degree. It has long been a popular remedy for the treatment of blood dyscrasias, but is nearly always given in combination with other well known specific alteratives. In combination with potassium iodide, stillingia, corydalis, phytolacca, podophyllum, or other alteratives, it has been given in **scrofula** and **secondary syphilis,** and especially in **cutaneous diseases** depending upon blood dyscrasia, and in **rheumatic** and **gouty** conditions, with inactive kidneys irritated from the presence of large quantities of uric acid and the urates. It is not at present in general use.

SCROPHULARIA. SCROPHULARIA NODOSA.

Synonyms—Carpenter's square, Scrofula plant, Fig wort, Heal-all.

CONSTITUENTS—According to Prof. Lloyd, there is present an alkaloid, a fixed oil, and a brown amorphous resin. From the alcoholic extract an amorphous, yellow powder has been obtained, which has some of the properties of digitalis.

PREPARATIONS—A fluid extract is prepared, and a tincture. Specific scrophularia may be given in doses of from five to thirty drops.

Specific Symptomatology—Marked evidences of **cachexia.** Depraved blood from any cause; **glandular disorders** of a chronic character, accompanied with disease of the skin. **Ulcerations, eczema, excoriations** from chronic skin disease. Those cases in which there is a peculiar pinkish tint, or pink and white tint to the complexion, with puffiness of the face, with full lips of a pallid character, are benefited by this remedy.

Therapy—The agent is administered in that class of cases, with the indications named, where a pure blood alterative is demanded. Its influence is perhaps more general than that of some of the better known remedies, but demands more time in the accomplishment of its results.

In disease of the glandular organs, resulting in dyscrasia; in general **scrofula,** in some cases of **secondary syphilis,** in depraved conditions of the system, where dropsy follows, the remedy is demanded. Goss claimed that it was especially curative where from blood dyscrasia, ulceration would readily follow contusions, or wounds would not heal readily. It has been used to correct **difficult menstruation** and **restore** the **lochial discharge.** In the form of an ointment, it is applied to glandular inflammations, especially

those of the mammary gland, and testicle, to bruises, ring worm, piles and chronic, painful swellings or enlargements. The agent should have more general use.

ANACARDIUM. ANACARDIUM OCCIDENTALE.

Synonyms—Cashew Nut.

CONSTITUENTS—It contains gallic acid and an acrid resin, anacardic acid, and cardol.

PREPARATIONS—A tincture is prepared. The commonest form of administration is the Homeopathic mother tincture. Dose, from one-fourth of a drop to a drop, four or five times a day.

Physiological Action—The juice of the rind is acrid, corrosive and irritating. Externally it produces blisters, which are apt to be troublesome and difficult of cure. It produces redness, inflammation, swelling and deep ulceration.

Therapy—This remedy was first brought into use, in the treatment of **Senegal fever**, a peculiar fever of the Tropics, where quinine has proved unavailing. Webster suggests that it may be found of value in the treatment of mental disease, the result of nervous debility, especially that form known as **sexual neurasthenia**, where there is loss of memory, threatened dementia, failure of the will, great anxiety, and solicitation concerning the condition, with general failure of the nervous power.

It has been used in the treatment of some forms of skin disease. There is room for investigation concerning its action.

CASCARA AMARGA.

Cascara Amarga, sometimes known as Honduras Bark, is advised in syphilis as an active alterative. The line of its action is where there is chronic skin affection or where the pustular variety of the syphiloderm prevails, the conditions being induced by debility, thus needing a specific tonic influence. It soothes the stomach, overcomes sensitiveness or ready irritability of this organ, increases the appetite, and improves general tonicity.

CHAPTER II.

Alteratives Influencing the Glands.

PHYTOLACCA. CHIMAPHILA. MYRICA.
STILLINGIA. LAPPA. PLANTAGO.
CORYDALIS. RUMEX.

PHYTOLACCA. PHYTOLACCA DECANDRA.

Synonym—Poke.

CONSTITUENTS—Phytolaccic acid, phytolaccine, calcium malate, resin, **starch**, wax, gum, tannin, mucilage. The ashes contain over fifty per cent of caustic potassa.

PREPARATIONS—Extractum Phytolaccæ Radicis Fluidum. Fluid Extract of Phytolacca Root. Dose, from five to thirty minims. Unguentum Phytolaccæ, Ointment of Phytolacca. Specific Phytolacca. Dose, from one to ten minims.

Physiological Action—Though the young shoots of Phytolacca are used as greens the mature plant is poisonous when taken in large doses. Death has followed an overdose (one-half ounce) of the berries or root, preceded by excessive vomiting and purging; drowsiness, prickling and tingling over the whole body; vertigo, dimness of vision, cold skin, feeble pulse, great prostration, convulsions and coma.

While it is specific in its influence upon all glandular structures, of whatever character, it also is a blood-making remedy of great power, and it acts directly also upon the skin. It influences the mammary glands and the testicles directly. The remedy acts also upon the spinal cord. It inhibits the influence of the medulla, to final paralysis. It slows the action of the heart, reduces the force of the pulse, and lessens respiratory movements. In poisonous doses it will induce convulsions of a tetanic character. It is a drastic cathartic and an emetic producing nausea of an extreme character. Its influence upon the bowels is greatly prolonged, and very irritating. It causes great pain in the bowels, which is slow of relief. It reduces muscular power and co-ordination. It produces dimness of vision, vertigo and drowsiness, prolonged in some cases to coma.

Specific Symptomatology—The most direct action of this agent is in inflammation of glandular structures, especially of the **lymphatic glands.** Pains of a rheumatic character from deficient catabolism are relieved by it. It is directly indicated in irritation, inflammation and ulceration of mucous membranes in rheumatic subjects, sanious ulcers, scabies, tinea capitis, sycosis, psoriasis, favus, *noli me tangere,* and all skin diseases. It is especially valuable in the squamous variety of skin diseases.

Therapy—This agent must now have especial attention in its influence in the treatment of acute **inflammations of the throat.** It makes but little difference what forms of throat disease we have, from the simplest forms of pharyngitis, through all the variations of tonsillitis, to the extreme **forms of diphtheria,** this remedy may be given in conjunction with other indicated agents. But few of our physicians neglect its administration in these cases, and they are unitedly profuse in their praises of its influence. If there be an infection of the local glands of the neck, from the throat disease, the agent should be applied externally, as well as administered internally.

In the treatment of **goitre** there is a concensus of opinion concerning the value of this remedy, but it is almost universally administered in these cases, with other more direct remedies. Dr. J. V. Stevens is enthusiastic in his opinion that **adenitis** needs no other remedy than phytolacca decandra. Whatever the cause of the disease or of however long standing, he saturates the system with this remedy, and persists in it, applies it externally and claims to cure his cases. He has used it for many years with success. Others combine other active alteratives as general conditions demand.

Too much cannot be said of its very positive and invariable influence in the treatment of acute **inflammations** of the **breast** during or preceding **lactation.** It should be given every two hours at least in doses of perhaps ten drops in extreme cases, or five drops in the incipiency of the disease, or mild cases. Conjoined with aconite and applied also externally, we will find in many cases no use for any other remedy. I have, however, found my results to be more quickly obtained when an active eliminant is given in conjunction with the remedy, in mastitis. Two or three fifteen-grain doses of the acetate of potassium will be found efficient.

The writer has, through a long experience, gotten into the habit of adding this remedy to alterative compounds. This is especially true of those prescribed for children's **glandular** and **skin disorders.** It is an efficacious remedy in any of the forms of skin disease, common to childhood. Given in

the incipiency of eczema and in some forms of chronic eczema, especially that of a dry character, where there are cracks or fissures in the skin, these promptly yield to the internal administration of this remedy.

It should be administered in the treatment of **syphilitic disorders** resulting in ulceration, and in the ulcerations of the outlets of the body. In **varicose** and other long-standing **ulcers,** in **psoriasis, dermal abscesses, fissures, boils** and **carbuncles** it will be often found that a combination of phytolacca, echinacea, berberis, and stillingia will prove signally effective.

Ten drops of equal parts of the juice of ripe poke berries and alcohol may be given every thirty minutes in **membranous** and **spasmodic croup** with great success, with other remedies as indicated.

In irritation of the urinary tract, even in conditions resembling Bright's disease, with albumin, and abnormal deposits in the urine, it tends to relieve the irritation, and effect a cure.

Dr. Waska of Chicago is a strong advocate of the use of phytolacca and echinacea in the treatment of any form of **albuminuria.** He believes with proper auxiliary treatment, these two remedies will be of great service in overcoming the excretion of albumin and in restoring a normal condition of the kidneys. Skin disease of constitutional origin, and scrofulous skin diseases, are cured by it.

Its action in relieving irritation, inflammation and ulceration of mucous membranes in all parts of the body—throat, larynx, lungs, stomach, bowels and rectum—suggests it as a remedy in inflammation of the lining membrane of the heart; and it is said to have cured cases of this kind.

In conjunctivitis, the local and internal use of the remedy is efficient; and also in the treatment of chancre and bubo.

In the treatment of conjunctivitis, a saturated tincture of the fresh root should be given in sufficient quantity to produce fullness of the temples and head, while the eyes should be bathed frequently with the decoction.

In the treatment of ulcers and ulcerating skin diseases, the local application of a concentrated preparation of the root or berries should be made, so as to exert something of a caustic effect, while full doses are given internally at the same time.

The presence in the blood of an infectuous irritant, which causes rheumatic pains, as in **sciatic rheumatism,** and irritation of mucous membranes, or inflammation of the throat associated with rheumatic pains, and enlargement and ulceration of lymphatic glands from scrofula or syphilis, is an indication for the remedial action of phytolacca.

It has been thought to stimulate the liver, by those who hold the theory that rheumatism, peritonitis, tonsillitis, and the many diseases assigned to the uric acid diathesis depend upon abnormal protoplasmic change in the blood, as it circulates through the liver; but whether this be true or not, there is no doubt that it improves nutrition.

Phytolacca is somewhat narcotic, and also a nerve stimulant in moderate doses, and this will explain its action in curing rheumatism, for those who take the ground that this obscure disease is a neurosis; and also explains its action in neuralgia.

STILLINGIA. STILLINGIA SYLVATICA.

CONSTITUENTS—An acrid resin, volatile oil, stillingine, tannin, starch, gum.

PREPARATIONS—Extractum Stillingiæ Fluidum. Fluid Extract of Stillingia. Dose, from ten to sixty minims. Specific Stillingia. Dose, from one to

sixty minims. Linimentum Stillingiæ Compositum, A. D., Syrupus Stillingiæ Compositus, A. D., Oleum Stillingiæ, A. D.

Specific Symptomatology—Irritation of the mucous membranes of the bronchial tubes, larynx, throat and both nasal cavities, deficient secretion, membranes red and tumid or glistening, blood dyscrasia with general enfeeblement, skin diseases of a moist character, red and irritable.

Therapy—The application of this substance to the chest with the internal use of small doses of the tincture will be found of great benefit in **bronchial cough** where there is a sensation of tightness in the chest, where the cough is hoarse and croupal without secretion. It has long been used in conjunction with lobelia in the treatment of **croup.**

As an alterative it has taken front rank with Eclectics for fifty years. It is in general use in **syphilis,** in **scrofula,** in blood taint of any character, in **tubercular disease,** and in the **cancerous diathesis.**

CORYDALIS. CORYDALIS FORMOSA.

Synonyms—Turkey corn, squirrel corn.

CONSTITUENTS—Corydalin, furmaric acid, bitter extractive, acrid resin, starch, volatile oil.

PREPARATIONS—Corydalia (hydro-alcoholic extract). Dose, from one-half to one grain.

Extractum Corydalis Fluidum, Fluid Extract of Corydalis. Dose, from half a dram to one dram.

Specific Medicine Corydalis. Dose, from five to forty minims.

Physiological Action—In overdoses it has produced biliousness, deranged stomach, an excessive secretion of mucus, or catarrh of the stomach and intestinal canal, loss of appetite, indigestion, fetid breath, irregular bowels and colic, with malaise and general indisposition to exertion.

This agent was in great repute among very many of our older physicians as an alterative of special value. Tonic properties are so evident in it that the patient's vitality is increased while the metabolism of the system is influenced. In this particular it will operate in harmony with echinacea. In some cases it acts well with berberis, hydrastis, and stillingia. In syphilis, scrofula, and in all glandular derangements with general depravity of the system, marked blood dyscrasia and general impairment of the nutritive functions, this agent is indicated.

Its influences are demanded in these cases more especially if there be tumidity and enlargement or distention of the abdominal structures with general atonicity, or in some cases in which there are persistently coated tongue and fetid breath. This is often the condition in which a patient is found following a protracted attack of intermittent fever—ague, and since the entire glandular system has become sluggish from the disease the tonic effects of this agent are here indicated. Its influence can be greatly heightened by the direct nerve tonics and calisaya in such cases as these.

Therapy—When blood **dyscrasia** is present, sluggishness of the digestive apparatus, deficient glandular secretion, impaired secretion of the mucous membranes of the stomach and intestinal canal, this agent is indicated, as, in these cases, its tonic properties are plainly manifested.

It is of value in imperfect restoration of these functions after protracted disease, on which it operates with the tonic and restorative stimulants to an excellent advantage.

Amenorrhœa, leucorrhœa and **dysmenorrhœa,** with relaxed condition of the uterine supports and prolapsus, sometimes occurring from the extreme

debility following severe fevers, and common, also, with scrofula and other blood dyscrasias, are all materially benefited by corydalis formosa.

In chronic **skin disorders** with marked cachexia, this agent is speedily curative. It will be found superior to other agents in overcoming eczema with great relaxation of tissue and general plethora.

It has been used in all cases of **syphilis** and **scrofula** with marked results. In syphilitic nodules of the bones, in syphilitic and scrofulous ulcerations, its influence is direct, immediate and permanent. If there is persistent ulceration with general breaking down of soft tissue, a strong infusion has been applied externally with good results. This is in part due to its stimulating influence upon the emunctories of the skin, facilitating elimination through the glands of this structure.

It has a marked influence, also, upon the kidney function which, while beneficial in its direct influence upon general elimination, is hardly sufficient to enable it to be depended upon as curative of kidney or bladder troubles to the exclusion of the use of more direct agents.

CHIMAPHILA. CHIMAPHILA UMBELLATA.

Synonym—Pipsissewa.

CONSTITUENTS—Chimaphilin, arbutin, ericalin, ursone, tannin, sugar, gum, resin.

PREPARATIONS—Extractum Chimaphilæ Fluidum, Fluid Extract of Chimaphila. Dose, from a half to two drams.

Specific Medicine Chimaphila. Dose, from five to sixty minims.

Syrupus Stillingiæ Compositus, Compound Syrup of Stillingia. Dose, from one dram to one ounce.

Physiological Action—Chimaphila is an alterative, stimulating waste, a tonic giving strength to the body, and a diuretic, removing dropsical accumulations. While it aids in restoring the excretory functions to a normal condition, it tends to remove irritation of the urinary tract and kidneys, lesions of the skin and lymphatic glands, and deterioration of the blood, caused by the presence of waste products, the result of defective catabolism.

Therapy—Dr. Fox of New York recommended chimaphila in the treatment of **glandular disorders.** In 1905 he presented a very interesting paper to the New York Society on the influence of this agent in the treatment of **general bubonic inflammation.** He believes the remedy to be very valuable in **leucorrhœa,** and diseases where there is an excessive outpour of mucus. He gave it also when the abdomen seemed to be filled with nodules, when there was diarrhea or cholera infantum.

He claimed that it will **reduce** the **mammary glands** if taken too long by females, and in males it will reduce the **size of the testicles.** It does not cause derangement of the stomach nor produce free action of the kidneys.

When the glands are large or inflamed either in the acute or chronic form he believes that this remedy is superior to our other glandular remedies, even to phytolacca. With it he can determine whether an enlarged gland is simple, or whether a tumor is developing. He gives it in bubo, ostitis, and mastitis with excellent results; also when the glands of the skin are affected.

It can be correctly adjusted to the uric acid diathesis, in **dropsy,** with debility and loss of appetite. Also in cases where there are inflamed and ulcerated **cervical glands,** enlargement of the parotid glands from retained excrementitious products, dropsy after scarlatina and measles, dropsy with debil-

ity from any cause, **chronic rheumatism,** skin diseases with enlarged cervical glands in scrofulous subjects, hectic fever with night sweats, enlargement of the mesenteric glands, also where there is an inflamed and swollen prostate gland, with discharge of prostatic fluid, urine thick, ropy, with bloody sediment, itching and pain in the urethra and bladder, strangury, chronic gonorrhœa, chronic nephritis, urethritis with profuse and purulent discharge, obstinate and ill-conditioned ulcers, in latter stages of typhoid fever with deficient excretion, tumors of the mammæ supposed to be cancerous, this agent is used.

In dropsy associated with debility and enlarged glands it should be given freely.

In acute rheumatism a warm infusion should be given till it produces perspiration, while hot fomentations of the same should be applied to the swollen and painful joints.

In obstinate skin diseases in scrofulous subjects, the tincture from the fresh leaves should be applied to the diseased skin and taken internally.

LAPPA. ARCTIUM LAPPA.

Synonym—Burdock.

CONSTITUENTS—Inulin, mucilage, sugar, resin, tannin, glucoside, fixed oil, wax.

PREPARATIONS—Extractum Lappæ Fluidum. Fluid Extract of Lappa. Dose, from a half to one dram. Specific Lappa. Dose, from five to thirty drops.

Therapy—This agent closely resembles yellow dock in its action as an alterative; it has a direct influence upon the blood, and thence upon diseases of the skin and mucous membranes. Its influence upon the mucous membranes of the stomach encourages normal glandular secretion and promotes digestion. In **aphthous ulcerations** of these membranes and in catarrhal ulcerations, it is excellent.

It influences the mucous membranes of the air passages when irritated from any blood disorder, alleviating **irritable coughs.**

It cures **psoriasis** and **chronic cutaneous eruptions.**

It has a marked influence upon **chronic glandular enlargements,** and is beneficial in **syphilitic, scrofulous** and **gouty** conditions.

It relieves **irritation** of the **urinary apparatus, promoting** a free flow of the urine containing urea, uric acid, and a full quantity of excrete solids.

RUMEX. RUMEX CRISPUS.

Synonym—Yellow dock.

CONSTITUENTS—Chrysophanic acid, tannin, gum, starch. The petioles of the leaves contain nearly one per cent of oxalic acid.

PREPARATIONS—Extractum Rumicis Fluidum. Fluid Extract of Rumex. Dose, from ten to sixty minims. Specific Rumex. Dose, from five to thirty minims.

Therapy—The alterative properties of this agent are underestimated. It is a renal depurant and general alterative of much value when ulceration of mucous surfaces or disease of the skin results from impure blood. It acts directly in its restorative influence, purifying the blood, removing morbific material, and quickly cures the disease conditions. It is valuable in **ulcerative stomatitis,** in **nursing sore mouth,** and in ulceration of the stomach with

great lack of tone, combined with quercus or other tonic astringent, it has no equal in these conditions. It has cured exceedingly persistent cases of exhaustive morning diarrhœa, the discharges being very frequent between six and twelve o'clock. It has been used also in the treatment of **syphilis** and **scrofula** with good results.

Dr. Vassar of Ohio believes that Yellow Dock is the best remedy known to prevent the inroads made by **cancer** on the human system. It is also valuable in **necrosis, scrofula,** and **tuberculosis.** I have mentioned the fact that this remedy will absorb iron from the **soil** very rapidly and carry a much larger proportion than normal, thus rendering the iron organic. Dr. Vassar knew of a blacksmith who raised Yellow Dock root, cultivating it in a soil which he kept constantly saturated with the washing from his cooling tubs, and scattered all the iron filings and rust over it. Ellingwood's Therapeutist has often called attention to this property of yellow dock and to the positive tonic and alterative influence exercised by it when so saturated with iron.

The above statement of the doctor's is the only one I have been able to find from any but foreign writers that emphasizes the power of yellow dock in extracting iron from the soil. It is possible that other inorganic medicines can be made organic in larger quantities by being artificially forced through the growth and development of plants in the natural exercise of their vital powers. The doctor thinks that the preservation of an absolutely normal cell condition of the human body if possible will prevent the development of **cancer.** He uses Yellow Dock hypodermically and thinks that there are mild early cases of cancer that can be cured with this remedy alone.

MYRICA. MYRICA CERIFERA.

Synonyms—Bay Berry, Wax myrtle, Candle Berry, Wax berry.

PREPARATIONS—The powdered bark, from twenty to thirty grains. Of the wax, one dram. Of the decoction of leaves or bark, from two to four ounces. Tincture, from five to forty drops. Specific myrica, from two to twenty drops.

Specific Symptomatology—The agent is a stimulating astringent. It is indicated when there is excessive mucous discharge, where catarrhal conditions exist in any locality, especially in the gastro-intestinal tract. Also where **atonic diarrhœa,** or persistent diarrhœa, accompanies prostrating disease; also where there is feeble capillary circulation of the mucous membranes, accompanied with **phlegmenous ulceration.** Locally and internally in sore mouth, with **spongy, bleeding gums.**

Therapy—It is a remedy for those conditions where the vital powers are at low ebb. It aids the nutrition, stimulating the absorption of food, and promotes the restoration of depraved blood. It is considered a valuable alterative. In any condition where the mucous surfaces have lost tone, and are throwing out a profuse discharge, it may be given with advantage. It has been found valuable in **epidemic dysentery.** In conjunction with capsicum, its stimulating and tonic properties are plainly apparent. Combined with geranium, it is of superior benefit, where the patients have taken mercury and where ptyalism has been induced. It assists in the more rapid elimination of the mercury from the system. Combined with asclepias, it is of much value in breaking up recent severe colds. Unlike most astringents, it materially improves excretion, secretion and the functional action of the glandular system.

In **chronic stomatitis,** of whatever form, where the breath is bad, and there is slow ulceration, the mucous membranes being dark colored, this remedy in combination with other indicated remedies, will effect a rapid cure. If the stomach is foul, and the breath and fecal discharges are offensive, it should be given with an emetic, until the stomach is thoroughly evacuated. In combination with sanguinaria, it will be found useful in removing abnormal growths from the post-nasal cavity. Sufficiently diluted, and combined with hydrastis, it may be applied to the mucous surfaces, in chronic **nasal catarrh.**

It is valuable in the treatment of very severe forms of **measles** and **scarlet fever.** It is especially useful in the persistent sore throat of scarlet fever when the tissues are swollen and spongy. Given in conjunction with antispasmodics, it will improve the action of that class of remedies, in many forms of **convulsions.**

Scudder claimed that the agent was a stimulant to the essential processes of digestion, blood-making and nutrition. The remedy may be given to advantage to those patients who are afflicted with chronic malarial symptoms and **jaundice,** with imperfect liver action, who are troubled with headaches, which are worse in the morning. The tongue is coated yellow, there is weakness and the patient complains of muscular soreness and aching in the limbs. The pulse is slow, the temperature is inclined to be subnormal. There is dull pain in the right side. No appetite, unrefreshing sleep, or where there are catarrhal conditions of the bile ducts, resulting in jaundice.

PLANTAGO. PLANTAGO MAJOR.

Synonyms—Plantain, Rib wort, Rib grass, Ripple grass.

CONSTITUENTS—The leaves contain a resin, citric and oxalic acids. There is no alkaloid or glucoside.

PREPARATIONS—Specific plantago. Dose from one to five drops. The juice of the leaves is used, dissolved in alcohol.

Therapy—The remedy is of value in the internal treatment of all diseases of the blood. **Scrofula, syphilis,** specific or non-specific **glandular disease,** and **mercurial poisoning.** It is used in ulcerations of the mucous membrane, due to depraved conditions. It may be given in **diarrhœa, dysentery,** the diarrhœa of consumption, **cholera infantum,** and where there are long-standing **hemorrhoids.** It is also given in **female disorders,** attended with fluent discharges, and in **hematuria,** also in **dysuria** and some forms of passive **hemorrhage.** It would thus seem to possess marked astringent properties, as well as those of an alterative character. The older physicians ascribe an active influence to it, in the cure of the **bites** of **venomous serpents,** spiders and poisonous insects. A simple but important influence is that exercised in **tooth-ache.** The juice on a piece of cotton applied to a tooth cavity, or to the sensitive pulp, has immediately controlled intractable cases of toothache. It seems to exercise a sedative influence upon pain in the nerves of the face, and relieves many cases of **earache** and **tic-douloureux.** In the **nocturnal incontinence** of **urine,** in young children, accompanied with a large flow of colorless urine, this agent has produced curative results in many cases.

Plantago is of immediate benefit, Dr. Kinnett says, in the treatment of **snake bites.** It should be made and given freely and a poultice of the leaves applied to the wounds.

Plantago relieves **inflammatory infection of the skin,** especially if accompanied with burning pain or itching. Inflammation of the intestinal tract

which involves the mucous membranes and is accompanied with colicky pains will be relieved by plantago.

Old Dr. Smith from southern Illinois applied plantago in the form of a saturated tincture as a dressing for fresh cuts, wounds, or bruises. He could thus secure healing without the formation of pus. He made his tincture of the entire plant and roots, pounded up in alcohol. He applied one part usually to four of water.

Where the **teeth** have developed sudden **tenderness** and seem to be too long from ulceration of the roots, Dr. Turnbaugh gives plantago, ten drops of a three x dilution every three hours. He gives the late Dr. E. M. Hale credit for the formula.

Dr. Wallace dips a teaspoon into hot water, drops into this five drops of the specific plantago, and pours this into the ear for earache, filling the ear afterwards with cotton. He claims immediate relief in aggravated cases.

Externally the bruised leaves have been applied in the form of a poultice, to **chronic ulcers,** and **skin disorders,** resulting from depraved blood. The juice may be combined in the form of an ointment. One physician told the writer that he saw an Indian woman pound up a large quantity of Plaintain leaves, put them into a skillet, and pour on enough lard to cover. This was boiled for some time, then strained. When cool, the product was a smooth, greenish colored ointment. With this a chronic and previously absolutely intractable skin disease, similar to a dry form of eczema, was rapidly and permanently cured. This ointment in appearance and action very closely resembles the proprietary preparation, known as cuticura.

CHAPTER III.

Special Glandular Remedies.

KALMIA.
BLADDER WRACK.
COLCHICUM.
SENEGA.
MANGIFERA.
MANACA.
TRIFOLIUM.
SYMPHITUM.
TELA.
ICHTHYOL.

KALMIA. KALMIA LATIFOLIA.

Synonym—Mountain laurel.

CONSTITUENTS—Andrometoxin, arbutin, tannin.

PREPARATION—Specific Kalmia. Dose, from one-half to five minims.

Physiological Action—In Kalmia we have a remedy acting in a manner somewhat like veratrum viride, both in controlling fevers and in inflammations, as well as in its influence as an alterative, it having been successfully used both in primary and secondary syphilis. Like veratrum it has also been employed hypodermically in the treatment of neuralgia of the face, and sciatica.

Therapy—Professor John King once reported the following case:

"Some time since I treated a case of **syphilis** of five weeks' standing, which had not received any kind of treatment during that period. The patient at the time I saw him had several chancres; the surface of the body and head was covered with small red pimples, elevated above a jaundiced skin, and he was in a very debilitated condition. I administered a saturated tincture of the leaves of Kalmia, and touched the chancre with tincture of muriate of iron, and effected a cure in four weeks, removing the jaundice at the same time."

Notwithstanding the authority, we accept this statement, *cum grano salis*. If Kalmia would relieve other cases of syphilis as it did this one, we may safely say that we have no other alterative in our materia medica equal to it. It has not been extensively used, but it is without doubt beneficial in **glandular disorders, scrofula,** and in mild cases of secondary syphilis.

Kalmia exercises a sedative influence over the heart, controls the pulse beat without depression. It is markedly alterative but must not be pushed because of this slowing influence. Homeopathists give it in cardiac hypertrophy, and for painful **rheumatic** affections, for **facial neuralgia,** for **tobacco heart,** and it will probably act well in **rheumatic endocarditis.**

It will be found of service in inflammatory diseases, also in **hypertrophy of the heart** with **palpitation, diarrhœa** and **dysentery, rheumatism,** chronic inflammations, with atonicity, neuralgia, active hemorrhages, threatened abortion from syphilitic taint, active **menorrhagia,** pain in the limbs and back during menstruation, jaundice, and also in scleritis, with pain in turning the eyes, and in ophthalmia.

BLADDER WRACK. FUCUS VESICULOSUS.

Synonyms—Sea wrack, Kelp-ware.

PREPARATIONS—Fluid Extract Bladder Wrack, miscible with water without precipitation. Dose, from one-half to four drams, three times a day.

Powdered Extract Bladder Wrack, of the same strength as the solid extract. Dose, from five to thirty grains.

Solid Extract Bladder Wrack; one part equals five of the plant. Dose, from five to thirty grains.

Therapy—This agent is used for the specific purpose of **reducing unhealthy fat** in excessive **adiposity.** If given in doses of from one-half to two drams, three or four times daily, it has reduced excessively fat patients in a satisfactory manner without interfering in any way with the normal health functions. Wilhite, in New Preparations, 1878, gave his observations as follows: "From our study of the drug we do not believe fucus to be a reducer of the adipose tissue of *healthy subjects.* It is mostly on those cold, torpid individuals with a cold, clammy skin, loose and flabby rolls of fat, with relaxed pendulous abdomen, that fucus will display its powers to the best advantage. In this class of cases fat is a morbid condition, a result of vitiated function. With such the remedy acts beneficially by overcoming this torpid and morbid tendency, thus reducing the size by toning up the vascular and sympathetic systems. Possibly it also acts upon the starchy matters of the food in some manner, so as to prevent their easy change into fat when introduced into the human economy."

It is in the **obesity** of individuals of the lymphatic temperament that the beneficial effects of this drug are the most marked. It has little or no influence in the reduction of the fleshiness of persons of active habits, or of those of the sanguine temperament. In these cases strict regulation of the diet affords the only prospects of relief, but owing to the keenness of the appetite usually present, this regulation is rarely enforced. Fucus shows its most decided influence upon women in whom there exist menstrual derangements, as menorrhagia and leucorrhœa, owing to a general atonic and flabby condition of the uterine tissues. In such cases an improvement in the local derangements usually precedes the general reduction of fat and the improved tonicity of the general system.

Fucus is advised as a specific remedy in the treatment of both **exophthalmic** and **simple goitre.** It is especially successful in patients not above thirty years of age. It is also suggested in the treatment of **fatty degenera-**

tion of the **heart.** It is of service in **desquamative nephritis,** and in irritation and **inflammation** of the **bladder.** When general muscular relaxation is present, it is of service in the treatment of **menstrual derangements.**

COLCHICUM. COLCHICUM AUTUMNALE.

Synonym—Meadow saffron.

Dose of the bulb, from two to eight grains; of the seed, from one to five grains.

CONSTITUENTS—Colchicine, Colchicoresin, Beta-colchicoresin.

PREPARATIONS—Specific Colchicum. Dose, from one-fourth minim to three minims. Extractum Colchici Semini Fluidum. Fluid Extract of Colchicum Seed. Dose, from one to five minims. Vinum Colchici Radicis. Wine of Colchicum Root (when made from the fresh bulb). Dose, from one to five minims. It should be discontinued as soon as violent catharsis or any depressing effects are observed.

Physiological Action—Moderate doses cause some gastro-intestinal irritation, with loss of appetite, colic and diarrhœa; if the quantity is increased there is bilious vomiting, irritation of the colon with colicky pains, bloody and mucous stools, but without tenderness on pressure over the abdomen; while poisonous doses cause violent gastro-intestinal irritation, griping, purging, vomiting, painful spasms of the limbs and trunk, collapse, delirium, coma and death.

It is a cathartic and depressant of vital action, in large doses, an irritant poison inducing the phenomena of acute cholera, with enfeeblement of the heart's action and of the circulation.

Therapy—A recent Homeopathic writer, finds the indications for colchicum very often present in vomiting and the nausea of pregnancy. His success has been so prompt and gratifying, that he seldom uses other remedies. It is indicated when there is a clear, glairy, stringy fluid vomited, the nausea aggravated by smell of food.

In autumnal diarrhea, with white or bloody mucous discharges, the remedy gives immediate results.

The remedy is seldom used for its cathartic influence but has long been given as a magical eliminative in **chronic rheumatism** and **gout.** It has a specific influence upon muscular pains, acting in harmony with cimicifuga, with which it is usually prescribed, and with gelsemium. It must be given always short of its cathartic action; even then, when continued for some time, it depresses the heart and the nervous system, producing a feeble pulse and cool skin. It is seldom given in acute rheumatism, although it may be prescribed advantageously in these cases.

In **rheumatic carditis** or **pericarditis** in its sthenic stage, its influence is sometimes superior to that of any other agent. Its direct influence on the disease processes is exercised to a most desirable extent.

TRIFOLIUM. TRIFOLIUM PRATENSE.

Synonym—Red clover.

CONSTITUENTS—Not analyzed.

PREPARATIONS—Specific Trifolium. Dose, from one to sixty minims.

Therapy—Trifolium has been used as a **cancer** remedy by virtue of specific alterative properties said to exist in it. It was at one time widely advertised, but the profession has failed to observe the effects claimed by

the proprietors, and yet it undoubtedly has active alterative properties. It is given where a cancerous diathesis is known to be present, and its use is persisted in for months. Improvement in objective phenomena is reported from a number of excellent observers.

The agent is also prescribed in **irritable conditions of the larynx** and air passages, especially if evidenced by **spasmodic cough.** It has served a good purpose in **whooping cough,** in the **cough of measles,** and in general bronchial or pulmonary irritation. A dry, irritable cough will respond most readily to its influence.

Dr. Lambert is of the opinion that trifolium has a direct action in improving the **nutrition of the brain.** He thinks it is demanded when the patient is overworked; when there is general mental failure, with loss of memory of words, or when there is confusion of ideas of functional causes; also when there is weakness of the lower extremities, or of the feet from deficient capillary circulation.

SENEGA. POLYGALA SENEGA.

Synonym—Seneca Snakeroot.

CONSTITUENTS—Polygalic acid, polygalin, fixed oil, resin, volatile oil, sugar, malates.

PREPARATIONS—Extractum Senegæ Fluidum, Fluid Extract of Senega. Dose, from ten to twenty minims. Specific Senega. Dose, from one to twenty minims.

Physiological Action—Senega has sustained a reputation in the past, as an antidote to the poison of venomous reptiles. It is an alterative of much power, exercising a marked influence upon both the skin and mucous membranes, notably the latter. In large doses it produces nausea, vomiting and catharsis.

It causes a sensation of acridity in the throat when a moderate dose is swallowed, and may be employed in chronic pharyngitis, as a local stimulant, where the mucous membrane is relaxed and the secretion abundant.

Specific Symptomatology—The agent is indicated in **typhoid pneumonitis,** capillary bronchitis, in aged and debilitated subjects, chronic bronchitis with profuse secretion, in the declining stages of pneumonitis, bronchitis and croup, when the inflammatory condition has passed off, chronic bronchitis with pain and soreness in the chest and asthma.

Therapy—The agent is in use in the treatment of **dropsy** from obstruction and glandular enlargement, also in **rheumatism, syphilis, squamous skin diseases** and in **amenorrhœa.** In inflammation of the eyelids, and iritis it is beneficial.

Senega has been employed as a stimulating expectorant in **chronic bronchitis,** in aged and debilitated subjects, where a stimulating medicine is demanded, and in the later stages of pneumonia and catarrhal inflammations.

In these cases, given in small doses, it improves secretion, removes abnormal deposits and restores the strength.

It is an energetic stimulant to the mucous membranes of the air passages; and, when given before the inflammation has subsided, aggravates the cough and does harm. Given in small doses, it also acts as an alterative, and may thus be given in dropsy from obstruction, in **syphilis,** and in squamous skin diseases.

In the treatment of **chronic asthma** this is an efficient remedy.

MANGIFERA. MANGIFERA INDICA.

Synonyms—Mango.

CONSTITUENTS—It contains a strong resin, tannin, and an acrid oil, sugar and citric acid.

PREPARATIONS—There is a fluid extract, the dose of which is from fifteen minims to one dram. Specific Mangifera is also prepared. Dose, from one to two minims.

Specific Symptomatology—Mangifera is especially adapted to atonic or greatly **relaxed mucous membranes** with profuse discharge from marked feebleness of the capillary circulation—very **pale membranes** with loss of tone; also when there is **diarrhœa** with large **mucous discharges** and **dysentery** with an excessive mucous or mucopurulent discharge. The dose need not exceed fifteen or twenty minims. It seems to have antiseptic properties which are advantageous in malaria in septic trouble. It has distinct tonic properties. It reduces the pain of **dysmenorrhea,** controls **leucorrhea,** reduces an exhaustive menstrual flow, and regulates this function. Prof. Howe gave it when there was developing tumor of the uterus, expecting to control the abnormal growth. It is useful also in irregular, passive hemorrhage.

Therapy—This agent has something of the same influence that any active tonic astringent would have combined with capsicum or other stimulant and an antiseptic. It seems to be a stimulating astringent tonic, correcting septic conditions. In **malignant disease** of the **throat** this author has been in the habit of using sulphurous acid, and pinus canadensis, or quercus. This remedy takes the place of both to an extent. It should be applied to the fauces, should be gargled, and also used internally. It will be found beneficial in **ulceration** of the **mouth** or other mucous surfaces. It has been for some time recommended in the treatment of **nasal catarrh,** and in **vaginal leucorrhœa,** in **bronchial catarrh** also. It is specific to diarrhœas where there is a great degree of relaxation and lack of tone, and where a stimulating astringent is needed.

Dr. Harrison gives mangifera freely in **diphtheria** and **tonsillitis,** two drams in four ounces of water, a teaspoonful every half hour or hour, treating other indications with aconite, phytolacca, or jaborandi as required. He used it in post-partum hemorrhage also. He says that when the mucous membranes are red, tender, swollen, perhaps inflamed, and have a tendency to throw out a discharge, then this remedy does the best good. It is a mucous membrane remedy.

Dr. Lisk used this remedy in the treatment of hematemesis with much success.

In the uric acid diathesis, Dr. Rew gives mangifera in conjunction with sulphuric acid in small doses every two or three hours with good results.

Dr. Barnes of Illinois reports several cases of severe uterine hemorrhage both post-partum and during the menopause, cured with this remedy.

In syphilitic throat trouble, an advantage is gained by combining mangifera with thuja. In extreme cases, the **ulceration** should first be touched with persulphate of iron; then thuja and mangifera used both to the ulcerations, and internally.

Dr. Jennie M. Covert reports extreme **uterine engorgement** and **dysmenorrhea** cured by mangifera and tiger lily. (Ellingwood's Therapeutist for September, 1910.)

Where there is mucopurulent discharge, either from the bowels or from the uterus, Dr. Linquist says he knows no agent equal to it. The dose is small, easily administered, has no disagreeable taste, it is acceptable to the

stomach, and more certain in its influence than most of the better known astringents. In some cases where pain is present with these conditions named, the pain seems to be relieved by the remedy. It has relieved the excessive albumen present in some cases of **albuminuria,** but has not seemed to promote a cure on the few cases used. It may be applied directly to **cervical ulceration,** and excessive **vaginal leucorrhœa,** either of a specific or nonspecific character, and will be productive of good results.

FRANCISCEA. FRANCISCEA UNIFLORA.

Synonyms—Manaca; Vegetable Mercury.

Dr. Williams of Bristol, Conn., has used manaca for twenty years. He finds it especially valuable in chronic stiffness of the muscles. Where from muscular contractions the joints are stiff. He does not think it curative in actual arthritis. In one case, there was **contraction of muscles** of the shoulders with inability to raise the arms, with severe neuralgic pain, weakness of the nervous system, and violent attacks of the heart. There were **rheumatic pains** in the **feet** and lower part of the legs which prevented the patient from walking except with the aid of a crutch. The patient was anemic; had heavy urine full of **uric acid.** This patient was given melilotus sticta and manaca. There was gradual improvement, and the patient ultimately made a satisfactory recovery.

Dr. Cowen gives manaca in fifteen-drop doses, with salicylate of sodium in **acute rheumatism.**

Manaca is a valuable remedy for **gonorrhea** and for **gonorrheal rheumatism.**

Dr. Hopkins gives manaca in muscular rheumatism in four-drop doses every two or three hours. He often combines it with macrotys. In either case, the results are satisfactory.

SYMPHITUM. SYMPHITUM OFFICINALIS.

Synonym—Comfrey.

CONSTITUENTS—It contains tannic acid, starch and a small quantity of asparagine.

PREPARATIONS—A tincture and a fluid extract are prepared, also specific symphitum. Dose of tincture is from one to ten drops.

Therapy—Its direct influence, like other mucilaginous agents, seems to be upon the mucous surfaces when taken internally. It was previously advised in all forms of bronchial irritation, with cough or difficult breathing, especially if there was hemoptisis. It was used in the chronic cases, or where there was protracted convalescence of severe acute cases. Some writers have been very enthusiastic concerning its specific influence. One physician who has used it for over thirty years, claims to obtain the best results from a strong decoction, made from one ounce of the root, in a pint of water. He gives this almost ad libitum as a drink. In **pneumonia,** this decoction relieves the difficult and painful breathing. It aids expectoration, and tends to lower the temperature. In all serious cases, he depends upon this remedy. Its properties he believes to be not only soothing, but demulcent, balsamic and especially pectoral.

Where there is **inflammation** of the **stomach** or bowels, he has obtained signal benefit from this infusion, especially if, as a result from inflammation, there is hemorrhage or passive discharges of any character. He also gives the infusion as a drink in nephritis, in both acute and chronic cases. In inflammation of the bowels, it may be injected, and being retained it exercises a direct soothing influence, which would probably be enhanced by the addition of the proper intestinal antiseptic.

Old European writers called attention to this remedy as a vulnerary. It had a great reputation as an external application in the treatment of wounds, bruises and putrefying sores. They used it for ruptures and applied it where a bone was fractured, believing that it would stimulate the knitting of the bone. These old writers claimed that it was useful in all hurts and bruises, internal and external, in all cases of **hemorrhage, blood spitting, flux, diarrhœa, dysentery, menorrhagias, leucorrhœa.** It will certainly relieve the swelling and pain of a bruise or sprain as quickly as any other remedy with which we are familiar. One writer, in his zeal and confidence, says: "It acts upon an inflamed surface like a charm, subduing inflammation as water subdues and extinguishes fire." Another writer says: "This agent has marvelous healing and cicatrizing properties. If the tincture be applied to swollen and painful parts, it quickly reduces the pain and swelling. It stimulates granulation in slow healing ulcers, and rapidly promotes healing in bruises of the muscles, ecchymosis, injuries to the tendons, and cartilaginous tissues. It is indeed efficacious. An antiseptic decoction will produce much the same results as the tincture."

TELA ARANEÆ

The spider's web has long been used as an astringent. The freshly spun web free from dust, is macerated in alcohol, and a tincture is prepared, or the specific tela, of which from one to ten drops may be given as a dose. The web has been applied directly to fresh wounds to check hemorrhage, but because of the fact that it can seldom be found free from dust, it is not commonly used. Given in **intermittent fevers,** it is said to produce a positive antiperiodic effect. It is also given in **periodical headaches** or neuralgias, for this purpose.

Specific Symptomatology—Felter and Lloyd give the following as its indications: Masked periodical disease in hectic, broken-down patients. In diseases that appear suddenly, with cool, clammy skin, and cool extremities **cool perspiration.** It has been given in **delirium** of continued fevers and where there is great **irritation** of the **nervous system** or feeble heart under these conditions. It will relieve **restlessness** and morbid wakefulness, when feebleness is present and **muscular cramps,** also **nocturnal orgasm,** whether in male or female.

ICHTHYOL.

Synonym—Ammonium Sulpho-Ichthyolate.

Therapy—The specific influence of the agent has not been determined. It is an alterative agent for both external and internal use.

Hare recommends it highly in the treatment of **acute articular rheumatism.** He applies an ointment to the inflamed area which contains two drams of ichthyol and twenty drops of the oil of citronella to an ounce of

adeps. This is applicable in severe sprains of the joints, and injuries of that character. The agent is widely used, also, in **chronic rheumatism** and in **gouty conditions.**

This same ointment is applied to **erysipelas** with equally good results in all cases.

In **lymphatic indurations** and chronic **scrofulous enlargements** it is a serviceable application; also in other glandular conditions with chronic enlargement. It is used extensively in the treatment of **skin diseases,**—ulcers of various kinds, urticaria, acne, intertrigo, **eczema** and **psoriasis.** It has been extolled in **lupus,** in **epithelioma** and in **keloid** also.

It is used to good advantage in chilblains, frost bites, burns, contusions, and in slowly healing wounds.

A foreign physician employed ichthyol in eighteen cases of **variola,** only two of which were fatal. From the time the papules appeared until the pustules disappeared, a pomade was applied, made of one part of ichthyol to two parts of lanolin, and six parts of the oil of sweet almonds. The results were highly satisfactory.

Dr. Langford depends upon ichythol to control **suppuration.**

Dr. Courtright of Illinois used ichythol as a local application in **eczema** and **erysipelas.** One patient with **moist eczema** covering almost the entire body and limbs was finally radically cured by this substance. He used it with good results in **scrotal eczema.** In doses from one to ten minims it may be given for cough and bronchial troubles with throat complications.

CHAPTER IV.

Astringent and Antiseptic Alteratives.

HAMAMELIS. ÆSCULUS. CEANOTHUS.
CALENDULA. CARDUUS.

HAMAMELIS. HAMAMELIS VIRGINICA.

Synonym—Witch-hazel.

CONSTITUENTS—Tannin, volatile oil, a bitter principle.

PREPARATIONS—Extractum Hamamelis Fluidum, Fluid Extract of Hamamelis. Dose, from ten to sixty minims.

Distilled Extract of Hamamelis. Dose, from ten to sixty minims.

Specific Medicine Hamamelis. Dose, from five to sixty minims.

Specific Symptomatology—Soreness of muscles, muscular aching, a bruised sensation, soreness from violent muscular exertion, soreness from bruises and strains, soreness and muscular aching from cold and exposure, relaxed mucous membranes, dark blue membranes from venous stasis, veins dilated, relaxed, enlarged, and full—varicosis.

Therapy—Internally it is given with the above indications as a remedy for **sore throat** of whatever kind, with feeling of extreme soreness, and with dark-colored membranes.

It is used in **tonsillitis** and **diphtheria,** in **phlegmonous ulcerations** of the mouth and throat, and in **acute catarrh.** If there is **hemorrhage** from the post-nasal cavity, or from the teeth, or from spongy gums, it is a useful remedy.

It is valuable when there is excessive **catarrhal discharge** from dark, relaxed mucous membranes, and in catarrhal or watery **diarrhœa** with a tendency to passive hemorrhage of dark blood.

It has conspicuous virtue in the treatment of **hemorrhoids** with the specific indications. The fluid extract in fifteen drop doses every two hours will quickly effect a cure in recent cases, and will greatly benefit chronic cases, its influence being greatly enhanced if combined with collinsonia. In relaxation of the mucous membranes of the rectum and in **prolapse** of the **bowel,** it is useful. In these cases the distilled extract should be applied externally while the fluid extract is given internally.

It is a good remedy in relaxation of the vaginal walls with **leucorrhœa,** and in catarrh of the womb, also in passive hemorrhages from these parts, especially if there be soreness or extreme tenderness. Externally the distilled extract is of first importance in soreness of the muscles, or aching of parts. In bruises, sprains and muscular lameness its application gives prompt relief. If applied hot it is particularly effectual. In the general aching, lameness ,and muscular soreness, following a **severe confinement**—a source of extreme discomfort, often greatly retarding recovery—this agent applied hot will give immediate relief, a measure it is cruel to neglect to advise, in these cases, as it acts at once. In lame and **sore breasts** it may be applied, to immediately relieve the soreness, but other remedies should be given for acute inflammatory action.

Its indications would suggest it as an excellent remedy in **rheumatism,** being of value externally and in conjunction with other remedies.

Applied to **burns** and **scalds** it gives prompt relief. Ten grains of menthol dissolved in four ounces of the distilled extract applied to a burn will stop the pain at once and will promote the healing. It is best applied by saturating a soft cloth with which the burned surface may be covered.

CALENDULA. CALENDULA OFFICINALIS.

Synonym—Marigold.

CONSTITUENTS—Calendula, volatile oil, amorphous bitter principle, gum, sugar.

PREPARATIONS—Tinctura Calendulæ, Tincture of Calendula. Dose, from half a dram to one dram. Specific Calendula. Dose, from one to sixty minims.

Physiological Action—Through the cerebro-spinal vaso-motor nervous system (Burt's fourth edition Homeopathic Materia Medica), calendula has one specific action. It induces paralysis in the arterial capillary vessels. Through it the vaso-motor nerves become partially paralyzed and the vessels become loaded with blood. From this increased irritation which attracts a large number of white corpuscles, the adhesive quality of these corpuscles induces adhesive inflammation, as is beautifully shown in lacerated wounds and cuts where calendula is used, producing union by first intention. Calendula is best applied in a cerate.

Therapy—This agent is used principally for its local influence. Internally it is given to assist its local action, and to prevent suppuration in cases where there is a chronic tendency to such action. It is useful in varicose veins, chronic ulcers, capillary engorgement, and in hepatic and splenic congestion.

As arnica is applied to bruises and sprains, this agent is also applicable; and in addition it is of much service applied to **recent wounds, cuts** and **open sores.** It is antiseptic, preventing the formation of pus. It causes the scar, or **cicatrix,** to form without contraction of tissues, and in the simplest possible manner. It hastens the healing of wounds and materially favors union

of co-apted surfaces by first intention. It relieves the pain in **wounds,** and if there are not bad bruises, it quickly relieves the soreness and favors the healing process.

It is applicable to catarrhal mucous surfaces, to festering sores, local swellings, glandular inflammations and to epithelioma and carcinoma to correct the fetor. It is especially applicable to **severe burns,** to promote healing and to prevent the formation of a contracting scar.

ÆSCULUS. ÆSCULUS GLABRA.

Synonym—Buckeye.

CONSTITUENTS—A poisonous principle acting like nux vomica.

PREPARATIONS—Specific Æsculus. Dose, from one-tenth of a minim to five minims.

Physiological Action—Æsculus Glabra acts on the cerebro-spinal system; and in toxic doses causes vertigo, vomiting, wryneck, opisthotonos, tympanites, stupor, coma and death.

Therapy—Æsculus Glabra is a narcotic, but actively stimulates the nervous system somewhat like nux vomica. It has a special influence on the capillary circulation of the **rectum,** and on the pelvic and portal circulations and overcomes constipation and congestion associated with **hemorrhoids,** and aids in the absorption of the coagulated blood in hemorrhoidal tumors where a surgical operation is not deemed advisable. It lessens the caliber of the capillary vessels, and removes obstructions to the pelvic circulation, and is applicable whenever congestion results in hemorrhoids, or in enlargement of the uterus.

Concerning the application of this remedy for **piles,** Dr. Bloyer in The Gleaner said the piles are usually large and purple. They rarely bleed. There may be a sense of fullness in the rectum or there may be dryness with stricture of the rectum, causing a proctitis, all of which is relieved by this remedy as well also as the **headache, backache** and digestive or **asthmatic disturbances,** which are reflexly induced.

In paralysis it is a stimulant similar to strychnine. As a narcotic it acts similarly to opium but has much less narcotic power.

CARDUUS. CARDUUS MARIANUS.

Synonyms—St. Mary's Thistle, Mary Thistle, Milk Thistle.

PREPARATIONS—A strong tincture; dose, from two to twenty drops. The Homeopathic mother tincture, dose from one to twenty drops.

This remedy was spoken highly of by Rademacher, in hemorrhages, where there was congestion of the liver or spleen. Where there was periodical biliary lithiasis. He employed the tincture of the seeds, in **dysuria,** where there were **caruncular growths,** in the female urethra. He claimed it to be of value in hemorrhoids, and in venis stasis. Carduus has been frequently advised in the treatment of **varicosed veins.** Its influence in this line must be studied. This condition has been neglected by internists, they having been taught that it was a surgical condition only.

Tripier used in it pelvic congestions, with quick and permanent results. Its action has seemed to be similar to that of hamamelis and collinsonia. A case of **chronic hematuria,** with sensation of weight and tension in the pelvis depending upon varicose conditions of the rectal veins, was quickly relieved by it.

Specific Symptomatology—Felter and Lloyd say that its indications are found in dull aching pain over the spleen, which passes up to the left scapula, associated with pronounced debility and despondency, splenic pain, with no enlargement or with enlargement, when there are no evidences of malaria. Congestion of the liver, spleen and kidneys. General bilious conditions accompanied with stitches in the right side, with hard and tender spots, in this locality, gall stone, jaundice, hepatic pain and swelling. Also in the vomiting of pregnancy when these organs are complicated.

As it overcomes congestion within the pelvis, it is useful in certain forms of **dysmenorrhœa, amenorrhœa,** or irregular passive uterine hemorhages.

Therapy—Harvey, in the California Medical Journal, says the indications are so plain that a tyro can prescribe it with certainty. It is indicated where there is venous stasis, the true veins enlarged and clogged with blood. This is true of either the large or small veins. He says he cured one case, where the veins from the hips to the toes were as large and as hard and twisted as Manila rope. They could be felt through the clothing. He cured completely a varicose tumor in the popliteal space. It was about four inches long, and three inches wide. The skin of the neck and hands was discolored. There was a troublesome chronic cough with the expectoration of large quantities of offensive matter. He believed these symptoms to be associated with disease of the spleen. He had observed these colored spots in other cases, and sometimes found long continued soreness and tenderness of the joints of the feet. Carduus, in five-drop doses three or four times a day, cured all the symptoms in this case, restoring the patient to perfect health. The remedy acts slowly and must be persisted in.

CEANOTHUS. CEANOTHUS THRYSIFLORUS.

Synonyms—California Lilac, Deer Bush.

Therapy—Henderson has written a very interesting article which was published in the Annual. He says he has employed an infusion of the leaves in conjunctivitis, and as an application in inflamed eyes he has applied the steeped leaves themselves. At one time he contracted a severe cold, which caused hoarseness, burning pain and a dry constricted throat, with much difficulty in swallowing. He gathered some of the berries from this tree, and eating them noticed a pleasant influence upon the throat and an ability to swallow with less difficulty. He determined to try them in other cases of throat disease, and had a tincture prepared from the berries.

Shortly after, in a severe epidemic of **malignant diphtheria,** he treated eighteen cases without the loss of one, using the ceanothus in all cases. He has used it since in diphtheria, **pharyngitis, tonsilitis,** and **nasal catarrh,** with good results. He gives it in diseases of the mucous surface where the discharge is profuse, thick and tenacious. For a gargle he uses two drams of the tincture to four ounces of water. It foams in the throat like the peroxide of hydrogen, and must be used with care. It removes all accumulations, leaving the membranes clear and clean.

He has further employed the remedy in the treatment of **subinvolution,** and evaporating it on a water bath, has made an ointment which is applied to **ulcers** of the **os uteri.** It gives good results as a wash in the treatment of **gonorrhea, gleet, leucorrhœa,** and ulcers and old sores. He believes the berries should be gathered just before they are ripe, to obtain the best action.

CHAPTER V.

Alteratives with Special Selective Properties.

LEMON.
CITRIC ACID.
THUJA.
VERBASCUM.
SAXIFRAGE.
MELILOTUS.
SARRACENIA.
CALCIUM SULPHIDE.

LEMON. LEMONIS SUCCUS.

Synonym—Lemon Juice.

Therapy—Because of the citric acid present in this substance it is exceedingly useful in therapeutics. The preservation of this juice from decomposition is easily accomplished by boiling, and pouring it while hot in bottles with narrow necks. The neck of the bottle above the hot juice is filled with sweet oil to the cork, which must fit tightly.

In Italy lemon juice is extensively used in malarial localities as an active **anti-malarial** remedy. It has produced cures in many stubborn cases.

It is an active **anti-scorbutic** and is in common use on shipboard for the prevention or cure of **scurvy,** for which it is of more service than citric acid.

It has been used in some cases of **chronic rheumatism** and gout with good results.

Diluted and sweetened it makes a most refreshing drink in fevers, especially if an acid is indicated, the mouth being dry and parched and the membranes of a dark color. It is useful in the **hoarseness** of singers and speakers to temporarily clear the voice. It will serve a good purpose in irritably dry **coughs,** added to cough syrups.

The pure juice has been injected into the cavity of the womb to control intractable post-partum **hemorrhage.** It is also useful in other hemorrhages.

ACIDUM CITRICUM.

Synonym—Citric acid.

Therapy—This organic acid has a narrow but important field in therapeutics. It is specifically a remedy for **scurvy.** It is freely used by those who are forced to subsist upon a salt meat diet, or are deprived to a great extent of vegetable food. Much the same effects can be accomplished by the free use of **lemon juice,** but it cannot be transported often in bulk and is sometimes difficult of preservation. In general scorbutic conditions, the use of citric acid in small quantity extended over considerable time is of much service.

This agent is useful in **rheumatism.** It influences the secretion, excretion, and general elimination of uric acid to a limited extent. It is also useful as a drink in **fevers** in the manner described for mineral acids and tartaric acid. It is cooling, refreshing, allays thirst and stimulates the secretions of the mucous and salivary glands, and temporarily promotes the normal function of the stomach. It is an efficient organic acid with which to supply the demand for acids in conditions where these are deficient.

There is a form of **difficult breathing** which is difficult to specify with exactness, where a small crystal of citric acid placed directly on the tongue and dissolved will give immediate relief. I have excellent authority for this statement.

THUJA. THUJA OCCIDENTALIS.

Synonyms—Arbor vitæ, white cedar.

CONSTITUENTS—Colorless volatile oil, soluble in alcohol, with a sp. gr. 0.92, and a yellow, crystallizable, bitter principle called thujin, punitannic (Kowalier) and thujetic acid.

PREPARATIONS—Extract non-alcoholic, Fluid Extract Arbor Vitæ, not miscible with water.

Dose, from one-fourth to one dram.

Specific Medicine Thuja. Dose, from one to ten drops.

Administration—In the treatment of local conditions involving blood changes, the beginning dosage should be small, and administered two or three times per day. If, however, the condition does not show improvement, especially where there is a **cancerous cachexia,** the dose may be increased, if necessary, to one dram every two or three hours. In non-malignant cases the dose may be much smaller. In warts and excrescences, two small doses per day will often remove them in a few days, especially if external use of the agent be made also. In conditions of a syphilitic character the cure in all cases will be more protracted.

Physiological Action—No extended systematic study of the physiological action or specific therapeutic application of this agent has been made. It exercises a peculiar influence over abnormal growths and tissue degenerations, especially those of an epithelial character. It was originally advised as a remedy for epithelioma, to be administered both internally and externally. It has been widely used in the treatment of cacoplastic growths, and glandular indurations of a scrofulous character, also of warts, small tumors, and incipient cancers of different varieties, and goitre. It is a remedy for perverted glandular action and certain blood dyscrasias.

Therapy—It has been used extensively by all physicians in the treatment of **cancer.** It is claimed to exercise an abortive influence over incipient cancer, and to retard the progress of more advanced cases. In extreme cases it will remove the fetor, retard the growth, and materially prolong the life of the patient. It should be given internally and the dosage increased to the extreme limit. It should also be kept in contact with the parts externally or injected into the structures. **Epithelioma, condylomata,** and all simple cancerous growths should be treated with it.

I had an interesting report from Dr. Caple who injected thuja into a **giant-celled sarcoma** of the hip joint. He used a teaspoonful in the structure at once, giving the remedy internally, in fifteen-drop doses, with the same quantity of echinacea. The results were more than he had anticipated.

Dr. Jones injected from twenty to sixty drops of thuja into a **rectal cancer** every second day, and also where there was a cauliflower variety of cancer of the uterus. He believes in this remedy if enough is used. It must be used very freely.

Thuja is given internally for cancer, and for the pains of cancer it is applied externally, when possible, occasionally with good results.

Thuja certainly exercises a direct influence upon the glandular structures and function. In what manner this influence is exercised is unknown, but in any disease that involves the gland, this remedy must be considered, and if there are no contraindications it can be tried, and in many cases as with the ductless glands, it seems to act in a direct manner.

Thuja is directly indicated, first, as a peculiar alterative, in improving diathetic conditions of the blood. Again, it acts directly upon abnormal growths—perversions, such as peculiar conditions of the cell structure of the skin, and other external structures. It is thus indicated in all abnormal

growths of the skin or mucous membranes. It exercises a specific influence upon **catarrhal discharges,** correcting the **glandular faults** that are to blame for such a condition wherever they may be. It is specific to **urinary irritation** in aged people especially; also in childhood. It strengthens the sphincter of the bladder.

Dr. Andrews uses thuja in **chronic diarrhœas,** and in the treatment of ulceration of the bowels. In colonic ulceration, he uses it as a high anema once or twice a day.

In a bad case of **polyuria** with great sensation of debility and weakness of the entire sexual apparatus and some loss of sexual strength, a man of 65 was given five drops of thuja every two hours with complete success.

Thuja is an important remedy in the treatment of **spermatorrhœa,** especially if from exhaustion from over-indulgence, or from **masturbation.** The patient must avoid alcoholic stimulants. Dr H. C. Noble reported twenty-nine cures out of thirty consecutive cases. In these there was nervous irritation and usually **sexual neurasthenia.** In those cases in which the mind is seriously depressed by the physical condition, it is of especial service, as it stimulates the nerve forces and delays the discharge until, by general improvement of the entire nervous system, the condition is restored. The influence of the agent will be enhanced by a combination with avena sativa, saw palmetto, or staphysagria, in cases of this character, when Thuja should be given in doses of from two to ten drops, four or five times daily.

As an external application Thuja produces at first a sensation of smarting or tingling when applied to **open sores** or **wounds** and it is usually best to dilute it with one, two or four parts of water, or to combine the non-alcoholic extract with an ointment base in the above proportion. This constitutes an excellent mildly antiseptic and actively stimulating dressing to indolent, phagedenic or gangrenous ulcers. It is of much service in **bed sores** and in other open ulcers dependent upon local or general nerve exhaustion.

In **chronic skin diseases** of either a non-specific or specific character, it is a useful remedy. Vegetations of all kinds, especially those upon mucous surfaces, will yield to it readily. It is a useful agent in the treatment of **post-nasal catarrh,** and **nasal polypi.** A small dose internally four or five times daily, with the application of fluid hydrastis in a spray, will quickly retard or remove such abnormal growths. It is also applicable to **sloughing wounds,** and to **phagedena** of the venereal organs. It is a positive remedy in the treatment of **senile gangrene.** It causes gangrenous surfaces to dry without hemorrhage or other discharge, destroys offensive odors and influences granulation.

Recent reports have been made concerning the very beneficial action of thuja on **papilloma of the larynx** and affections of that character in the post nasal region. J. Moreau Brown has reported a number of cases satisfactorily treated with this remedy. The agent is applied locally and small doses are given internally. One cases of multiple papilloma was quickly cured.

The same writer uses this agent in the treatment of **growths in** the **posterior nares.** He reports the cure of several small **tumors polypi** and **papillomatous growths.** He treats chronic **enlargement of the tonsils** with this remedy and has succeeded in reducing many severe cases to the normal size. He has treated some cases of **disease of the turbinated bones** with the same remedy. He believes that in all cases of normal hypertrophy, where there is no diathesis, underlying the difficulty, in the post nasal region, this remedy is of inestimable value.

The treatment of **adenoids** is greatly simplified by making an application first of Monsell's solution to the diseased structures, and then applying thuja. The use of thuja persistently in these cases is as effectual as it is

when used in the same manner for **syphilitic** ulcerations. It may also be given internally.

Professor A. J. Howe cured **hydrocele** almost exclusively with this agent. The following is the course he adopted as described in his own words: "In an ounce of warm sterilized water pour a dram of Lloyd's Thuja. Mix thoroughly by drawing a quantity into the syringe, and forcing it back repeatedly for a few times, then draw up about two drams of the dilute mixture in the barrel of the syringe to be ready for use. Introduce a large exploring needle into the sac of the tunica vaginalis testis and allow the fluid to escape. Before withdrawing the needle, place the nozzle of the loaded syringe into the needle's open mouth and with a plunge of the piston force the diluted Thuja into the cavity recently distended with serum. Then in order to cause the liquid to enter every crevice of the sac of the hydrocele, pinch and knead the scrotum with the fingers quite vigorously. The needle is then withdrawn. The pain induced is quite considerable for at least half an hour, then the patient goes about his business and usually no additional treatment is required." The above method, with some unimportant variations, has been in general use among our physicians since suggested by Professor Howe, and the result as reported by very many has been satisfactory.

This agent has been used successfully in the treatment of **trachoma.** The non-alcoholic preparation is combined with vaseline or other unctuous substance and applied once or twice daily.

Dr. Barber uses thuja in **conjunctivitis.** However severe the case, he had no case especially where there was severe **granulation of the lids** that was so stubborn but that he could benefit it with a mild solution of thuja. He occasionally used Long's thuja with vaseline with equally good results. The use of thuja in **pterygium** is spoken of by a number of our writers. It is applied directly to the growth as often as possible without inducing inflammation. Cures have been effected in many cases.

Dr. Walker for many years has **injected** small **tumors** with thuja full strength, twenty drops for the first injection, increasing the subsequent injection every day or two until in some cases he has used as high as half an ounce. An abscess forms and the tumor slowly disappears.

The agent is especially advised in the treatment of urinary disorders of the aged and young. It gives satisfaction in the treatment of **nocturnal eneuresis** when the difficulty is of functional origin. It is also valuable when there is dribbling of urine, loss of control from paralysis of the sphincter, perhaps, in the aged, where **urinary incontinence** is present, with severe coughs, lack of control when coughing or sneezing. Sometimes in severe cases of nocturnal eneuresis, it is accompanied with belladonna, or rhus aromatica with good results. In old men with chronic **prostatitis,** with constant dribbling of the urine, this agent is valuable. It relieves the weakness at the neck of the bladder. It tones the muscular structure of the bladder and exercises a desirable influence over the mucous structures of the entire urinary apparatus. It also stimulates secretion within the tubules of the kidneys by its direct influence upon the epithelial cells.

Where there is **irritability** of the **bladder** from the presence of uric acid, or other precipitates in the urine, or where there is chronic rheumatism or gout, the agent is serviceable. It is not advised where there is acute inflammation.

The agent is useful in **urethral caruncle,** and as a remedy for gleet, when granular urethritis is present. The remedy is valuable in the treatment of disorders of the mucous lining of the bronchial tubes. It is beneficial in ulcerative forms of **sore throat,** where the secretions are fetid in character. It may be inhaled in **chronic bronchitis, bronchorrhea; bronchitis,** with of-

fensive discharge; **chronic nasal catarrh.** Hemorrhage from these organs is beneficially influenced by its use. A number of cases of **spermatorrhea** have been cured since our previous report on this remedy.

The **balanitis** from cystitis with frequent urination, indicates this remedy. It is beneficial when the urine seems to burn or scald in the passing, when there is local soreness in the urethra or neck of the bladder, when the bladder tolerates but little urine at a time, and the patient must rise frequently during the night.

Homeopathists give thuja where the **rectum** is diseased; where there is a slimy discharge streaked with blood with dark blotches on the adjoining tissues; where there is itching and constant inclination without power to expel feces; sharp sticking pains in the rectum. It will act with collinsonia or hamamelis in this.

In cases of **verucca** on the genitalia or rectum, this agent is advantageously used, especially if preceded by a mild escharotic. In **prolapsus of the rectum,** especially in cases depending upon paralysis, this agent may be diluted and injected. It has stimulating properties, which restore the vitality of the part. It is good for fissure of the rectum with piles.

The injection of thuja into **nevi** that are of a **non-pulsating** character, or those not too venous in structure, has been recently practiced.

In **bulging nevus** the remedy has been used advantageously. One case was cured in three weeks, where the nevus looked like a ring worm, and was of a fiery red color. One physician cured a case of **ulcerated stomach** with thuja in four-drop doses, alternated with sub-nitrate of bismuth every two hours. This patient had pain extending through the stomach to the back. No physician gave him ease. Anything warm produced great distress. The case was cured in a few weeks.

Another physician advised the agent in **pruritus,** whether of the anus or vulva, especially when accompanied by fissures. He uses it in warts, tumors and excrescences. He uses it for chapped and rough hands, so troublesome in the spring and fall.

Another physician reports a case of extreme **prolapsus of the bowel** in a child which he cured with a five per cent solution of thuja. A wet dressing was applied and a small quantity of the remedy was injected into the bowel. A greatly enlarged and **relaxed uterus** in a woman of fifty with severe metrorrhagia was treated with injections of thuja. The remedy should be diluted in these cases.

A doctor reports the cure of a **urinary fistula** by giving two drops of thuja internally every four hours.

The use of the oil of thuja in **confluent small-pox** given internally and applied externally was advised by Dr. Busbee who had an extensive and successful experience with it in these cases.

Thuja applied to the tonsils and crowded into the crypts is an excellent remedy. I am using it in **syphilitic throat ulcerations** and if I precede it once or twice with an application of Monsel's solution it has proved invariably satisfactory so far.

Thuja will prove an excellent remedy for all forms of **sore mouth,** especially if combined with echinacea and a mild antiseptic astringent.

Dr. Gibbs reports a case where a number of **varicose enlargements** about the ankle of an old washer woman broke down. He made a 50 per cent solution of thuja and applied it freely with bandages, covering the whole with roller bandages, and produced a cure.

VERBASCUM. VERBASCUM THAPSUS.

Synonym—Mullein.

CONSTITUENTS—Mucilage, volatile oil, fat, sugar.

PREPARATIONS—Specific Verbascum. Dose, from five to sixty minims.

A preparation may be prepared extemporaneously by breaking off the upper portion of the blossoms of the mullein and putting them into a glass jar and allowing them to stand in the sun for a few days. The mass is then strained through muslin. The juice extracted by the above or other process is called an oil or **mulleined oil,** but does not possess all the properties of an oil.

Therapy—The most direct use of this agent is in the treatment of simple uncomplicated cases of **deafness,** or in the early stages of progressive deafness where the cause is not apparent. In these cases, from two to five drops in the ear, three or four times each day, will stop the progress of the disease, and will cure many simple cases. In its local influence, it softens and facilitates the removal of hardened secretions, stimulating the nerve structures at the same time. It has positive anodyne properties, and is curative in a large number of the ordinary cases of **earache** in children, acting often more quickly than other and better known agents, and is used with perfect safety, as it has no irritating or toxic properties.

Used in the treatment of **ulcerations** of the ear, where there are fetid discharges, it is of much value in allaying pain and promoting the action of other antiseptic and healing remedies. In the treatment of the simple ear troubles of childhood, it accomplishes alone that for which complex formulæ are otherwise necessary.

Mulleined oil has a wider influence, however, than its use in the **disease of the ear.** It has been used in **rheumatic** conditions to an extent, and I am of the opinion that properly developed in this line, it will be found a serviceable remedy. Internally, the specific medicine or the infusion exercises a diaphoretic and diuretic influence, and is soothing to the nervous system.

This agent is often used in **irritation** and **inflammation** of the **urinary apparatus,** acting in harmony with hydrangia, gelsemium or other antispasmodics in **stricture** from irritation. It is useful also in acute catarrh, either of a specific or non-specific origin, in catarrhal cystitis, and in some cases of pyelitis and catarrhal nephritis. It has been used also in bronchial irritation and in asthmatic **bronchitis.** In uncomplicated **asthma,** especially the paroxysmal form, mullein leaves, mixed with stramonium and potassium nitrate and smoked through a pipe, will often give prompt relief. The smoking must be suspended if vertigo supervenes.

The agent has long been a domestic remedy in the treatment of **rheumatism.** A fomentation is prepared from the leaves or the steam from a decoction is confined to the part, or compresses are wrung from a strong infusion of the leaves, and applied.

One-half drop doses of the mulleined oil four times a day has overcome some **dribbling** of the urine. This remedy seems to be serviceable as an external application to inflamed glands.

Dr. Mathews says that this is an excellent agent in the treatment of conditions where there is **persistent acridity** of the urine, especially if it produces pain or strangury.

Verbascum is useful for the treatment of orchitis. It can be used internally and externally.

SAXIFRAGE. SAXIFRAGA PENNSYLVANICA.

Synonyms—Tall Saxifrage, kings' evil root, scrofula bush.

Specific Symptomatology—It is specific as an alterative in **syphilitic affections** of the **eyes.** In glaucoma, in iritis, in ophthalmia, in cataract from syphilitic causes, our doctors have had the most marked results from the use of this remedy. Dose, F. V. Ext., from 20 drops to one dram.

The agent is an active diuretic and an excellent tonic, as well as possessing active alterative or antiscorbutic properties.

MELILOTUS. MELILOTUS OFFICINALIS ALBA.

Synonym—Sweet clover.

CONSTITUENTS—Coumarin, melilotic acid, coumaric acid.

PREPARATION—Emplastrum Meliloti, Melilot plaster.

Specific Melilotus. Dose, from one to ten drops.

Specific Symptomatology—Spasms, colic, dysuria, dysmenorrhœa; in painful cough, spasms from dentition, pain in the stomach, rectum, or uterus, neuralgic rheumatism.

Dr. Reed gives melilotus in cases where ergot would seem to be indicated; where there is **fullness of circulation of the brain;** a tendency to nose bleed, often followed by sick headache; where the action of the heart is oppressed with occasional palpitation. He believes that in all three cases it is an excellent remedy.

Therapy—Melilotus is a stimulant to the local circulation, and is adapted to those cases where **debility** or a **feeble vital power,** as in delicate females and **poorly nourished infants,** is associated with congestion, as in atonic neuralgias and spasms occurring during the period of **dentition,** and in congestion of the uterus, ovaries, rectum, bowels, stomach, or bladder in feeble subjects. It is also a remedy for pain from determination of blood as in headache with throbbing.

An ointment made from the leaves is an efficacious application to all kinds of ulcers.

A fomentation of the leaves and flowering tops may be applied with good effect in inflammation of joints, and local pain in the abdomen.

Engorged conditions of the uterus are treated very successfully by four or five-drop doses every two hours of melilotus.

SARRACENIA SARRACENIA PURPUREA.

Synonyms—Pitcher Plant, Sidesaddle Plant, Fly Trap, Water Cup.

CONSTITUENTS—Sarracenin, a resin, sarracenic acid.

PREPARATIONS—Specific Sarracenia. Dose, from two to twenty drops. Tincture Sarracenia. Dose, one dram.

Physiological Action—The agent is laxative, stimulating the action of the intestinal glands and the liver and overcoming torpidity. It stimulates the kidneys, inducing an abundant flow of limpid urine. It is an active eliminating agent, exercising a special influence upon the glands of the skin.

Therapy—As a remedy in the treatment of **zymotic disease** this agent has been used with good results. It is given freely during the course of

scarlet fever, measles and **small-pox,** and it is claimed that in every case it modifies the character of these diseases, shortens their course, and prevents sequelæ. It has, as yet, no established place in therapeutics.

CALCIUM SULPHIDE.

Synonyms—Calx Sulphurata, Sulphurated Lime, Sulphuret of Calcium.

Administration—It should be thoroughly triturated with sugar of milk, one grain of the salt with a dram of sugar of milk, being a good combination for this trituration. From one to ten grains may be given at a dose, four times daily, but good results will occur from the use of from one-twentieth to one-fourth of a grain of the sulphide, every three hours.

Specific Symptomatology—The agent is specific to glandular, nodular and pustular suppurative inflammations, especially those of the skin. **Carbuncles, acne** and crops of boils and small pustules are cured by its internal use. It has been most widely used in overcoming the tendency to the formation of **crops** of **boils,** and is generally relied upon for this purpose. One-twentieth of a grain, four or five times daily, is effectual.

Therapy—It is also given in **scrofulous conditions** for the glandular indurations, or local ulcerations of this dyscrasia, to most excellent advantage.

In **syphilitic diseases,** with persistent bubos or nodular or ulcerative skin eruptions, it is directly indicated. It has been used by excellent authorities in the treatment of tubercular conditions wherever existing.

Shields claimed remarkable results in inflammatory diseases of the air passages. In fetid **bronchitis,** and in fifty cases of **pneumonia** in which he used the drug (in conjunction with quinine and nitroglycerine), the mortality was extremely small. In tonsillitis and quinsy its action was almost specific. In only four cases out of one hundred and fifty did it fail to effect a complete cure in from two to six days.

A French writer gave a grain of the sulphide every hour to patients with **pulmonary consumption** until gastric irritation occurred. This is an extreme measure, but the author claimed satisfactory improvement. It will certainly relieve the cough of this disease.

It is praised in **tubercular diseases** of the **joints,** as well as those of the skin. If the tubercular conditions are complicated by syphilis, its benefits are especially marked. It is administered in small doses in **bronchial** and **laryngeal** troubles, in **croup** to produce immediate relief, and in persistent and **suffocative coughs.**

This powder is a successful **depilatory,** and will remove hair in a few moments. Applied moist, to the locality to be deprived of hair, it is allowed to remain fifteen minutes, and is then removed with warm water and a sponge.

It may be applied as sulphur, or dilute sulphuric acid, is applied to kill the itch insect and destroy its eggs. This is effectually accomplished in a short time, and the powder should then be washed off.

A writer, some years ago, advised this agent in **small-pox** claiming that its internal use greatly modified the severity of the disease, and prevented severe pitting. Its physiological influence would suggest its use as rational treatment in this condition.

SOLANUM. **JATROPHA.**

For several years the physicians of the south, stimulated by the writings of the late Dr. Burgess of Chattanooga, have used Jatropha, commonly called in that locality, "Bull Nettle," in the treatment of syphilis, with rather remarkable results. The identity of the plant is not thoroughly established, but recent investigators claim that it is the Solanum Carolinense, or Horse Nettle of the north. Investigations made by the state of Tennessee identify it as Solanum Rostratum.

Prof. Lloyd (writing the author) says, "under the common names 'Horse Nettle' and 'Bull Nettle,' both Solanum Rostratum and Solanum Carolinense, are gathered. They are botanically so nearly related as to make it difficult for a collector to distinguish between them. Probably varieties of each wedge into each other so that where they so commingle, that the collector would be unable to distinguish between them. Possibly the variety of Solanum classified by Dr. Burgess as Bull Nettle is really the Solanum known in the north as Horse Nettle, with radical differences from location that have caused him to classify it as a different species.

Dr. Burgess prepared an infusion, or decoction rather, as he believed that alcohol in the tincture would destroy its active properties. The root, leaves, stem, and fruit supply medicinal properties, but the tea is best made from the green root or from the whole green plant. A precise formula for the decoction is not given. It readily decomposes unless combined with glycerine in sufficient quantity to preserve it. The strong infusion is given in doses of from one-half to two ounces, every three or four hours.

It is claimed that this remedy will stop the stench of severe cases of syphilis in a few days, and will produce a sense of well being and a general improvement in a very reasonable time. Dr. A. C. Cook of Georgetown, Kentucky, believes this to be the Solanum Rostratum. He confirms the statements of Dr. Burgess. He gives the strong infusion in wineglassful doses every four hours. If there be constipation, he gives it more freely until the bowels move two or three times a day, and then as before, for seven days. For the next three days the medicine is discontinued entirely, to be again resumed for another seven days. Dr. Cook agrees with Dr. Burgess that intoxicating liquors, tobacco, and all animal fats must be avoided, and in the early part of the treatment, acids are incompatible. In the early stages, all observers claim excellent results. In the latter stages of the disease, it requires considerable time, but the benefits are secured in a satisfactory way, and leave the patient in excellent health.

The remedy is useful also in **scrofula, necrosis of the bones, ulcers, tumors,** and **various skin affections.** One writer believes that it will prolong life, health, and activity in the very old, promoting a sense of well being and warding off senility.

I introduce this remedy here, because of the very many expressions of approval I have received throughout the south. The future will determine its place and value. The Field Laboratory, Chattanooga, Tennessee, conducted by Dr. Burgess' daughters, supplies an infusion for trial, which is prepared according to the Doctor's method, or with glycerine, as may be desired.

CHAPTER VI.

Alteratives with Anti-Rheumatic Properties.

GAULTHERIA.	SALOL.	POTASSIUM CHLORATE.
SALICIN.	ASPIRIN.	SALOPHEN.
SALICYLIC ACID.	SALICYLATE OF STRONTIUM.	CHROMIUM SULPHATE.
SALICYLATE OF SODIUM.	POTASSIUM ACETATE.	

GAULTHERIA. GAULTHERIA PROCUMBENS.

Synonym—Wintergreen.

CONSTITUENTS—Volatile oil, tannin, gallic acid, arbutin, urson, ericolin, sugar, gum.

Oil of Gaultheria (Oleum Gaultheriæ)—This oil is prepared by distilling wintergreen leaves while fresh with water or steam. It is transparent and colorless when recent, but soon becomes reddish from exposure. It has an aromatic odor and a strong, spicy, agreeable taste. Pure oil of wintergreen contains about 90 per cent of methylsalicylic acid. The dose of the oil is five or ten drops, repeated every two or three hours, till some effect is produced, favorable or otherwise. If ringing in the ears is caused by the medicine, it should be discontinued or repeated in smaller doses when this effect has passed off. The remedy in full doses is apt to cause dangerous depression in debilitated constitutions.

Salicylic acid, made from oil of wintergreen, is the only preparation of the acid suitable for internal use.

A pure salicylate of soda is made from the salicylic acid of oil of wintergreen, which is preferred in the treatment of acute **articular rheumatism;** while in neuralgia of the fifth cerebral nerve, **tic douloureux,** and **gonorrhœal rheumatism,** the oil of wintergreen, in as large doses as can be borne, is the better treatment. In other cases, a tincture of the fresh plant should be employed.

It may be employed as a spray to the throat in diphtheria; and suitably diluted, as a dressing for wounds; while it may be used internally for the general purposes of an antiseptic.

PREPARATIONS—Specific Gaultheria. Dose, from five to thirty minims.

Specific Symptomatology—The agent is given successfully in the treatment of **hemorrhoids** from congestion of the pelvic circulation, hemorrhoids with very painful external tumors, of a dark-purple color, with constipation, with pain across the sacrum, and congestion of the portal circulation.

Therapy—It is of benefit in **neuralgia, tic douloureux, gonorrhœal rheumatism, inflammation** of the **bladder, irritation** of the prostate gland, **dysuria,** sexual excitement in male or female, **spermatorrhœa** without impotency, **acute articular rheumatism, migraine, sciatica,** diabetes, **diphtheria,** chronic mucous discharges and toothache (locally). A liniment of the oil is useful in allaying the pain of rheumatism.

Asthmatic breathing of a non-paroxysmal character is relieved by this remedy, as is **asthmatic cough,** and cough characterized by constriction or tightness at the supra-sternal notch. In the cough of asthmatic **bronchitis,** or in dry, harsh, persistent bronchial or phthisical cough, this agent acts nicely.

It is a serviceable remedy in **hepatic congestion,** and in congestion of the glandular structures of the entire gastro-intestinal tract. Its influence over the portal circulation is most pronounced.

In ovarian conditions inducing too frequent menstruation, with congestion of the pelvic circulation, in addition to the conditions above named, as in enlargement of the uterus, with a swollen, engorged condition of the cervix, it is directly useful.

The oil is now freely used externally in the treatment of articular **rheumatism** and also in **chorea** with excellent results. In the latter disorder it is applied, if necessary, over the upper and lower limbs, alternately, and over the spine. It may be given internally at the same time. The application may be confined with oiled silk.

An ointment made of ichthyol and the oil of gaultheria in a proper vehicle, rubbed together thoroughly, makes an excellent application to the joints in acute, and in gonorrheal rheumatism. It acts equally well on the original disease. Six drops of the oil is given three times a day, and this will cure many cases. If given in conjunction with gelsemium and macrotys in the first stages, it will probably shorten or even abort the disease.

ACIDUM SALICYLICUM.

Synonym—Salicylic Acid. Dose, from three to fifteen grains.

Physiological Action—Taken into the system, salicylic acid produces a roaring in the head similar to that produced by quinine, an uncomfortable fullness of the head, a sensation of distention with deafness and impaired vision. There is trembling or muscular uncertainty, and reduction of reflex action.

From over-doses, Bartholow says strabismus or ptosis may occur, and complete amaurosis has been temporarily induced. It has induced delirium, restlessness, difficult breathing, feeble pulse, loss of control of the natural evacuations. It induces general depression of the functions of the central nervous system. It depresses the action of the heart, and the temperature in large doses, to the extent in health of more than one and one-half degrees. In elevated temperatures its influence is more conspicuous, but if the synthetic agent is used its influence is irregular and not to be relied upon. It is destructive of the red blood corpuscles, destroying their oxygen carrying power. It produces flushing of the face in its first influence, a suffusion of the eyes and sweating which continues even if the temperature falls. Its protracted use produces pallor and prostration with lowering of the vital forces.

The agent is eliminated by all the natural emunctories, the natural form much more freely than the synthetic acid. It has appeared in the urine in fifteen minutes after its ingestion. It is usually, however, slow of absorption and its elimination is correspondingly protracted.

The influence of the agent upon the kidneys must be watched, as it sometimes acts as an irritant, producing congestion and hæmaturia, with partial suppression, or slight albuminuria.

In examining the urine of patients taking salicylic acid or its salts, it must be borne in mind that a reaction occurs from their presence with tests for sugar, similar to that of sugar itself, and is often misleading.

Chemical changes occur in the intestinal canal by the action of the digestive and intestinal juices upon it, and the effete products of large doses produce an alteration in the character of the urine.

Salicylic acid is used in medicine largely in combination wth the alkaline bases, through its action on the neutral salts of these substances, because of their superior solubility. It was advised when the acid first came

into general use to dissolve it by the addition of the phosphate, acetate, carbonate, or other salt of sodium. This, of course, resulted in the formation of the salicylate of sodium with phosphoric, acetic or carbonic acids as the products. The sodium salt is now more universally used than any other compound of the acid.

The bromides or hydrobromic acid in small doses will correct the unpleasant roaring in the head induced by this acid or by the salicylates, and will permit their protracted use in cases where, when indicated, the patient is susceptible to this influence.

Therapy—The therapeutic influence of salicylic acid in internal use is largely comprehended in the therapeutics of the salicylate of sodium and the other salicylates.

Salicylic acid is specifically a remedy for **rheumatism.** It is used to best advantage in the acute and sub-acute forms, but will serve an excellent purpose in the chronic forms of whatever character. It is now given in the form of its soluble salts. Relapses are, however, more liable to occur after this agent than after almost any other remedy.

It is advised by Ringer as of especial value in **sciatica** and **lumbago,** and in some cases of **migraine.** It will serve a good purpose in many of these cases.

The antiseptic, deodorant, stimulating and healing properties of the agent are promptly and satisfactorily exhibited. It may be dissolved in hot water and used as a mouth-wash in all conditions of ulceration of the mucous membranes of the mouth or throat. It was commonly used in **diphtheria** at one time, and was superior to other then known remedies.

In **tonsillitis** it seems to exercise a specific influence, operating efficiently in small doses of one or two grains every two hours. It can be applied directly to the tonsils if there is an exudate.

In the form of a spray it is useful in **ozœna** and fetid catarrh. It can be finely pulverized, combined with a non-irritating powder and used as an insufflation, or with a powder blower.

Internally the unaltered acid has been given in the treatment of **ulcerations** and **cancerous** conditions of the **stomach** and of the lungs, in all conditions wherein there was persistent foul breath or offensive expectoration. From two to five grains are given as a dose in these cases. It corrects the bad breath and quiets much of the discomfort present in ulcerative disease of these organs.

It is of value in old indolent **ulcers,** in chronic **tibial ulcers,** in unhealthy granulating sores, and in **cold abscesses.** It is either dusted directly on these sores or incorporated into an ointment, with a healing base.

It is used in **pruritus,** especially if accompanied with a moist discharge from the part, similar to eczema. It is useful in a large number of skin diseases and has been especially advised in some **tubercular** and **epitheliomatous** conditions of the skin.

It is in universal use as a constituent of corn salves and other bunion and **corn** cure remedies, and is useful in the treatment of **chilblains** and frost bites.

Salicylic acid is an efficient agent in preventing fermentation. It is used to prevent this process in canned fruits, in cider and grape juice, and in other liquids subject to rapid decomposition. It is useful in preventing decomposition in urine preserved for future observation or analysis.

SODIUM SALICYLATE.

Formula—$NaC_7H_5O_3$.

Synonym—Salicylate of sodium.

Physiological Action—The agent acts upon the economy similarly to salicylic acid. Its ready solubility renders it much more valuable. It is irritating to the stomach to a limited extent. Although the salicylate of sodium may be given with impunity in the conditions in which it is indicated, there are certain undesirable, and in certain cases serious results, that follow its use, which must be anticipated. The best known of these is the suppression of the gastric fluids and interference with the digestion.

A writer in the Journal of Cutaneous Diseases mentions severe cases of erythema and urticaria from its use. In another case twenty grains were ordered to a man three times daily. After taking only three doses (one dram) of the drug an urticarial eruption, quickly becoming petechial, appeared on the body and extremities. The hemorrhagic extravasation was so great at certain points, as to cause subsequent sloughs and ulcers. Almost every part of the surface of the body except the palms of the hands and soles of the feet, were attacked during the course of the disease, accompanied by myalgic and arthritic pains. The tongue, larynx and pharynx were affected by the eruption and were so swollen as to threaten suffocation. No blood or pus was found in the urine and there was no disturbance of the bowels.

Therapy—In the larger part of the conditions named as benefited by the use of salicylic acid this agent may be prescribed, often with better results than occur from the use of the acid.

It is perhaps the best of our remedies for **rheumatism** wherever located and whatever the cause or duration. Both this agent and the acid may be given internally and applied freely externally. They may be applied in solution, or the powders may be sprinkled upon cotton and applied dry and kept warm. There is authority for the statement that occasional large, full doses of this sodium salt in rheumatism will act more rapidly, and produce less gastric irritation, than if given in frequently repeated small doses.

Sodium salicylate has a specific influence in the treatment of **acute coryza,** when there is fullness of the head across the eyes, with watery secretion, sneezing, chilliness, malaise and general depresseion. Two or three fifteen-grain doses of this salt, taken two hours apart, have often dissipated every symptom for the writer. **Supra-orbital pain** from the above cause, or of a neuralgic or rheumatic character, is most quickly dissipated by it.

This agent has a specific influence upon the schneiderian membrane. It relieves irritation, reduces chronic thickness, regulates the secretion from the mucous follicles and restores tone to relaxed membranes. In acute cases it relieves pain. Knapp, of New York, has used the remedy in small doses for many years, in the treatment of **progressive deafness,** resulting from chronic catarrh. He gives five grains three or four times a day. The same dose will be found beneficial in the treatment of uncomplicated **chronic catarrh.** A slow, progressive improvement will be noticed, if the agent be persisted in.

Having confidence in the action of the remedy, in the treatment of **acute colds** in adults—coryza—I was induced to prescribe it in the **snuffles** of very young infants. I dissolved five grains in one-third of a glass of water, perhaps an ounce and a half, and gave half teaspoonful doses every half hour. The results were surprising, and from my experience I can urge the use of this simple method in the cure of this condition.

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The agent has been used to relieve **eye strain,** accompanied with **ptosis.** The cases where its influence was marked were accompanied with a **rheumatic diathesis.** Fifteen grains of the remedy three times a day was the curative dose.

Sodium Salicylate is of benefit in **whooping-cough.** Two or three grains may be given twice or three times each day and excellent results obtained.

This remedy relieved a most severe case of **universal cutaneous pruritus** of nervous origin. Fifteen grains, three times daily, controlled the entire phenomena in three days.

In the treatment of **inflammatory diseases** of the mucous structures of the **kidneys** and **bladder,** this agent is of much service, its influence being largely due to its antiseptic and soothing properties. Upon the secretory function of the kidneys in lithæmia and rheumatism the **salicylate of lithium,** however, is the preferable salt.

SALOL.

Synonyms—Phenyl Salicylate, Salicylate of Phenol.

Administration—It is prescribed in capsules of from three to six grains every two or three hours. It is safest to discontinue for a few doses, after a number of doses has been given, and to begin again subsequently, if indicated.

Physiological Action—In its physiological action it closely resembles its constituents, salicylic and carbolic acids, as it is clearly proven that the compound is broken up by the action of the pancreatic juice, and these two agents are released in the intestinal canal. This is determined by the presence of the carbolic acid products in the urine, and the evidences of salicylic acid poisoning in the system. A dram of salol will release twenty-four grains of carbolic acid in the system, as forty per cent of the substance is of that acid, and the toxic effects of the agents are the phenomena of salicylic or carbolic acid poisoning.

It is stated by Huselbach, that if the kidneys are diseased, the elimination of the constituents of salol is retarded, and serious poisoning is much more apt to occur. It intereferes with the excretory functions of the kidneys, especially if their power is at all impaired. Its use must be avoided entirely if these organs are diseased, and must be administered with careful discrimination in all diseases of the urinary apparatus. In small doses, it is beneficial, if the mucous lining only of the pelvis of the kidney is involved, as in **pyelitis,** but it must not be given in pyelonephritis.

Therapy—Because of the antiseptic character of both the acids, salol is prescribed freely as an **intestinal antiseptic** in all cases, whether of a febrile or non-febrile character, where that influence is desired. It is given in catarrhal and fermentive **diarrhœas,** in **cholera morbus,** and also in **cholera.** It is prescribed in **rheumatism,** where the salicylic acid is indicated, and the effects are identical with the influences of that agent. The liberation of the acid in the intestinal canal in a form easily absorbed, may facilitate its action.

In **catarrhal cystitis,** with alkaline urine, it is directly serviceable, neutralizing the alkalinity and destroying disease germs.

Its use in **specific urethritis** is quite common, its curative influence depending largely upon its antiseptic properties in all these conditions.

It is prescribed by many physicians as an anodyne and pain-relieving agent. It has but little influence other than in allaying irritation by destroying disease ferments, and other causes of painful disorder.

ASPIRIN.

Synonym—Acetylsalicylic Acid.

Aspirin is an intestinal antiseptic which by virtue of the salicylic acid which it contains is used more for its influence upon the blood and metabolic conditions.

The dose is from five to fifteen grains; the larger dose to be given three times a day, the smaller dose more frequently.

It is crystalline needle-shaped in character, white and somewhat unpleasant to taste.

Therapy—It is used as a remedy for **headaches** and also as a sedative in **excitable** and **mild febrile conditions,** but it is found that its best influences are exercised through the action of its salicylic derivative upon the urates and uric acid—**lithemic conditions.**

This is one of the **safer of the synthetics,** and is proving to be quite useful for the purposes above mentioned.

The **Salicylate of Strontium** is advised in the treatment of **rheumatism** as sometimes a superior agent. It may be combined with bryonia, phytolacca, or rhus, according to the indications. Dr. Bliss claims to get better results from this than from other agents. He dissolves about six drams in a quart of distilled water, adding to this two grains of the hyposulphate of iron, and gives one or two teaspoonfuls three or four times a day.

SALICIN.

Formula—$C_{13}H_{18}O_7$.

Description—A crystalline body, occurring in white or colorless, shiny, silky needles, or in crystalline powder having a bitter taste but odorless. It is soluble in water which contains an equal part of alcohol, at sixty degrees Fahrenheit. Dose, from two to ten grains.

Specific Symptomatology—Periodicity, when general debility is present, accompanied with severe pain. **Periodicity** in **fevers,** with prostration. **Intermittent** or **remittent fevers,** accompanied by rheumatic manifestations. It is a sedative to fevers, where intermittency or **rheumatism are present.** Some physicians use it indiscriminately in fevers.

Therapy—Physicians who are in the habit of prescribing this remedy and have had experience with it, claim for it a wider field than is exercised by other remedies of this class. They claim that it will control fever, even when malaria is not present. While some class it with quinine, they claim that it has a much milder, and less irritating effect than quinine, which is exercised with equal positiveness. It is especially advantageous where there is periodical neuralgia with feebleness, cold skin, and feebleness of the circulation. In **sciatica, lumbago** and in the various forms of **rheumatic neuralgia,** or **myalgia,** it is a valuable remedy. As a restorative tonic, during **convalescence** from prostrating disease, it has been favorably used, and is highly spoken of. There is no doubt that the remedy better known will be found to be an important one. It should have more extended investigation. While not in common use, this agent is a reliable one, and important and deserves further investigation.

POTASSIUM ACETATE.

Formula—$KC_2H_3O_2$.
Synonym—Acetate of Potassium.
Physiological Action—It is directly a renal depurant, increasing the amount of solids in the urine, by stimulating both the excretion and secretion. It has but little influence upon the excretion of the watery portion of the urine. In large doses it produces aching and even pains in the kidneys. It promotes retrograde metabolism throughout the system and increases waste, thus acting as a direct alterative. This is plainly apparent when the sudoriparous glands are inactive and the skin becomes rough and coarse, or **pimples, pustules** and other skin disease is present. It stimulates excretion by the kidneys and relieves the irritation of the skin, and thus facilitates the cure of these conditions.

Therapy—This agent may be used instead of the iodide of potassium, as an alterative in eczema and other skin diseases of childhood, and will be found a valuable remedy.

In glandular diseases of childhood, where an iodide is usually prescribed, this simple remedy, combined with vegetable alteratives, will often produce all of the good effects, with none of the unpleasant results, of the iodide. In **glandular inflammations,** acute and chronic, it is a valuable agent. If given in full doses of from ten to fifteen grains with aconite, every two hours, in the first stages of **mastitis, ovarititis or orchitis,** it will often abate the disease within eighteen hours. It is most reliable.

If the kidneys are normal it will hasten the removal of morbific products in all acute inflammations, but its administration must be conducted with discretion, and the kidneys must not be over-taxed. It is best given with an abundance of water, that the solid waste stimulated in the kidneys, may be fully diluted.

It neutralizes excessive acidity probably to a limited extent by decomposition and liberation of the alkaline potassium carbonate.

It has been much used in **rheumatism,** but is now largely replaced by the salicylates, which accomplish the same and often increased results. It is, however, the best remedy of the two where the stomach refuses to tolerate the salicylic acid salts as it often does.

Cloths wet in a hot solution of acetate potassium are most valuable as an application to **acute rheumatic inflammation** of the **joints.**

In **lithæmia** its influence is most direct. The dosage prescribed in these cases is usually too large. It works more satisfactorily if given in doses of one or two grains, five or six times daily, quickly relieving the aching in the back, so common to this condition, and promoting a clear and normal urine, reducing, instead of increasing, the specific gravity.

It acts upon the liver promptly, stimulating a flow of bile, and overcoming **hepatic congestion.** It has long been used in jaundice, and exercises a desirable influence upon the glands of the entire intestinal tract.

It is a remedy for **boils** and other persistent **skin eruptions,** and will be found valuable in **carbuncle** as an active eliminative.

POTASSIUM CHLORATE.

Formula—$KClO_3$.
Synonym—Chlorate of Potassium.
Physiological Action—The physiological action of this agent is that of an irritant poison. It depresses the action of the heart, lowers arterial ten-

sion, disorganizes the red blood corpuscles, converting the hæmoglobin into methæmoglobin. The product of the disorganization is excreted by the urine. It produces enlargement of the liver, kidneys and spleen, inducing inflammation of the entire gastro-intestinal tract. When death occurs from its use there is delirium and coma or convulsions. Continued use of the agent even in medicinal doses may produce irritation and congestion of the kidneys with albuminous urine and difficult renal action. It is apt to produce cutaneous eruptions, papular, vesicular, or erythematous in character.

Therapy—The agent is an active antiseptic, although not usually so classed. In the early treatment of **diphtheria** it first came into prominent use as a remedy for that disease, for which it was used in conjunction with the chloride of iron. Given after exposure, before the development of the symptoms, it is said to ward off an attack of the disease. Its solution is useful in all cases of **ulceration** of the **mouth** or of the **stomach.** It is given in frequent doses, and is used freely as a mouth wash, especially valuable if the gums are spongy and tend to bleed readily, and there is fetid breath. It is specific in **mercurial stomatitis** and was long advised in conjunction with mercurial treatment, to prevent the salivating influence of mercury. It prevents the formation of false membrane and hastens its detachment in **membranous croup.** It is useful in the sore throat of **scarlatina,** but it must be given with caution in this disease, because of its irritating influence upon the kidneys.

Its solution is useful in specific or non-specific **urethritis, vaginitis** and **cystitis,** in which mild solutions are more efficacious than saturated ones. It is useful also in **hemorrhoids** and in **rectal ulcers** and fissures.

It has been used in **phthisis pulmonalis,** in **syphilis, scrofula** and in **scurvy,** but its use in these conditions is now obsolete as we have many superior remedies. Local ulcerations of the mouth or throat, or ulcerations of any mucous surface occurring in the course of these constitutional diseases may be well treated with this salt in solution, but its continued internal use is not advised.

This agent is useful in the treatment of **leucorrhœa,** and in **ulcerations** of the **os uteri** or of the walls of the **vagina,** in solution in a douche.

SALOPHEN.

Synonym—Acetylparamidophenyl Salicylate.

Therapy—It is a safer remedy than salol, and quite as sure in the same conditions where the effect of salicylic acid in the blood is desired, and it will probably act with much less irritation upon the kidneys. Its influence upon the **bladder** and **mucous membranes** of the **genito-urinary** tract is probably much less active than that of salol. Dose 5 to 20 grains.

CHROMIUM. CHROMIUM SULPHATE.

Chromium was discovered by Vaquelin in 1797, and its salts had been used in the arts, but it is only within a little more than a decade that it has been suggested in medicine. The leading materia medicas do not mention **chromium sulphate.** Kolipinski, in 1902, presented this remedy to the American Therapeutic Society. He stated that he had been using it with results that would justify its general adoption. He gave it in doses of four grains, three times a day. Since that time familiarity with it, and an absence of

toxic symptoms have caused the dosage to be increased to more than double this amount in certain cases, and occasionally thirty or forty grains have been given with only mild vertigo and some uncertainty of muscular action. It has been continued over long periods without unpleasant results.

It is used first for its influence upon the **prostate gland;** also in **neurasthenia, exophthalmic goiter,** and **locomotor ataxia.** It has cured these conditions, especially the second, without the usual auxiliaries of rest and travel. Its effect upon exophthalmic goiter has been a pleasing one, in some cases, and in many it has exercised a beneficial effect. It has been used in uterine fibroid, in interstitial fibroid, in all forms of prostatic trouble, and in **senile pruritus.**

It has been given for **impotency** and **faults with the menopause** and **growths** in the **female breast.** It has been prescribed for **nervous vomiting** or the **vomiting of pregnancy,** and for various forms of **headache.** The conditions for which it is now **preferred** are **enlargement** of the **prostate, enlargement** of the **thyroid gland** or **exophthalmic goiter,** and the several nervous conditions named above. In the **tachycardia** of exophthalmic goiter, the irregular action of the heart is controlled usually and a normal action is induced. The latter symptoms with trembling, slowly ceasing. The remedy acts more promptly in early cases than in later ones, and this same holds true in **locomotor ataxia.**

In my own cases of enlarged prostate, while I thought I had good results from its action, I found that I got better results by combining it with thuja, and later with thuja and saw palmetto. I would certainly advise its further observation.

Two cases of **lateral sclerosis** of the spinal cord were cured with this remedy. Another physician used it in **heartburn** of long standing, five grains three times a day, and cured his patients.

CHAPTER VII.

IRON AND ITS COMPOUNDS.

FERRUM.	FERRIFERROCYANIDUM.	FERRI CITRAS.
FERRI CHLORIDUM.	FERRUM REDUCTUM.	FERRI OXIDUM HYDRATUM.
FERRI SULPHAS.	FERRUM DIALYZATUM.	FERRI ARSENAS.
LIQUOR FERRI SUBSULPHATIS.	FERRI CARBONAS.	IRON AS AN ANTIPYRETIC.

FERRUM.

Symbol—Fe.

Synonym—Iron.

Physiological Action—Iron is an essential and constant constituent, a proximate of the animal organism. It is taken into the system with the food of which it is a constituent, being absorbed by plants which serve that purpose, from the soil. It floats in the blood as the most important component of the red corpuscle a little less than one-half of one per cent of the total constituents of the red corpuscle, consisting of iron.

It is also present in the gastric juice, bile, chyle, lymph, milk and urine, and in various pigments, notably those of the eye.

During the administration of iron the red blood corpuscles increase in number as well as in their oxygen-carrying power, the quantity of hæmatin and hæmoglobin, and also the total quantity of the blood being increased, at the same time.

By the improvement of the blood and the increased supply of oxygen to the tissues occasioned by the administration of iron when this agent is deficient, the nervous system is directly influenced in a most favorable manner. There is increased strength and a greatly augmented power to resist disease, and to sustain the vital functional operations of the various organs of the body.

An objection to the administration of iron as a medicine is the inorganic character of the agent, which materially interferes with its appropriation. The more nearly we are enabled to approach to an organic compound of iron, the more speedily and satisfactorily will the influence of the agent be exercised. A commendable effort is being made by various manufacturers to separate the iron from pure blood for internal administration.

The matter of speedy absorption must be considered in selecting an iron salt, as elementary iron is not used in medicine, the compounds alone being prescribed. Whatever compound is selected for this purpose the proportion absorbed is very small and the amount given in excess of the appropriation is usually eliminated with the feces, imparting to them a black color.

The oxides, the sulphates, the carbonate, the phosphates, and the chloride of iron are among its most easily appropriated salts. For the application of iron in general, we refer our readers to the consideration of the remarks under the headings of these various salts.

FERRI CHLORIDUM.

Synonym—Chloride of Iron, Muriate of Iron, Ferric Chloride.

PREPARATIONS—The **Tincture of the Chloride of Iron** is prepared by dissolving the chloride in alcohol. It is a clear, dark reddish-brown liquid with a sharp, astringent taste, and an acid reaction. It may be mixed with water in all proportions without precipitation. Dose, from three to fifteen minims, fully diluted.

The Ethereal Tincture of the Chloride of Iron, prepared by dissolving one ounce of the crystals of ferric chloride in twelve ounces of ether which has been mixed with four times its bulk of alcohol. Dose, from two to ten minims, fully diluted.

Therapy—The tincture of the chloride of iron has a wide range in therapeutics, in addition to its direct influence in restoring the **red blood corpuscles.** It exercises a direct **tonic** influence upon the **stomach** and is also a powerful **astringent antiseptic** and restorative to a high degree, especially in general atonicity without fullness of the blood vessels—with anæmia. It is not a direct nerve tonic, its influence upon the nervous system being exercised through its restorative influence upon the red blood corpuscles, and the consequent renewal of vitality thus induced, enhanced by the increased power of the blood to carry oxygen.

The agent is demanded in **anæmia** which has occurred from the sudden loss of blood from acute hemorrhage. In cases of this character the blood is not impaired and the agent quickly restores to this fluid its full quantity of red corpuscles. It is no less efficient in anæmia from chronic disease or in that form which occurs slowly from a gradual destruction of red corpuscles in the system. In **chlorosis** it acts well, but other forms of iron are usually more efficacious, as it is necessary in the larger proportion of cases to treat other existing conditions, usually disorders of menstruation.

In depraved conditions of the blood, resulting from the **absorption** of **septic matter**, it is a most important remedy. It imparts tone to the system, antagonizing the influence of the poison, while it destroys the poison itself, at the same time restoring the blood if impoverished.

In **local poisoning** where septic material has been introduced into wounds, and the course of the infection is marked by the appearance of active inflammation along the course of the lymphatics, the reddened areas may be painted with the tincture, while it is also administered internally. It may also be applied directly to the wound, but there are milder antiseptics that we may use for this purpose that are less irritating and fully as efficacious. Iodine is a better application.

In the treatment of **acute erysipelas** the tincture of iron has long been considered a specific. It is applied directly to the inflamed surfaces, and at the same time to a narrow area of healthy tissue beyond the line of inflammation. This retards further advancement of the disease, and is especially indicated if the tissues are of a dark, deep red color. Ten drops of the tincture, freely diluted, should be given internally at the same time, every two or three hours.

This tincture was one of the first successful remedies used in the treatment of **diphtheria.** If the mucous membranes are swollen and engorged, and of a deep red color, its influence is exercised most speedily. It was commonly administered in combination with the chlorate of potassium, fifteen grains of the latter being dissolved in two ounces of water to which a dram of the tincture is added. A teaspoonful of this every two hours was given to a ten year old child. The tincture may be diluted and used as a gargle, and in extreme conditions the swollen areas, which are covered with the characteristic exudate, may be gently painted with it in full strength.

This simple course of treatment was very successful in the past, especially when the specific indications of the constitutional involvement have been met with aconite, phytolacca, belladonna, or other indicated measures.

Whenever prescribed, if the indications for an acid in the system are present, such as dark mucous membranes, the narrow, red tongue with thin tip and edges, the influence of the agent is more promptly exercised.

In the treatment of **chronic inflammation** of the **kidneys** where there is a large waste of **albumin,** the tincture of iron is a most efficacious remedy. In these cases there is deficiency of action of all the vital organs, and anæmia. The blood pressure in the kidneys is greatly altered and the general vital force is much reduced. As stated, the possible precipitation of a large quantity of albumin is the indication for its use, although it is beneficial in certain cases where the quantity is not large. In an experience of many years in the treatment of albuminuria, the writer has learned to prefer the ethereal tincture to the ordinary tincture of the chloride in these cases. Five to eight drops of the ethereal, will acomplish the same results as twice that quantity of the ordinary tincture.

The tincture of iron is of much service in the treatment of **pyelitis,** reducing the quantity of pus formed more rapidly than other agents. The diuretic effects of the tincture are of much service in these cases, especially if dropsy is present as a complication. It stimulates the digestive and appropriative organs, it forms new blood and thereby increases the quantity of oxygen in the system. It increases nerve force and through the nervous system the strength of the heart's action. It thus materially increases the blood pressure in the kidneys, and in every way improves functional activity. It reduces the quantity of uric acid and the phosphates in the urine, when excessive, and relieves the consequent irritation. Its antiseptic properties further inhibit the formation of pus.

In pulmonary **tuberculosis** the tincture of iron controls the night sweats, hemorrhage, bronchorrhœa, and diarrhœa, its tonic influence in these cases being most marked.

The styptic properties of this agent render it advantageous in all conditions of passive hemorrhage. Vegetable astringents, however, have largely replaced the use of the tincture of iron for this purpose.

Binz claims that ether given in conjunction with iron greatly facilitates the absorption of the latter. He especially advises the use of ethereal tincture of the chloride of iron in chlorosis. The author, in a long experience in the treatment of chronic **kidney disease,** has long ago replaced the tincture of the chloride of iron and the other non-ethereal preparations by this preparation of the German pharmacopœia. Its action in the consequent anæmia of **albuminuria** is much more prompt, reliable and satisfactory. The smallness of the dose, from three to eight drops, also commends it.

The tincture of the chloride of iron, like many of its other salts, has an injurious influence upon the teeth, acting chemically upon the enamel, softening and destroying it. It precipitates the iron and produces a permanent black discoloration, for which reason it should usually be taken in high dilutions or through a glass tube or a straw.

The tincture in combination with dilute phosphoric acid makes an excellent tonic which may be freely administered after protracted disease, especially in convalescence from malarial disease.

℞—Tincturæ Ferri Chloridi.....ʒiii
Acidi Phosphorici diluti .....ʒiv
Glycerini .....ʒi
Elixir Simplicis ad. q. s.....ʒiii
M. Sig. Teaspoonful every two or three hours in water.

This mixture is nearly or quite colorless and very palatable, especially if added to a little water in a glass. In it a chemical change takes place which rather enhances the value of the constituents. In proper doses its influence as a tonic for children is exceedingly prompt and satisfactory. It is given to them also when convalescing from severe stomach or bowel trouble, when the nervous system is debilitated, and the blood is deficient in red corpuscles.

If one grain of strychnine be added to each pint of the above compound its influence will be broadened.

Incompatibles—The chloride of iron is incompatible with the salts of the metallic elements, with the compounds of silver and mercury, with all the arsenates and arsenites, the borates, and those vegetable compounds which contain tannin, albumin or gums.

FERRI SULPHAS.

Synonyms—Green Vitriol, Ferrous Sulphate, Sulphate of Iron.

Ferri Sulphas Exsiccatus is the sulphate of iron deprived by heat of its water of crystallization. It is a grayish-white powder perfectly but slowly soluble in water. It contains sixty-five per cent of the original sulphate.

Ferri Sulphas Granulatus.

Synonym—Granulated Ferrous Sulphate.

For many years the sulphate of iron has been a popular **tonic** and **restorative,** and is the active constituent of many well known formulæ. In its tonic properties it rapidly supplies iron to the system, and is given with-

out special regard to nice discrimination, in all atonic conditions, where there is **anæmia.** As a restorative to the menstrual function which has ceased in anæmic and chlorotic cases, it is one of the best of the iron compounds. It permits a natural restoration of the function by supplying the necessary iron to the red blood corpuscles, but it is an **emmenagogue** only in such atonic conditions, and will not force a restoration of the function when suppressed from other causes. This agent has powerful astringent properties, and has long been used in both active and **passive hemorrhages.** In chronic **pulmonary disease** its tonic properties are of much value, while its astringent action restrains the tendency to hemorrhage and profuse night sweats. Its astringent and tonic effects are also evident when there is chronic or profuse diarrhœa with tendency to intestinal hemorrhage. As it has the properties of an irritant, it must be given in small doses. One grain every three hours is much better than five grains three times a day, and in many cases one grain three times a day will be quite sufficient. It is a useful remedy in **diabetes,** either of the saccharine or non-saccharine variety. The agent, externally applied, either in the form of a fine powder or in strong solution, will control many cases of traumatic hemorrhage. In solution it is also applied externally to chronic ulcers and moist **eczema,** and is used in a douche in profuse **leucorrhœa.** It is applicable as a wash in open cancers, especially cancer of the uterus, in the proportion of one or two drams to a quart of hot water. A solution kept in contact with recently extruded piles will sometimes cause their rapid disappearance.

LIQUOR FERRI SUBSULPHATIS.

Synonym—Monsel's Solution, Solution of Ferric Subsulphate, Solution of Subsulphate of Iron.

Description—This preparation is not widely different from the liquor of the persulphate of iron, either of which evaporated with moderate heat will yield a light, reddish-brown, deliquescent crystalline substance known as **Monsel's salt.**

Therapy—It is not given to any extent internally, its influence being specifically that of a powerful **local styptic.** In contact with the blood it produces immediate coagulation, the coagulum extending into the open vessels, thus occluding them. In **hemorrhage** of the stomach and bowels it may be given internally in doses of from two to five minims diluted, and in hæmoptysis it may be used in an atomizer, also in bleeding from the post-nasal cavity. For application to wounds the solution is preferable to the powder, as the coagulum from the former is more easily removed than that which forms in the presence of the crystalline salt.

FERRIFERROCYANIDUM.

Formula—$Fe_3Fe_4(CN)_{18}$

Synonyms—Prussian Blue, Ferric Ferrocyanide, Ferrocyanide of Iron.

Administration—In its administration it may be given in doses of from two to five grains, four times daily, in a capsule. Its value is sometimes enhanced by giving it in conjunction with quinine.

Therapy—In pernicious intermittent fevers when quinine has apparently lost, or exerts no influence, this agent sometimes produces a pro-

found antiperiodic effect. In severe pain of **neuralgic, malarial** or even of uncertain character, appearing periodically, but with *long intervals* of one, three, five or seven weeks, if this agent is given in small doses for a few days preceding the expected paroxysm it will break up the periodicity when every other known measure has failed. The writer treated a case of facial neuralgia in a woman of a very nervous temperament. The attacks were exceedingly violent, and the patient was susceptible to the action of morphine, and, in fact, ultimately died from the administration of a simple one-fourth grain dose given by a physician who did not understand her idiosyncrasies. The attacks of neuralgia had occurred at regular intervals of five weeks for eleven years without having been controlled but once, and that only for a very short time. There was no reappearance of the pain after this agent was used, for six or seven months. A mild attack after complete exhaustion was then completely controlled, and there was no recurrence for over a year, when in a distant town a physician unfortunately administered morphine for a mild attack, with the result mentioned.

This agent is specific in certain cases of **vomiting,** and should be given in minute doses frequently repeated. In many of these cases the persistency of the vomiting may have withstood better known agents.

The tonic properties of this salt of iron are not as great, because of its insoluble character, as those of others of the salts, but in certain cases it has an influence peculiarly its own, which is very satisfactory.

FERRUM REDUCTUM.

Synonyms—Quevenne's Iron, Reduced Iron, Iron by Hydrogen.

Description—This is in fact a powder of iron, light, tasteless, without luster, and of an iron-gray color. Because of the presence of hydrogen it takes fire readily. It is insoluble in both water and alcohol. It has long been considered one of the very best of the iron tonics. It supplies iron directly to the system, is comparatively free from astringency and irritating properties. It is given wherever a pure iron tonic is needed and is especially available for administration to children. In its administration three grains in a pill or capsule or in the powder may be given every three or four hours.

A test of the purity of this agent may be made by igniting a quantity of it, when it should burn in sparks. If it does not ignite an impurity is present, probably in the form of an oxide. It should not yield sulphureted hydrogen gas.

Ferrum Dialyzatum.

Dialyzed iron is a common preparation of iron of rather unstable character. It yields up its iron freely in the system and with many practitioners is commonly used in anæmia in preference to other preparations of iron. It is said to serve as an efficient antidote to arsenic without further preparation. It is prescribed in liquid form and is easily precipitated from its solution. The dose of the solution is ten or fifteen minims in water.

FERRI CARBONAS.

Formula—$FeCO_3+H_2O$.

Synonym—Carbonate of Iron.

Administration—In the administration of this remedy, while five or six grains during twenty-four hours are considered a small dose, this amount is without doubt more than is absorbed. There can be no advantage in prescribing a greater amount, although it is not uncommon with some physicians to give ten grains four or five times a day. From one-half to one grain will usually do as well as a larger dose.

Therapy—The restorative powers of this salt are very great, while the facility of its absorption, the absence of irritating properties and its tastelessness render it of especial value in therapeutics. There are but few atonic conditions in which iron is needed where this remedy is contra-indicated, its beneficial action being particularly marked in all debilitated conditions. Its influence upon the stomach is most gratifying, as it stimulates the normal secretion, is not astringent, overcomes rapidly excessive catarrhal discharges by its tonic properties and materially improves the digestion. **Blaud's pill,** which has been popular for nearly a century, contains as its principal constituent the carbonate of iron. The writer has learned to depend upon the following formula as a specific in certain atonic conditions of the stomach, or **catarrhal gastritis:**

Ferri Carbonat. 3ss
Hydrastine 3ss
Capsici . .....gr. viii
Mix and divide into capsules No. xxx.
Sig. Take one after each meal.

In extreme debility one of these capsules may be given every three hours, but always after eating, however small the amount partaken of, even if no more than a few mouthfuls of bread or any other plain food.

In conditions where quinine is indicated this may be added to the prescription very satisfactorily. In cases which demand nux vomica, especially if there is prostration of the nervous system, this latter makes a most valuable addition to the formula. In other cases the crude powdered golden seal may replace the hydrastine to good advantage, but at least double the quantity should be used. Whitford has used this formula for nearly half a century, but with the addition of xanthoxylum in the place of capsicum.

Very often the formation of boils, inflamed **abscesses,** and especially **pustular** conditions of the skin of the face and aggravated cases of **acne,** depend upon a condition of the blood, which is speedily corrected by the action of this remedy. The formation of **crops** of **boils,** which has continued for months, may be terminated and the boils cured within a short time, by administering a grain of this salt every two or three hours. This is a very reliable treatment in these stubborn conditions.

This agent is of much value in the treatment of the **anæmia** present with chorea, and may be combined with other tonics or nerve sedatives. In amenorrhœa, due to anæmia, this agent is of service, as it rapidly improves the condition of the blood, thus promoting the natural restoration of the function.

FERRI CITRAS.

Synonyms—Ferric Citrate, Citrate of Iron.

Administration—This is an excellent form of iron for administration; soluble, easily appropriated, pleasant and crystalline. It may be given in solution, pill or capsule form. The medium dose is five grains, three or four times daily.

FERRI ET AMMONII CITRAS.

(Iron and Ammonium Citrate.)

FERRI TARTRAS.

(Tartrate of Iron.)

FERRI ET AMMONII TARTRAS.

(Tartrate of Iron and Ammonium.)

FERRI ET POTASSII TARTRAS.

(Tartrate of Iron and Potassium.)

FERRI ET QUININÆ CITRAS.

(Citrate of Iron and Quinine.)

FERRI ET STRYCHNINÆ CITRAS.

(Citrate of Iron and Quinine.)

FERRI ET QUININÆ ET STRYCHNINÆ CITRAS.

(Citrate of Iron, Quinine and Strychnine.)

Administration—The above are given in doses of from two to ten grains, and are best dispensed in a syrup or aromatic vehicle as they are exceedingly bitter. A good extemporaneous method is to make up the prescription by completely dissolving the total quantity of the citrate or tartrate in about seventy-five per cent of its total liquid bulk of equal parts of water and simple elixir, and subsequently adding twenty-five per cent of syrup of liquorice. If the crystals are entirely dissolved this will make a comparatively permanent and palatable compound.

Therapy—They are excellent tonics and act in a satisfactory manner in debilitated conditions where their constituents are plainly applicable.

They have the restorative properties of iron, the tonic but not the antiperiodic properties of quinine, or the nerve stimulant properties of strychnine in its compounds.

In **malarial** regions where there are apt to be **malarial complications,** with all fevers and acute inflammatory conditions, these salts are of great efficacy. Appropriate selection may be made according as the **debility** involves the **nervous** system, or the functional operations of the vital organs, or the assimilation of nutrition.

FERRI PHOSPHAS SOLUBILIS.

Synonym—Soluble Ferric Phosphate.

This salt is given in doses of from five to ten grains in syrup or in aromatic elixir.

Physiological Action—It possesses the tonic properties of both iron and phosphorus. Both of these substances are actual food for the brain and nerv-

ous system and in debilitated conditions where there is lack of nutrition of the nervous system, this salt is important, although not as valuable as free phosphorus or a combination of the iron and alkaline phosphates.

Therapy—It is indicated in those conditions following **exhausting diseases** where the **exhaustion** is apparent in inactivity of the digestive and appropriative organs, and in diminished nerve force. In the cure of many forms of **indigestion,** the phosphate of iron performs an important function. It increases the tone of the stomach, and stimulates the secretion of the gastric and intestinal juices.

FERRI PYROPHOSPHAS SOLUBILIS.

Synonyms—Soluble Pyrophosphate of Iron, Soluble Ferric Pyrophosphate.

Dose. From two to five grains.

Therapy—It is given in **anæmic** conditions where debility is marked or where there are evidences of **neurasthenia.** In convalescence from prostrating disease where there is general loss of nerve power, this agent in many cases will be found superior to the phosphate. It is further applicable in all cases where the phosphate is indicated.

Compound Syrup of the Phosphates.

For perhaps sixty years there has been on the market a syrup known as Parrish's Chemical Food, the Compound Syrup of the Phosphate of Iron, or the Compound Syrup of the Phosphates. This compound was widely used with success in nervous prostration, but the complex character of its formula, which was afterwards made known by Dr. Parrish, makes it difficult to prepare. It has recently been replaced by other manufacturers by a palatable and efficient syrup of the phosphates. The following is the original formula of Dr. Parrish, but it is much too complicated for general prescribing, in fact, the character of its constituents are such that it is inadvisable to undertake to construct it unless skilled in pharmacy. Simpler combinations, or the direct prescribing of its single constituents, will often prove of greater service.

Phosphate of Iron.....3x.
Phosphate of Sodium.....3xii.
Phosphate of Lime.....3xii.
Glacial Phosphoric Acid.....3xx.
Carbonate of Sodium.....grs. xv.
Carbonate of Potassium.....3i.
Hydrochloric Acid, water and ammonia, of each a sufficiency.
Powdered Cochineal .....3ii.
Distilled water.....sufficient to make ℥xx.

To this is added the oil of orange and sugar. The ingredients are then carefully combined.

It is given in doses of one dram three or four times daily, in water.

In an extreme case of "starved nerves" in a pregnant woman where there was **spinal irritation** in a most exaggerated form, with violent insanity, the writer relieved the entire train of symptoms, restoring perfect mental action and producing quiet and rest, which had not been produced for six weeks previously, except by the continued use of morphine, in less than ten days, by the use of Parrish's syrup in frequent doses and forced concentrated nutrition.

Spinal irritation will yield more quickly to this combination than to any of its single constituents. It is demanded in all cases of nervous prostration with **anæmia.** It is advisable not to continue the use of any single tonic or restorative in nervous prostration for a greatly prolonged period; better results are obtained by selecting two or three of this class of preparations which seem to be adapted to the case, and rotating them in order, changing every twenty-one or twenty-eight days.

FERRI OXIDUM HYDRATUM.

Formula—$Fe_2(OH)_6$.

Synonyms—Ferric Hydrate, Ferric Hydroxide, Hydrated Oxide of Iron, Red Oxide of Iron, Hydrated Peroxide of Iron, Hydrated Sesquioxide of Iron.

Therapy—This substance has no practical use in therapeutics beyond its power to at once convert arsenous acid into an insoluble arsenic compound of iron, which is comparatively innocuous.

When arsenic has been taken into the stomach this antidote can be at once prepared and administered. It is given in teaspoonful doses of the moist magma every few minutes until a quantity equal to at least twenty times the bulk of the arsenic taken, has been administered. It is then advisable to at once introduce the stomach pump and thoroughly evacute the stomach, or evacuation can be accomplished by the use of an emetic.

FERRI ARSENAS.

Synonym—Arsenate of Iron, Iron Arsenate.

Administration—It is administered in pill form in doses of from one-sixteenth to one-eighth of a grain three times daily. The smaller dose should be used in the beginning, and it will seldom be found necessary to administer a larger one than one-tenth of a grain.

Therapy—Its direct administration is in those diseases of the skin where arsenic is of acknowledged value, when accompanied by anæmia or a blood dyscrasia. In cases of eczema, where there is prostration, it has been of much service, and is more useful if the disease is of the dry than if of the moist variety. It is of much value in scaly conditions, with extreme inaction of the glands of the skin. Some cases of impetigo, psoriasis, and even lepra, yield to it. In chronic diarrhœa, where there is impairment of the red blood corpuscles it is of value.

IRON AS AN ANTIPYRETIC.

Those who have followed the methods of Schussler closely have become enthusiastic over the action of the **phosphate of iron in trituration,** in the control of **uncomplicated fever.** It is superior often to any other remedy (see Tissue remedies), especially with children. A very thorough trituration equal to the third decimal trituration of the Homeopathist is the preparation I use the most. Of this fifteen or twenty grains added to four ounces of boiling water is cooled to the proper temperature and given hot every ten or fifteen minutes especially in sudden high temperatures. Usually other remedies may be discontinued while this is being given.

The promptness with which the temperature drops depends upon the persistency of the cause. But in from two to six hours, there is a marked reduction in the temperature. This method is especially adapted to the acute inflammatory diseases of childhood, especially pneumonia where it has in some cases, for me, covered all the pathological conditions for a short period.

Dr. Stephens claims that the citrate of iron in small doses, frequently repeated, will produce the same result. He puts ten grains of the soluble citrate into a four ounce mixture and gives a teaspoonful every ten or fifteen minutes. Other writers have used the tincture of iron alone, in small doses. When we have the characteristic specific symptoms for an acid (as this preparation is acid in reaction), from one-fourth of a drop to one drop at a dose, it is claimed, will exercise a direct controlling influence over the temperature. The above suggestions should receive our attention. If these facts can be confirmed by experience, they will prove of much value, as they will enable us to replace agents that are depressing in character, when depressants are contra-indicated by those which by their inherent properties will sustain and build up the system outside of their possible sedative influence.

CHAPTER VIII.

IODINE AND ITS COMPOUNDS, ETC.

IODINE.
TINCTURE OF IODINE.
POTASSIUM IODIDE.
SODIUM IODIDE.
OLEUM MORRHUÆ.
FERRIC IODIDE.
HYDRIODIC ACID.

IODINE.

Note. Because of the fact that iodine is obtained from organic sources, direct, we may well class it as an organic remedy. It is readily absorbed, and just as readily eliminated through all the emunctories. It as readily applies itself in line with the demands of the system for this agent, in the same manner and with much the same facility and felicity as the organic principles of the plant drug. In these particulars, it is superior to iron and eminently superior in the rational character of its influence to the common inorganic remedies.

Symbol—I.

Administration—Iodine is given in the aqueous solutions hereinafter named, or in the form of the tincture, or in its compounds. The crystalline substance is not a desirable form for administration, although sometimes so prescribed.

Physiological Action—In its influence upon the nervous system, Iodine produces depression of spirits, mental distress and disinclination to exertion. There is lassitude, muscular debility, and increasing feebleness, with depression of the heart and circulatory apparatus.

In its influence upon the stomach in small doses it acts as a tonic and sedative, in large doses producing salivation, general discomfort and colicky pains; in extreme cases vomiting and purging. In excessive doses Iodine has produced death by exciting severe gastro-enteritis. With this condition there are a rapid and feeble pulse, deathly pallor, and irritation of the kidneys, with ultimate suppression of urine.

Iodism, from the protracted use of this agent in any form, manifests itself by a peculiar metallic taste in the mouth upon rising in the morning, increased salivation, with sore mouth and tenderness of the gums, irritation of the post-nasal cavity, and perhaps watery eyes, the symptoms closely resembling those of hay-fever or rose cold. There is an eruption upon the skin, acne rosacea appears and this is followed by boils, or perhaps purpura. There is sore throat, in many cases severe and painful, and an excessive frontal headache. Some patients are exceedingly susceptible to the above symptoms and even nervous phenomena with impaired vision, paresis, anæmia, and atrophy of the glandular organs, especially of the mammary glands and testes, with a marked loss of sexual power, may appear in many cases. As an antidote, starch and starchy substances may be freely administered, and a solution of the bicarbonate of sodium and occasional hypodermic injections of the active stimulants, are sometimes indicated.

Iodine has been called the king of **alteratives,** but no satisfactory explanation has yet been given of its influence in this line. I believe it is due to its innate organic character. It is argued that the virtues of all vegetable alteratives are exercised through the iodine they contain. But we have vegetable alteratives which are possessed of equal and in some cases greater powers than iodine, in which iodine is not conspicuous as a constituent. This agent in its influence resembles the organic remedies closely in its elimination; it acts more like the inorganic agents.

In harmony with the teachings of Germain-Sée, iodine probably stimulates a more perfect absorption of nutritive material, and encourages perfect elimination of all waste products. This elimination takes place with much activity through the skin, kidneys, salivary and mucous glands, especially those of the intestinal canal. When the compounds of iodine are taken by nursing women, iodine is found abundantly in their milk. The elimination of its salts and the waste products through the skin produces irritation and often pustulation. In medicinal doses iodine increases the appetite, especially if there be an excess of acid; it promotes digestion and stimulates the absorption of nutritive material. Because of its insolubility, the uncombined agent is seldom given internally, but generally in the form of one of its compounds.

Therapy—In the form of an inhalation, iodine is of much benefit in disease of the **nose, throat** and **bronchi.** The influence upon the mucosa of these passages is direct. **Ulceration,** with a watery discharge and a feeling of fullness in the head, across the face and eyes, often inducing frontal headache, is relieved by these inhalations.

Vaporized iodine is proving more effectual and immediate than applications of any solution.

In **chest** troubles following **measles,** these inhalations are somewhat beneficial; also in **irritation** of the **trachea** or **larynx,** of either an acute or chronic character, especially in children, evidenced by a hoarse, hollow, dry cough, or wheezing respiration, induced by slight exposure to cold.

In conditions where there is an exceedingly free expectoration, especially if this has a bad taste or odor, as in some cases of **bronchitis** or **phthisis,** and especially in purulent conditions following prolonged **pneumonitis,** inhalations of iodine have long been in use. A narrow-mouthed pitcher may be filled with hot water, and on this may be dropped from twenty minims to half a dram of the tincture of iodine. The vapor of this should be inhaled directly for about five minutes, the head and the pitcher being closely covered.

In 1911 Rouge of Paris advised the use of **Iodine in the form of a vapor** for all external purposes and as an inhalant. He had found that when con-

verted into a vapor and applied to suppurating surfaces, or blown into abscesses, hydroceles, cysts, lymph nodes, tumors, etc., the immediate effect was much more pronounced than when used by any other method.

More recently Dr. Capell of Omaha, Nebraska, has spent a great deal of time and effort in developing this method, and the surprising results that he has obtained have proven beyond doubt that the use of iodine vaporized is superior to the application of the tincture or any other form of this actively antiseptic agent.

In cases of **acute infection,** the vapor is thrown into the open wound and applied over an infected limb or to the contiguous surfaces every day or two. The influence is very prompt. He has invented a simple vaporizer which makes the application of this vapor an exact and accurate process, very readily handled. It is applied to ulcerations in the throat of all character, to post-nasal difficulties, especially the intractable ones, and to disease of the internal ear. This method will certainly become the future popular method.

Two of our writers advise the use of iodine in inflamed conditions of the joints whether or not the inflammation involves the osseous structures, as well as the synovial membranes. It may be given in small doses internally and applied externally.

Dr. Aylesworth dissolves iodine in goose oil and applies it in preference to the ordinary tincture. When the oil is boiled it takes up about eight per cent of the iodine. This does not irritate, leaves no stain, and is promptly absorbed.

Veterinarians depend greatly upon inhalations of iodine in their treatment of **catarrhs, distempers** and persistent discharges from the nasal mucous membranes of horses.

TINCTURE OF IODINE.

Occurrence—Prepared by dissolving two ounces and two hundred and fifty grains avoirdupois of iodine in thirty-three fluid ounces and three hundred and ninety minims of alcohol.

Physiological Action—Applied to the skin this preparation produces a local inflammation following a primary irritation. It separates the cuticle from the dermis slowly with only desquamation, or immediately, with the production of a blister which contains serum. The application often causes much pain, some patients being especially sensitive to it. In order to derive benefit from the application of iodine, the soreness that exists must be found in the deep muscular structures or in the parenchyma of the organ or gland, since if the soreness is in the skin only it is apt to be increased by the application, in which case belladonna applied will be found curative.

The tincture of iodine is applicable to **enlarged glands,** in **goiter** and in **scrofulous tumors,** and in **hydrocele.** It is beneficial in enlargment and in **congestion** of the **ovaries** with pain, and is useful in erysipelas, applied over and beyond the inflamed area. In this form the agent is not usually given internally because of its easy precipitation and lack of absorption. The skin is painted with the full strength tincture once each day, or once in two or three days for a short time only.

Therapy—It has been applied with good results in acute inflammation of the lungs, and in **pleuritis, bronchitis** and **phthisis.** It may be applied over the spinal ganglia in **spinal irritation.** At one time it was common practice to inject iodine into glandular structures, into bronchoceles, into the tonsils, into abscess cavities and tumors and into malignant growths, but

this course is not now generally adopted. It is applied to **bubos** in the developing stage, and if the inflammation is not too far advanced produces rapid abatement of the symptoms. At one time it was applied to the internal lining of the womb in chronic sub-involution or chronic metritis, but although still advocated by a few it is replaced by as effectual and less severe measures. If the compound solution is diluted with water it may be used as a vaginal douche, in **leucorrhœa** and in some cases of thickening of the os uteri or simple ulceration.

In **chilblains** the tincture of iodine carefully applied is rapidly curative, but is best applied in a diluted form, or rubbed up with an ointment base. The tincture may be applied in **tinea tonsurans,** in **tinea circinata** and in other parasitic skin disorders. It is not always best applied in full strength, but may be thoroughly mixed with a bland oil, vaseline or lanolin. The application of iodine to the gums is advised in cases where the **teeth loosen** and the **gums retract,** especially in the aged. A colorless aqueous solution made by dissolving one grain with two grains of the iodide of potassium in an ounce of water will be found an excellent form for this purpose. This may be painted freely on the gums twice daily. It will also remove **tartar.**

The use of iodine if applied to the tonsils, crowded down deep between the follicles into the crypts is very satisfactory treatment for **tonsilitis.** In mild cases, it should be diluted with equal parts of glycerine. In all **infectious throat troubles,** the application of iodine is satisfactory.

The **Compound tincture of Iodine** (U. S. P., 1870) is made by dissolving half an ounce of iodine crystals and one ounce of potassium iodide in one pint of alcohol. The **Compound solution of Iodine** (Lugol's Solution, U. S. P. 1890) is made by dissolving seventy-seven grains of iodine and one hundred and fifty-four grains of iodide of potassium in three ounces and two hundred and thirty-one grains of distilled water.

Either of these solutions may be given in doses of five minims three or four times daily, freely diluted with sweetened water. The **Decolorized tincture** internally is absorbed without precipitation. It may also be painted freely over the surface of the skin, with results similar to those of the tincture of iodine, without producing irritation. The tincture must be applied if the irritant effect is desired. These preparations were at one time in common use when iodine was desired. They are serviceable and active therapeutically and while not commonly prescribed may well be described here.

POTASSII IODIDUM.

Formula—KI.

Synonyms—Kalium Iodatum, Potassium Iodide, Iodide of Potassium.

Administration—It is given in doses of from one to twenty grains in solution in water or syrup. In patients not accustomed to its use, the desired results may at first be fully obtained by the minimum dose. Especial susceptibility is shown by the appearance of soreness of the throat or nose, or other evidences named under iodism.

Physiological Action—This salt is so readily eliminated through the saliva that it is almost constantly tasted after it has been taken a short time. It is readily absorbed into the blood where it is claimed that all iodides are changed into the iodide of sodium, although there is much to disprove such a conclusion.

The general influence of the iodides is similar to that of iodine. They depress the functions of the organs of the body, encourage destructive metamorphosis and rapid elimination of morbific products, and retard con-

structive metamorphosis. While they thus encourage elimination their action may easily be carried so far as to produce a deleterious influence upon the blood and its corpuscles. They deprive the blood both of fibrin and albumin, and prevent oxidation, and restoration of muscular tissue and other structures. One great advantage the iodides have over many inorganic remedies is that they are very freely eliminated from the system by all emunctories. It is usually from their use in large doses that they are found in the system and produce unpleasant effects. As confidence is gained in vegetable alteratives, these among practitioners of rational medicine are usually prescribed, instead of the iodides or other inorganic alteratives.

Echinacea promotes even more rapid removal of morbific products than iodine, and at the same time stimulates constructive metamorphosis, improves the blood, increases the number of its red corpuscles, adds tone and vital power to the nervous system, thus increasing the functional activity of all organs. However true these statements may be, we have by no means advanced to the point where we can entirely replace iodine and its compounds with vegetable remedies.

Specific Symptomatology—Potassium iodide is especially indicated when there is a pale leaden color of the mucous membranes of the mouth and tongue, as its influence under these circumstances is more speedily apparent. It will not act well if there be irritation of these mucous membranes, or of those of the stomach and intestinal canal, as shown by a narrow, pointed, red tongue with thin edges. Its prolonged use has produced oxaluria, albuminuria and also Bright's disease, in which its elimination by the kidneys is greatly retarded. It is demanded in blood dyscrasias, such as syphilis, scrofula and chronic glandular inflammation with enlargement and induration.

Therapy—When cachexia of any character is present this salt is an important remedy. In the treatment of chronic enlargements of glands, or organs, it is first thought of, the glands concerned in elimination being first influenced. In **goiter,** in **bronchocele,** in **enlarged lymphatic glands,** it has long been used and has come to occupy a permanent place in the therapeutics of such conditions. It should be avoided, however, if there be a breaking down of the structure of the gland with pus formation, as the sloughing process is apt to increase, and is more difficult of cure while this agent is used. Its use in the treatment of **enlarged thyroid** or of **exophthalmic goiter** is attended with some degree of danger, especially if used both externally and internally at the same time, as the blood may not be able to eliminate the great amount of waste material thrown into it until serious damage is done. This occurred under the indirect observation of the author, where the circumference of a greatly enlarged thyroid was reduced seven inches in three weeks. The elimination must be encouraged by all possible auxiliary measures, in order to avoid this danger.

Chronic enlargement of the **spleen** or **liver** is directly influenced by this agent. It is advised in the chronic malarial poisoning to which these enlargements are often due. If there is functional derangement of these organs the agent is of especial value, as it is believed to encourage a flow of the bile and correct catarrhal conditions of the common duct. Iodide of ammonium is in some cases more efficacious than the iodide of potassium when these conditions exist.

In the treatment of **syphilis** potassium iodide is an acknowledged specific among all schools of physicians. It is advised in those cases which are slow of development with gradually progressive phenomena, and is especially the remedy for the secondary and tertiary stages of the disease. It was used by the older physicians in large doses long continued. The fact

that large doses can be well borne by those not habituated to the remedy, is considered as proof of the extent and severity of the syphilitic infection, the amount that can be borne, being to a certain degree an index of the extent of the infection.

All **syphilitic disorders of the nervous system** demand this remedy. These are neuralgias, meningitis, paralysis, epilepsy, mental aberration, sclerosis of the spinal cord, and all conditions resulting from the deposit of nodes and gummata. It has also been used in **spina bifida.** It can hardly be said to have a direct action upon the nervous system, but it removes the causes of disease and stimulates the removal of waste, thus indirectly encouraging nutrition. It is advantageous when nodules are thought to have formed upon the membranes of the brain.

In the following conditions depending upon syphilitic taint this agent is accredited with specific properties: **Skin eruptions** of whatever character, **syphilitic iritis, periostitis, nodular conditions** and **gummata,** in all of which this agent is usually the first remedy prescribed. In all forms of **disease** of the **bones** from syphilis, especially if there are nodes, or enlargements, and in **tubercular** or other **joint diseases,** this agent is of first importance. In small doses, frequently repeated during the day, it is a specific for **pains** of an irregular character occurring from no apparent cause, in the **bones** or **muscular structures,** during the night—**nocturnal pains,** especially if there be a syphilitic diathesis.

Dr. Eisenstedt gives from one to three drops of Fowler's Solution of arsenic with each dose of potassium iodide when large doses of this must be given for skin diseases, and this prevents soreness or irritation of the mucous membranes or of the skin in elimination.

Potassium iodide has exercised a most beneficial influence in many cases, in the treatment of **diphtheria.** It is usually given in small doses, which are often repeated, and a solution of the salt alone, or a solution of the salt to which is added one-half as much iodine, is used as a gargle, properly diluted.

This iodide is credited with much power in the removal of **effusions** following active inflammation, and also in the removal of the indurations present as the result of inflammation, and in the softening of inflammatory deposits. It is given after pleuritis, and in the latter stages of pneumonitis to overcome hepatization and to elimnate or stimulate the reabsorption of inflammatory products. This effect is produced fully as satisfactorily in non-syphilitic as in syphilitic cases.

Iodide of potassium is probably the most popular of remedies in the treatment of **aneurism.** Balfour, Huchard, Ringer, Roberts, Chuckerbutty, Bartholow and many others speak of it in this condition with great positiveness. It relieves the pain most satisfactorily, and in some cases, usually the more recent ones, the tumor is slowly reduced in size and its pulstations are rendered less conspicuous and less painful. The dose has been slowly increased in quantity until more than two drams per day have been given and have been well borne. In severe cases its use should be persisted in, as a cessation of only a day or two is followed by increased pain.

In **aneurism** of the **aorta** its influence has been most satisfactory in relieving all pain, while firm thrombosis within the sac has occurred and the pressure symptoms have been reduced.

While at a certain stage of **Bright's disease** this agent will produce suppression of urine, in the earlier stages while the epithelial cells of the glomeruli are yet intact, the potassium iodide will stimulate a greatly increased flow of urine, sometimes quite quickly relieving severe **dropsy.** If the

heart is involved it will greatly relieve the action of that organ. It has been given in **angina pectoris** with good results in very many cases.

It is now but seldom that we have to treat **mercurialism,** a condition that at one time was very common. In its treatment the iodide of potassium was the principal agent used. In ptyalism it was used, as of first importance, and in tremors, and in rheumatic or other pains caused by the use of this agent, the iodide was commonly used. It was thought to increase salivation in some cases and to cause the reappearance of mercurialization after the phenomena had once disappeared. Ringer explains this phenomenon by the theory that the iodide causes the insoluble albumin compounds of mercury to set free the mercury in some soluble form, when it will act as before. It is my opinion that the mercury from these insoluble compounds, forms a soluble iodide in its union with the iodine of the potassium salt, and the re-mercuralization is the characteristic action of this soluble toxic mercuric iodide.

This agent is commonly used in the treatment of **lead poisoning.** It stimulates the elimination of all metals, probably by combining with them to form iodides, which are more easily eliminated. As a remedy for the removal of any metallic substance it should be given in small doses, that the process of the conversion of the metal into a soluble iodide may not be too rapidly hastened. Efforts should be constantly made to remove the metallic iodide from the system as rapidly as it is formed, that none may accumulate to cause the recurrence of the symptoms of the poisoning by the metal. The solution of potassium iodide applied to **tender areas,** especially if from **congestion** or acute inflammation of a **serous membrane,** as in **pleuritis** or in **peritonitis,** is often of much value. It acts best if diluted and applied hot in such cases. It is also valuable when applied to **enlarged** and **inflamed glands,** and to hardened, sore or tender muscles, or to inflamed portions of muscular structure, also to bruised or strained joints, and to rheumatic or tubercular arthritis or synovitis.

Iodide of potassium in five grain doses, three times a day given to patients who have suffered from **deep and severe wounds** will at times materially assist in the healing of those wounds.

SODIUM IODIDUM.

Formula—NaI.

Synonyms—Natrium Iodatum, Iodide of Sodium.

Occurrence—The iodide of sodium is prepared from a solution of caustic soda in a manner similar to that in which the potassium salt is produced from caustic potassa.

Description—It occurs in the form of crystals, isomorphous with those of the potassium salt, and has similar but less active properties, but is more soluble, however. Dose, from one to twenty grains in water or syrup.

Physiological Action—Its influence upon the system is similar to that of the potassium iodide, but milder. It has but little irritating influence upon the stomach and intestinal canal, and is almost entirely devoid of any depressing effect upon the heart. It is really preferable in every condition to the potassium salt, as it yields up its iodine much more readily, but the potassium salt has been longer in use and has the experience of the mass of the profession to confirm its influence.

Therapy—The therapeutic action of sodium iodide is fully considered under that of the potassium salt.

FERRI IODIDUM.

Synonyms—Ferrous Iodide, Ferrum Iodatum, Iodide of Iron.

The **syrup** of the **ferrous iodide** is of a pale-green color and is quite palatable. It is subject to decomposition on long standing, turning to a deep-red color. It is given in doses of from fifteen drops to a dram, about thirty minims being the proper dose for continued administration.

Physiological Action—The agent is an alterative tonic. It possesses the properties of iron more prominently than those of the iodine. It stimulates the action of the stomach, improving both digestion and assimilation. It stimulates peristaltic action of the bowels, acting in some cases as a laxative, with blackened stools, instead of as an astringent as other iron salts. It is an intestinal antiseptic.

Therapy—When there is **scrofula** or a mild **syphilitic taint,** with **anæmia** or **impoverished blood,** this is the remedy. It is demanded under these circumstances when there are scrofulous enlargements of any of the glands, when there is obstruction from a dyscrasia or inactivity of the visceral organs.

In the disorders of females suffering from the effects of scrofula, syphilis or tubercular disease, this agent is exceedingly valuable. It is prescribed with success in **chlorosis,** overcoming the dyscrasia and improving the condition of the blood.

In the amenorrhœa common to anæmic and chlorotic patients, this agent acts directly. It improves the blood and stimulates or encourages a normal return of the function, but does not induce a return before the system can stand the drain. In **leucorrhœa** and other disorders of a general atonic character, it is valuable, especially if any dyscrasia is present.

It has long been used as an auxiliary remedy in **phthisis pulmonalis,** and in all **tubercular diseases** of the **joints,** bones and skin. It is excellent taken in conjunction with cod-liver oil and other restorative agents, and with tonics.

ACIDUM HYDRIODICUM.

Formula—HI.

The Syrup of Hydriodic Acid contains one per cent of the absolute acid. Dose, from five to twenty minims.

Therapy—The agent is indicated whenever iodine is indicated and is especially adapted to those cases in which an alterative is needed, in which there are the usual indications for an acid. It liberates its iodine freely within the system in the nascent form. It is thus active in **strumous cases** of whatever character. It is useful in such cases as a restorative, when there is **catarrhal bronchitis or pneumonitis.**

It is especially useful in **scrofulous skin disorders,** and has been widely used under these circumstances.

In old standing gouty and rheumatic cases with deposits about the joints, its persistent use has produced good results. It produces the greatest satisfaction when the indications for an acid are present.

OLEUM MORRHUÆ.

Synonym—Cod-liver oil.

Constituents—It contains butyric, oleic, acetic and sulphuric acids and glycerine, salts of magnesium and calcium, and in addition iodine, bromine and phosphorus in considerable quantities.

Administration—A tablespoonful four times daily is the adult dose. Mixed with syrup of orange-peel, or aromatic syrup, or elixir, its taste is partially concealed. It may be given in hot coffee, milk, brandy, wine or whisky. Sometimes a little salt added to it covers its taste. It is also given in the froth of porter, or of an egg, well beaten. If two hundred parts of this oil are rubbed thoroughly with one part of the oil of bitter almond, the taste is most effectually concealed; or equal parts of the oil and bitter almond water may be shaken together in a large bottle, allowed to stand for a day and then separated.

Physiological Action—In cod-liver oil the organic constituents are present in a vitalized form, hence the medicinal constituents are absorbed and appropriated in a natural manner, in perfect harmony with all the vital processes. It has nutritive properties of high value and at the same time is an active alterative.

It is not well received by all stomachs, hence the necessity for the preparation of palatable emulsions. It increases the appetite, improves the quality of the blood and increases the number of red corpuscles. It increases the power of the heart and the strength of the pulse, adding, at the same time, to the general strength and weight. It materially assists in the elimination of morbific material—retrograde waste—from the blood, and exercises a beneficial influence over scrofulous, syphilitic, tubercular and other cachexiæ.

Its common use in **phthisis pulmonalis** at once directs attention to it as a cure for that condition. It must be begun early in the history of the disorder, in which its influence is first upon the cachexia, and secondarily, as a nutrient upon the general system. It has a beneficial action in chronic diseases of the respiratory apparatus, but when directly from tubercular or specific disease, the stomach must receive it readily, without great disgust or nausea, and its use must be persisted in, sometimes for many months.

In tubercular arthritis or **scrofulous inflammations** of the joints, its persistent use is attended with the best results. In tabes mesenterica its influence is satisfactory, also in spinal or hip-joint disease, but to a limited extent.

In the treatment of **rachitis** and other scrofulous conditions of infancy its influence is marked, especially if given persistently with other directly indicated remedies. In greatly debilitated patients its influence is especially apparent if there is predisposition to scrofula, under which circumstances it may be administered by inunction. It should be thoroughly rubbed over the abdomen, in the axillæ and groins, once or twice daily. Its odor is the principal objection to this method, but the results are extremely gratifying in many cases.

GROUP VII.

Agents Acting Upon the Genitourinary Organs.

CHAPTER I.

General Renal Stimulants.

AGRIMONY.	TRITICUM.	ERYNGIUM.
BUCHU.	EPIGÆA.	GALIUM.
UVA URSI.	ALTHEA.	

AGRIMONY. AGRIMONIA EUPATORIA.

Synonyms—Cockle Burr, Stickwort.

CONSTITUENTS—It contains a volatile oil and tannin.

PREPARATIONS—Pulverized leaves. Dose, one dram. Decoction. Dose, two ounces. Tincture, from one fourth to one dram. Specific agrimony, from one to forty minims.

Specific Symptomatology—Deep soreness or tenderness over the kidneys. Tenderness that seems to be due to irritability in the structure of the kidney. Sharp cutting, deep-seated pain, with general distress in the lumbar region. Pain extending from the lumbar region through to the umbilicus. Inflammation of the kidneys, or bladder, with foul-smelling urine, containing a sediment when passed, accompanied with discoloration, and dirty appearance of the skin. Renal congestion, general irritation of the urinary organs. This agent should be given in that common and intractable condition, where there is **dribbing** of **urine** in elderly people, always present when coughing or sneezing. **Bronchial or pulmonary cough,** where there are thick and profuses secretions, is relieved by it.

Therapy—The older physicians spoke very highly of the action of this remedy within the limits of the above indications. It is valuable in the treatment of **erysipelas** and **scrofulous affections.** It inhibits excessive action of the mucous membranes, giving tone to the mucous tissues. In **chronic bronchitis** and **asthma,** and in the earlier stage of **consumption,** it was especially advised. All authors agree, however, that its influence is most direct upon the kidneys, correcting imperfect elimination through these organs. It corrects chronic inflammatory conditions, and relieves general irritability. **Excessive mucous discharges** are promptly relieved by agrimony. The atonic and relaxed mucous membranes which secrete excessively, are restored to normal tone and normal functional activity by its use. **Bronchorrhœa** and **leucorrhœa,** chronic **ulcerative gastric catarrh,** as well as **colitis, ileocolitis proctitis** and **cystitis,** all come within the range of its influence.

In **ulcerative stomatitis,** with foul smelling breath, it may be used alone or in conjunction with astringent alteratives, as quercus alba, alnus or geranium.

Agrimony is useful in a form of dysuria which affects women and girls, especially those who are suffering from some form of **dysmenorrhea;** or those in which there is difficulty in having a normal menstrual function established, this function being accompanied with much pain and general distressing symptoms.

With this there is often an **irritable** condition of the **bladder.** At the same time there may be hysterical symptoms, which result from **uterine or ovarian congestion,** which on its part, may be increased by the urinary irritation. This remedy seems to soothe the nervous system while it quiets the local irritation of the bladder. It was used by the older physicians for this purpose. **Pain** due to chronic **renal** or **cystic inflammation** is relieved by it through its direct influence upon the pathological processes. There must be more general observation of the action of this remedy, as it certainly possesses important properties.

We would be inclined to combine macrotys or gelsemium and pulsatilla with agrimony, but the old doctors believed the latter remedy would cover the entire group of symptoms. However, a combination of the above agents, properly adjusted, could not fail to be of service.

BUCHU. BAROSMA { BETULINA. CRENULATA. SERRATIFOLIA.

CONSTITUENTS—Volatile oil, rutin, resin, gum, albumen.

PREPARATIONS—Extractum Buchu Fluidum, Fluid Extract of Buchu. Dose, from ten to sixty minims.

Therapy—The agent acts directly upon the **urinary apparatus,** stimulating the kidneys, and increasing both the watery and solid constituents by its tonic and restorative influence. It is also valuable when there is greatly increased action from debility, as it lessens the quantity of water secreted in such cases. It relieves irritation of the bladder and urethra, and is valuable in **catarrh** of the **bladder, pyelitis** and **gonorrhœa.** In chronic cases of **irritable bladder** it has long been used, especially if caused by persistent excess of **uric acid.** It controls the irritation, reduces the excess of acid, and relieves the urinary incontinence depending upon it. It relieves irritation of the bladder sphincter, increases the tone of the muscular structure and overcomes any existing paralysis.

It has been advised as a general tonic, a stomachic and an anti-dyspeptic, but we would hardly depend upon it for any positive curative influence in these cases.

UVA URSI. ARCTOSTAPHYLOS UVA URSI.

Synonym—Bearberry.

CONSTITUENTS—Gallic acid, tannin, resin, sugar, arbutin, ericalin.

PREPARATIONS—Extractum uvæ ursi fluidum, fluid extract of uva ursi. Dose, from ten to sixty minims.

Physiological Action—Uva ursi has long been in general use as a diuretic and sedative to the general urinary apparatus. It exercises both an astringent and tonic influence also, and it is prescribed when there are calculi present.

Specific Symptomatology—Its direct influence is upon relaxed conditions of the bladder walls, to which it imparts tone and induces normal contraction. It restrains excessive mucous discharges.

Therapy—It is curative in **ulceration** of the **bladder** wall, in **cystitis,** in **pyelitis** and in **pyelonephritis.** It is of much benefit also in the general treatment of **gonorrhœa.** It has been prescribed with much confidence in **diabetes,** in which condition its influence is more general than specific. It exercises

a soothing influence upon the urinary apparatus, and for that reason, is a common constituent of very many prescriptions for diseased conditions of these organs.

TRITICUM. — TRITICUM REPENS. AGRAPYRUM REPENS.

Synonym—Couch Grass.

CONSTITUENTS—Triticin, silica, glucose, inosite, mucilage.

PREPARATIONS—Specific Triticum. Dose, from one to sixty minims.

Physiological Action—The action of this agent is solely upon the **urinary apparatus.** It exercises a soothing, diuretic influence, greatly increasing the flow of the watery portion of the urine without to the same extent influencing the actual renal secretion. It is bland, mild, unirritating, and is used whenever urine, having a high specific gravity, causes irritation of the kidneys or bladder, more especially of their mucous surfaces.

Therapy—It is a useful agent in **pyelitis** and in **catarrhal** and **purulent cystitis.** It is of value also because of its soothing properties in **gonorrhœa.** In the treatment of **lithæmia,** it will relieve the constant ache in the back, which is due to precipitation of the crystalline secreted products within the tubules of the kidneys, by furnishing abundant water for their solution. It flushes the kidneys, as it were, to an admirable extent, when renal sand has accumulated within the pelvis. Under these circumstances it is one of our most useful remedies. Whether the deposit consists of phosphates, uric acid, or the salts of calcium, it seems to act equally well. It relieves **dysuria** and **tenesmus** and has been beneficial in the treatment of both sub-acute and chronic **prostatitis** with enlargement, **strangury** and **hæmaturia.**

In gout, chronic **rheumatism** and jaundice with the above complications, it is of much value as an eliminant. One of our authorities speaks of it as a drink in fevers. The infusion may be iced, or given with lemon juice as lemonade.

It not only quiets the thirst, but it accomplishes the important purpose of keeping up free secretion from the kidneys. In the treatment of **fever** it is most important that the excretory functions should not be retarded and it is but seldom that sufficient attention is paid to the function of the kidneys. A free flow of urine is often a most effectual sedative, materially assisting in the reduction of excessive temperature. There are but seldom, unpleasant effects observed from mild stimulation of the kidneys, under these circumstances. It assists in the elimination of heat, and waste products, and greatly lessens the danger of auto-intoxication, acting more effectually in many cases, than free evacuation of the bowels.

While the demulcent effect of this agent is not as great as that of other diuretics, its influence under the circumstances above named is often more satisfactory.

EPIGÆA. — EPIGÆA REPENS.

Synonym—Trailing Arbutus.

CONSTITUENTS—Arbutin, urson, ericolin (identical with those found in uva ursa), formic acid, gallic acid, tannin.

PREPARATIONS—Extractum Epigæa Fluidum, Fluid Extract of Trailing Arbutus. Dose, from thirty to sixty minims. Specific Epigæa. Dose, from five to thirty minims.

Specific Symptomatology—This agent should be freely employed where there is excess of uric acid; where the "brick dust" deposit is marked; where the extreme and nauseating **backache** suggests that the crystalline constitu-

ents of the urine are not well dissolved and washed out of the tubules; or where there is renal sand or **gravel** in the **bladder**; where the urine is dark and heavy, and there is irritation, causing **congestion** of the **kidneys**, which in some cases induces **hemorrhage**; where precipitated solids irritate the bladder, and induce **cystitis** with thickening of the walls, and formation of pus. An infusion of epigæa freely drunk in these cases will relieve the entire train of symptoms, inducing a grateful sense of relief from irritation and distress.

Any of the preparations in sufficient doses will accomplish satisfactory results in the above conditions, but the infusion is more immediately active. Fifteen drops of specific Epigæa in an ounce of hot water, drunk hot, will act most promptly.

If the patient is closely confined and constipated, with dark, sallow skin, and inactive liver, add thirty grains of sodium phosphate and note the most gratifying results. This latter agent is itself a renal tonic and stimulant, with a soothing action. Its specific influence upon the liver greatly facilitates its effects on the kidneys when there is a fault in the hepatic conversion of the nitrogenous waste. In addition to its influence upon the kidneys, epigea is a carminative of much value. It is a stomach tonic, and it soothes gastric irritation. It will quickly relieve persistent **eructations of gas**, and will cure many chronic cases that have resisted other treatment. When there is noisy **rumbling in the bowels** so distressing to ladies, when present, this agent may be successfully administered.

ALTHÆA. — ALTHÆA OFFICINALIS.

Synonym—Marshmallow.

Solvent, water. Dose, from a half to one dram.

CONSTITUENTS—Asparagin, mucilage, pictin, fixed oil, sugar, starch, salts.

PREPARATIONS—Syrupus Althæa. Syrup of Althæa. Dose, *ad libitum*.

Physiological Action—Althæa is the most mucilaginous of the **diuretics**. It has but little influence beyond its local, soothing, emollient effect; it also soothes **irritation** in the **mucous membranes** of the stomach and intestinal canal, as well as those of the entire urinary apparatus.

Therapy—In its soothing influence upon the intestinal structures, it is of service when there is **inflammation** of the **bowels** or irritation from any cause, and it is often administered as an enema in dysentery, and if a few drops of laudanum be added it will often cause prompt relief from the tenesmus and general distress. When **irritation** of the **bladder** exists from decomposed urine, this agent is of much service, especially if taken in conjunction with benzoic acid or benzoate of sodium. An infusion which contains five or six grains of the above salts to the ounce is of most excellent service in these cases. Acute painful **cystitis** with much mucus, ammoniacal urine, great pain in urinating, and tenesmus, should be relieved in twelve hours with this method.

In conditions where simple irritation is induced either from the presence of uric acid or other precipitated crystalline bodies, a strong infusion of Althæa will greatly enhance the influence of other indicated remedies.

ERYNGIUM. — ERYNGIUM AQUATICUM.

Synonym—Button Snakeroot.

CONSTITUENT—Volatile oil.

PREPARATION—Specific Eryngium. Dose, from one to ten minims.

Physiological Action—Diuretic, diaphoretic, expectorant, emetic.

Specific Symptomatology—Irritation of the bladder and urethra, dysuria, atonic dropsy, gravel, chronic nephritis, chronic bronchitis with profuse expectoration, chronic gonorrhœa, nymphomania and satyriasis, phthisis with profuse expectoration, chronic laryngitis, mucous diarrhœa and summer complaint, epidemic influenza, scrofulous ophthalmia, hemorrhoids and prolapsus ani.

Therapy—Eryngium is a general stimulant, being diaphoretic and diuretic, with a special affinity for the mucous membranes. It has been given in infusion as a diaphoretic, in **dropsy, gravel** and **jaundice,** and in the commencing stage of catarrhal inflammation, such as occurs in the upper air passages in **epidemic influenza.** It must be given early in acute cases as a diaphoretic.

In chronic disease of the respiratory organs, with a relaxed condition of the mucous membranes, it acts as a stimulating expectorant like senega.

It is especially valuable in chronic irritation and inflammation of the mucous membranes; and on the urinary passages it has been shown to possess specific powers, as in **dysuria** from stricture, and in **gleet** and **chronic gonorrhœa.**

It also acts as a tonic upon the reproductive function, and is a very positive remedy in **nymphomania** and **satyriasis.**

It may be given as a tonic in cases of weak **digestion,** and to promote the appetite in general debility, and in convalescence from fevers.

GALIUM. GALIUM APARINE.

Synonym—Cleavers.

CONSTITUENTS—Gallotannic, citric and rubichloric acids; starch.

PREPARATIONS—Specific Galium. Dose, from five to sixty minims.

Therapy—A sedative remedy in acute inflammation or irritation of the urinary tract. Given in fever it impresses the temperature favorably, stimulates the excretion of all urinary constituents and the fever is shortened by its use. It is given for its general tonic influence upon the urinary tract.

An infusion is the most active form. It is useful in **dysuria** if from acute inflammation, and it is an excellent remedy for **suppression** when **nephritis** has occurred from septic causes. It is useful in **strangury** in vesical irritation from **uterine** disorder and in the **cystic** and **prostatic irritation** of old men.

CHAPTER II.

Renal Stimulants.

PETROSELINUM. BETULA. ALFALFA.
BLATTA. PAREIRA. ANEMOPSIS.
OXYDENDRON.

PETROSELINUM. CARUM PETROSELINUM.

Synonym—Parsley.

CONSTITUENTS—Apiin, apiol, volatile oil, crystallizable and fatty matter.

Apiol—This is a yellowish, oily liquid, not volatile, heavier than water, odor peculiar and distinct from that of the plant, taste acrid, pungent. Dose, from five to ten drops.

Preparations—Infusum Petroselini. Infusion of Parsley. Dose, from two to four ounces.

Therapy—An infusion of parsley is beneficial when, with **nephritis** or **cystitis,** the specific gravity of the urine is high, and the urination painful and irritating to the mucous membranes. It is useful in **gonorrhœa** and strangury, with great irritation of the parts, with heat, or a scalding sensation on passage of urine, and can be given during the inflammatory stage. It has also been given in **dropsy** with good results.

Apiol is a specific in **amenorrhœa.** Five or six minims in a capsule, three times daily, for six or eight days before the menstrual epoch will restore the flow in many stubborn cases. It has no marked abortive influence. In **persistent dysmenorrhœa** it has cured many cases intractable to other agents.

Active anti-periodic properties have been ascribed to apiol. It is a nerve stimulant. It controls excessive night sweats, either from phthisis, or following protracted malarial disease.

BLATTA. BLATTA ORIENTALIS.

Occurrence—This is the powder of the dried bodies of the common cockroach.

CONSTITUENTS—A native chemist separated an alkaloid which he called antihydropen, which he believed to contain in a concentrated form all the therapeutic properties of the remedy.

This has been a common remedy in Russia for dropsy. It produces an immense flow of the urine. At the same time it also acts freely upon the skin as a diaphoretic. It so influences the functional activity of the circulatory organs, and of the kidneys, that the entire character of the urine is changed and a normal condition obtained. It will reduce the quantity of albumen in the urine, often very quickly. With children from five to ten grains are given during the course of the day. From five to ten grains may be given three times a day to an adult.

BETULA. BETULA ALBA.

Synonym—White Birch.

This agent has been quite extensively used in Europe from the time of the Middle Ages. One of the old writers—Dragendorff—says the bark is given in **malarial fevers,** in dropsy, gout, disease of the lungs; also in abscesses, and in skin diseases and itch, and where there is excessive sweating of the feet. The juice or sap from the tree is used in kidney and bladder trouble.

The following facts were furnished me by Dr. Isenburg of Hamburg, Germany:

The bark contains betulin, a resinous substance, and betulalbin. The bark of the black variety contains glucosides, gaultherin, and an essential oil. Winternitz and Jenicke both recommend the remedy for its **diuretic effect** and for its influence in dissolving **kidney stones.**

Winternitz made an infusion of the dried leaves in the preparation of one part to six or eight parts of water by weight. Of this he would give from four to six ounces at a dose for albuminuria. He claimed that albumin epithelial scales and casts would disappear entirely. The quantity of the urine would increase to from six to ten times its bulk. Jenicke used it in **nephrolithiasis.** In one case, a stone had been discovered in the kidney by an X-ray. The urine was concentrated, sometimes bloody, contained pus cells, and uric acid in large quantities with three and one-half per cent of albumin.

This tea reduced the quantity of albumin, relieved the pain, improved the general health of the patient so that in twelve weeks' time he was entirely

cured, the urine being normal. There has been passed from time to time with the water tiny pieces of stone from the kidney. We have had reports from a number of writers in this country concerning the action of this remedy in a similar manner, and all confirm the observations made by the German writers.

PAREIRA. PAREIRA BRAVA.

Synonyms—Pareira Root, Pareira Brava.

CONSTITUENTS—Starch, gum, tannin, and a very small quantity of an alkaloid, which was first obtained in 1838, by Wiggers. Subsequently an alkaloid has been obtained from the root which is thought to be identical with beberine of the nectandra. This has been called pellosine.

PREPARATIONS—The remedy is used in infusion; dose, from two to four drams. The tincture of the bark and the fluid extract. The dose of the tincture is from one to ten drops.

Specific Symptomatology—This remedy is of value in the treatment of chronic diseases of the kidneys or bladder, where the urine is scanty, and contains a large quantity of the earthy salts, or urates. Where with these irritating substances there is ulceration of the kidneys or bladder.

Therapy—Irritation, frequent desire to urinate, and pain in the organs during urination are relieved by this remedy. It is thought to be useful, especially in chronic inflammations of the urinary passages.

Pyelitis, pyelonephritis, and **cystitis,** with large secretion of pus and mucus are benefited by it. It should be used in mild infusion, in the treatment of **phosphaturia,** or the condition sometimes known as **phosphatic diabetes.** It is a good auxiliary remedy in the treatment of all forms of **lithemia.**

ANEMOPSIS. ANEMOPSIS CALIFORNICA.

Synonym—Yerba Del Manza.

This is highly valued by the native Indians of Southern California and Mexico. The California observers have used it extensively.

The remedy possesses tonic astringent and antiseptic properties.

The dose of anemopsis specific medicine is from five to thirty drops. The root is the part used in medicine.

It is a tonic not only to the gastro-intestinal tract, but also to the respiratory and renal organs. It has an aromatic warming and astringent taste, not at all unpleasant. It seems to possess properties very much like those of piper-methysticum, and it can be used in the same conditions, as a tonic; combined with very small doses of specific nux vomica it is very efficient. In **tuberculosis,** it has repute among the natives, and especially in tuberculosis with great weakness, and tendency to **hemorrhage.** If it be added to specific medicine, lycopus, it will give good results.

For feebleness of the mucous membranes, with a tendency to breaking down of the tissues, given internally and as far as possible applied locally, it gives good results. In **gonorrhœa** and such urinary troubles where cubebs are given, anemopsis is good. In painful **diarrhœa** and **dysentery** with passages of blood and mucus, also in bad cases of typhoid, Dr. Oliver spoke very highly of it. The doctor in these cases used it in decoction, and so prepared it can be given freely.

In bad bruises, in **tibial ulcers,** and also in **syphilitic sores,** it makes a good local application.

Dr. Munk of Los Angeles used it for some time in nasal catarrh. He adds from ten to thirty drops of the fluid medicine to a two-ounce prescription, consisting of glycerin, one dram, aqua dest. to make two ounces. This is used as a spray in the head and the throat every two to four hours. He has had considerable success with it.

The specific indications for its use in catarrh are, "a full, stuffy sensation in the head and throat."

It is a mucous membrane remedy, and whenever we have cough with expectoration, or wasting discharges from the bowels, or urinary tract, it is indeed a good remedy. When using it locally, as in catarrh, be sure and give it internally. The compound syrup of the hypophosphites makes a splendid vehicle in which to administer it.

OXYDENDRUM. OXYDENDRUM ARBOREUM.

Synonyms—Sour wood, Sorrel tree, Elk tree.

PREPARATIONS—Pills are made of the solid extract containing from three to six grains. Specific oxydendron, dose from one to twenty minims. The Wm. S. Merrell Co. make a normal tincture of which from one to ten minims may be given in water.

Specific Symptomatology—It is indicated where there is dropsy, especially in aged people, or general dropsical effusion, accompanied with loss of vital tone. Also where there is deficient renal action, accompanied with painful urination. Urinary irregularities of the aged.

Therapy—This agent has been used in **dropsy** in a few cases with marked results. It is not only used in **anasarca** and **ascites,** but also in **pleuritic effusion, hydropericardium** and **hydrocele.** It improves the general condition on which the dropsy depends, increasing the action of the heart and arterial tension. Dr. A. W. Smith reports several cases in which the general dropsy was relieved in a very short time. The remedy improved the general nutrition in each of the cases, overcame **difficult breathing** and increased the power of the heart.

In the **dropsy of the aged,** that follows prostrating disease, oxydendron is indicated. It is indicated where there is **deficient renal action,** especially if there is some painful urination, and in the **urinary irregularity** of old people. It is not easy to define that class of cases of dropsy in which it is specific as in some it works beautifully and in others it is ineffective.

Dr. N. A. Graves says that where there is general edema from **dropsy of the heart,** liver or kidneys—**general dropsy**—he has had good results. He gives from twenty to thirty drops of the specific medicine every four hours and could give even larger doses. He uses it with aralia occasionally. Where there is dropsy of the serous cavities, he thinks it is not the best remedy.

Dr. Manley gives sour-wood with other remedies in the dropsy of **diabetes,** and believes that it improves the general condition of the patient. One of our doctors said his grandfather, an old botanic physician, gathered the leaves and boiled them in water for three hours. He would then strain the decoction and reduce the fluid until it was entirely evaporated. He would roll it up in form of pills and give one of them three or four times a day, improving his cases of dropsy very generally.

This remedy is considered valuable in the treatment of **prostatic disease,** chronic enlargement of the prostate, with irritation at the neck of the bladder, urinary irritation from other causes, especially the urinary difficulties of the aged. It is a diuretic, more or less active in proportion to the size

of the dose. It promotes the absorption and elimination of dropsical effusions in a characteristic manner, especially those of the abdominal cavity. Given to patients suffering from protracted fever, it will make a cooling and pleasant drink, which promotes the elimination of all of the excretions and restores secretion. Felter and Lloyd state that when a **frequent** desire to **urinate** is accompanied with a burning pain at the urethral outlet, the urine passed in drops and mixed with a little blood, it is an especially valuable remedy.

ALFALFA. MEDICAGO SATIVA.

Synonyms—Alfalfa, Spanish Clover, California Clover, Lucerne.

Physiological Action—On taking large doses of an infusion of the leaves of alfalfa as one would drink tea or coffee, there is a sensation of warmth in the stomach with fullness of the blood vessels of the head. (A sensation which gelsemium removes.) The stool early in the morning is mushy, and dark green, much like after taking bismuth, but without pain or tenesmus. A large dose at night, other symptoms calling for it, produces a good night's rest and decreases any burning sensation on micturating as seen in cases of early gonorrhœa. The above are observations that were made on ten men and five women who took this drug, alfalfa. They were in usual good health and free from any organic trouble. Some took it for two months, and some only for ten days to two weeks.

There is an increased secretion of the kidneys from this agent and in the female, of the milk glands; increased peristaltic action of the bowels; increased appetite; increased assimilation of food, and increased weight. In one case there was a disappearance of swelling of the milk glands. There is a sensation of weight in the female genitalia with bearing down sensations. (In the males, the scrotum feels heavy and there is distress in the spermatic cord as if strained. Neutralization of acid urine occurs with itching of the corona glandis, found in some cases of enlarged prostate.)

These observations were made by Dr. Ben A. Bradley of Hamlet, Ohio.

From the fact that alfalfa increases the flow of milk in cows while they are yet gaining in flesh, Dr. Bradley gave the remedy freely to mothers who were insufficiently nourished, and secreted but little milk, or milk devoid of its nutritious properties, for the child.

In every case so administered, the patient showed a satisfactory increase in flesh and strength. The digestive apparatus, whatever the disorder, assumed its normal function, and in some cases the patients took on a fair increase in flesh.

He believes that a tea made of alfalfa will readily take the place of ordinary tea and coffee, and as a beverage for certain periods, he has found it to take away the taste for these commoner beverages and preserve an excellent condition of the stomach.

With one woman who in three previous births had had kidney complications with uremia, he preserved with this agent a normal condition of all the functions through the pregnancy and labor.

He finds in Alfalfa **a superlative restorative tonic,** but it does not act as a stimulant, after the manner of alcohol, cocaine or other habit-forming drugs. It rejuvenates the whole system by increasing the strength, vim, vigor, and vitality of the patient. In all cases, the ever-marked condition calling for the remedy is despondency, along with loss of flesh, whether the case is one of stomach trouble, such as indigestion, dyspepsia, general and nervous debility, anæmia, marasmus, loss of appetite and poor assimilation, as shown by loss of flesh and constipation, with the always accompanying

condition, depression. Alfalfa, administered in the dose one or two drops in a bottle of milk three times daily, is especially useful with bottle-fed babies. One physician prescribed it where there was dropsical effusion, where the kidneys were inactive, and the skin dry, and in every case so administered, it gave satisfactory results.

In old men, it relieves prostatic irritation. It relieves irritable conditions of the urinary apparatus.

Dr. Houts cured backaches where the patient was passing a small quantity of urine with high specific gravity, especially where there were rheumatic indications, with much muscular aching with excessive quantity of urates and uric acid.

Dr. Bradley reports one family where seven children had died at the age of eighteen from some undefined disorder with great emaciation. The eighth child, a daughter, exhibiting the same symptoms was kept on a tincture of alfalfa seed fully saturated, ten drops four or five times a day. The condition disappeared, the patient increased in weight from 99 to 133 pounds, and recovered her health.

In a concentrated form, this will be probably found nutritional, occupying in some particulars a position like that of avena, improving the functional action of the brain and spinal cord. We have introduced this remedy here because it promises well for the future, and must not be overlooked.

CHAPTER III.

Renal Stimulants and Sedatives.

STIGMATA MAIDIS.	EUPATORIUM PURPUREUM.	NITROUS ETHER.
SCOPARIUS.	CUCURBITA CITRULLUS.	EQUISETUM.

MAIZE. STIGMATA MAIDIS.

Synonym—Corn silk.

PREPARATIONS—A fluid extract from the ear terminals of the common field corn prepared when yet green. Dose, from one to two drams.

Specific Medicine Stigmata Maidis. Dose, from twenty drops to two drams, in water.

Therapy—The agent is a diuretic and demulcent. It apparently has antiseptic properties, due probably to the presence of maizenic acid which has a desirable influence in neutralizing excessive alkalinity of the urine, and in the cure of phosphatic gravel.

It is of value in **catarrhal cystitis,** soothing, and neutralizing the strong ammoniacal odor, and decreasing the mucous secretion. In **lithæmia** it increases the flow of water, and decreases the excessive proportions of uric acid and the urates. It is specific in relieving **bladder irritation** in these cases.

In painful urination from any cause, it is beneficial, and is a good auxiliary in the treatment of **gonorrhœa.** It influences all **catarrhal** conditions of the **urinary passages.**

Dupont advised its use in **dropsies** due to heart disease. He says it reduces the **œdema,** and as the œdema disappears there is a better regulation of the blood supply throughout the system; the pulse beats more regularly, the action of the heart is slower and the rhythm is improved. While this

fact is true, there is not much improvement in dyspnœa, nor in the actual condition of the heart when hypertrophy, contraction, or inefficiency are present. The agent is well tolerated by all patients.

Dr. Pruitt of Arkansas in 1893 reported the use of a distilled extract of **Corn Husks** in the treatment of **malaria.** He had observed its use in many cases of chronic intermittent fever. In no case had he known it to fail in giving relief to the entire train of symptoms, often intractable to other remedies. It controls the persistent temperature, quiets irritability of the stomach, regulates the action of the liver and kidneys and reduces enlarged spleen. It has a mild, diuretic effect in many cases, relieving dropsical conditions not dependent upon actual kidney lesion.

Dr. Fledderman of Nebraska, following the above suggestions, treated a boy who had long been having **malarial fever.** He secured some tablets from a Homeopathic pharmacy that were made from a tincture of **corn husk.** With this he cured the boy in a short time of the malarial condition. In another case of chronic malaria with cirrhosis and dropsy with the same remedy, and succeeded in relieving the condition in a few weeks, and in curing the patient in a fairly reasonable time.

SCOPARIUS. CYTISUS SCOPARIUS.

Synonym—Broom.

CONSTITUENTS—Scoparin, sparteine, volatile oil, fatty matter, wax, tannin, mucilage, albumin, sugar.

PREPARATIONS—Extractum Scoparii Fluidum, Fluid Extract of Scoparius. Dose, from twenty to forty grains.

Physiological Action—Poisonous doses of sparteine cause sweating, vomiting, dimness of vision, staggering gait, dizziness, a sense of weight in the limbs, slowing of the pulse, convulsions, paralysis of the motor and respiratory centers, and death by asphyxia. The preparations of scoparius are non-toxic.

Administration—The best form of the remedy is infusion, half an ounce of broom tops to half a pint of boiling water, to be taken in divided doses in twenty-four hours, till it acts on the kidneys or moves the bowels.

Therapy—Asthenic dropsies, dropsy with feebleness and loss of appetite, **hydrothorax** without inflammation, dropsy from heart disease. It has cured diabetes mellitus.

It should not be given in acute kidney troubles, or in dropsy from disease of the liver or spleen.

EUPATORIUM. EUPATORIUM PURPUREUM.

Synonyms—Queen of the Meadows, Gravel Root.

CONSTITUENTS—Eupatorin, resin, volatile salt, tannin.

PREPARATIONS—Specific Gravel Root. Dose, from five to thirty minims.

Specific Symptomatology—Irritation of the bladder in women from displacement and chronic inflammation of the uterus; and **suppression** of urine, partial or complete, during or after pregnancy.

Therapy—The agent is of service in **dropsy, strangury, gravel,** hæmaturia, disease of the **kidneys** and **bladder** from an excess of uric acid, also in chronic **endometritis,** leucorrhœa, chronic uterine disease, insufficient labor pains, threatened abortion, ovarian and uterine atony, dysmenorrhœa, painful affections of the kidneys and bladder, much cutting pain and smarting

in the urethra while urinating, constant desire to urinate, suppression of urine, either partial or complete, burning distress or dull aching in the bladder, urine mixed with mucus, pain in the kidneys. It has been frequently used in enormous distension of the limbs and body from **dropsy.** Also in **intermittent fever,** chills in the lumbar region, when there is violent shaking with little perspiration, severe bone pains, frontal headache, weak, tired feeling, paroxysms every other day, hectic fever with night sweats.

Eupatorium Purpureum is a remedy for the diseases of the **uric acid diathesis,** irritation of the urinary tract being the chief symptom; while it is a positive remedy where it is necessary to increase the flow of the urine. It increases retrograde metamorphosis and eliminates the poison causing rheumatism. It stimulates the female reproductive organs, and may be employed in labor and as a tonic in chronic uterine disease. In intermittent fever it has effected cures. It acts on the ganglionic system of nerves, and may be given to improve digestion. It stimulates waste, and may be employed in any case where an alterative is required.

Dr. Andrews for many years has treated **scarlet fever** with gravel root. He adds two drams of it to four ounces of water and gives a teaspoonful every two, three, or four hours for its active influence in stimulating excretion.

CUCURBITA. CUCURBITA CITRULLUS.

Synonym—Watermelon.

CONSTITUENTS—Fixed oil, mucilage, sugar.

PREPARATION—Fluid Extract of Watermelon Seed. Dose, one dram.

Therapy—The juice of the fruit is a **diuretic** with many individuals, producing a cooling sense of relief from heat or **aching** across the kidneys, or throughout the **urinary apparatus.** The seeds in the form of an infusion act promptly with children, relieving **pain** in the **passage** of **urine** and stimulating the flow of water. When male infants cry with every urination and the diaper is stained yellow, this remedy will correct the condition promptly. In those conditions accompanied with a general sense of constriction, or **backache** from the passage of urates and phosphatic gravel, this remedy exercises a direct soothing influence, not only upon the renal organs, but upon the **bladder,** especially when the **irritation** persists, warding off subsequent **inflammation.** It is also very useful during the active stage of **cystitis.**

SPIRITUS ÆTHERIS NITROSI.

Synonyms—Spirit of nitrous ether. Spiritus nitri dulcis. Sweet spirit of nitre.

When aged and exposed, it assumes an acid reaction. It mixes freely with water and alcohol in all proportions.

Administration—The dose of this remedy is from ten drops to one dram, freely diluted with water. In childhood a small dose frequently repeated will be more satisfactory.

Therapy—This agent is an **anæsthetic** although not used for that purpose. Its common use is that of a **stimulating diuretic** and if the conditions are favorable, it will produce the discharge of a very large quantity of water. It is the domestic remedy for **retention** or **suppression** of **urine** in children. If it be given with hot tea or with watermelon seed tea, it is of value in mild dropsies. If the glands of the skin are active, the skin being

warm and moist, its diaphoretic influence may be greater than its diuretic effects. The agent is antispasmodic and stimulant in **continued fevers** with much prostration and nervous irritability. It may be given in fifteen or twenty drop doses four times a day in water with very good results. It soothes the irritation, reduces the temperature and encourages elimination.

It is a remedy for **nervous irritation** of the **stomach** with nausea and flatulence.

Its diuretic influence is of advantage in certain forms of **Bright's disease,** if there is congestion with deficiency of urinary secretion. It is of temporary benefit only and its use can not be greatly prolonged.

It will relieve **pain** in **urination** in many cases, especially if there is an alkaline reaction to the urine. It is of value in urethral spasm and in some forms of spasmodic stricture.

Pain on urinaton in childhood in the larger proportion of cases will be benefited by its use.

EQUISETUM. EQUISETUM HYEMALE.

Synonym—Scouring rush.

CONSTITUENTS—Silex, resin, wax, sugar, starch, salts, fixed oil.

PREPARATIONS—Specific Equisetum. Dose, from five to thirty minims.

Therapy—A diuretic useful in suppression of urine from any cause. Useful in **dropsy** and in **lithæmic** conditions, where the urine is scanty, of high specific gravity, and dark-colored. It is advised in **hæmaturia,** and is of much service in both **gonorrhœa** and **gleet.** In cases of **irritable bladder** with much tenesmus, it is soothing in its influence. It is valuable in the treatment of nocturnal **incontinence** of **urine** in children, and in incontinence induced by cystic irritation.

An infusion made from the green stalks of the plant, is sometimes of more service than other forms, a fact which is true of a large number of diuretics.

Some authorities have advised the powdered ashes of this agent in the treatment of certain forms of **acid dyspepsia.** This influence is probably due to the presence of the potassium or sodium hydrate, or their compounds, in these ashes, and these substances are readily supplied from more available sources.

Equisetum is used where there is suppression of urine or scanty urine, or where there is irritability of the mucous surface of the urinary tract. Boskowitz' Review says that it has been found of value in **prostatitis.** It should be given where there is stinging pain in the glands. There is pain at the base of bladder and in the prostate, and there is irritability of the nervous system. The dose is from five to ten drops.

Dr. Jedlicka of Wisconsin thinks that it influences **morbid enlargements within** the **urinary apparatus.** It is primarily astringent, and tonic. He used it in prostatic enlargements combined with salix nigra. He finds it to act favorably also in gastric ulcer.

CHAPTER IV.

Renal Sedatives and Correctives.

JUNIPER.	XANTHIUM.	LITHIUM BENZOATE.
KAVA-KAVA.	BENZOIC ACID.	AMMONIUM BENZOATE.
HYDRANGEA.	HEXYMETHYLENAMINE.	PIPERAZINE.
PICHI.	SODIUM BENZOATE.	

JUNIPER. JUNIPERUS COMMUNIS.

Synonym—Juniper berries.

CONSTITUENTS—Volatile oil, resin, gum, wax, starch, sugar, salts.

PREPARATIONS—Extractum Juniperi Fluidum. Fluid Extract of Juniper. Dose, from one to two drams. Oleum Juniperi. Oil of Juniper. This is a volatile oil obtained from juniper berries by distillation, and is of a pale greenish or yellowish color, and of a warm, terebinthinate taste. Dose, from five to twenty minims.

Oleum Cadinum—Oil of Cade. This is an empyrheumatic oil obtained from the wood of Juniperus Oxycedrus, a shrub resembling common juniper, by dry distillation, and is a dark-colored, thick liquid with a tarry odor, and a burning, bitter taste. Dose, from three to five drops.

Therapy—Juniper has long been in use as a general diuretic and soothing kidney remedy. It is indicated in feeble or aged patients with persistent dragging or weight across the kidneys. In chronic disease it is especially beneficial. In **pyelitis pyelo-nephritis** and **cystitis,** all of a chronic form, it is of value.

It will quickly relieve many cases of simple **renal hyperæmia,** preventing the development of structural change, or the advancement of nephritis. After acute **nephritis,** whether from direct causes, or subsequent to scarlet fever, diphtheria, or other severe disease, when active inflammation has subsided, it will restore the secretory power of the epithelium of the renal tubules and readjust the secretory function to the blood pressure, restoring normal action. It is useful in strangury, and in some dropsies where there is absence of acute inflammation.

The oil of cade is applicable to skin diseases, especially **moist eczema.** It may be applied directly, but is quite severe upon an irritable or sensitive surface. It can be incorporated with an ointment base to excellent advantage. It is a useful agent in **psoriasis,** and as a parasiticide it will destroy psora and cure favus.

It was at one time in common use as an application to skin diseases and parasites in domestic animals.

KAVA-KAVA. PIPER METHYSTICUM.

Synonyms—Yakona, Ava Ava, Ava Kava, Kawa, Macropiper Methysticum.

CONSTITUENTS—An active resin, or two resins of similar character, and a yellow, volatile oil. The resinous principle is permanent and probably contains the active principle of the plant.

PREPARATIONS—Extractum Kava-Kava Fluidum. Fluid extract of Kava-Kava. Not miscible with water. Dose, from ten to sixty minims.

Solid extract of Kava-Kava, one part equals ten of the root. Dose, from two to six grains.

Specific Medicine Kava-Kava. Dose, from five to twenty minims.

Physiological Action—Dr. David Cerna made extensive experiments upon the action of the drug, which were published in The Therapeutic Gazette in January, 1891. His conclusions were as follows:

Kava-kava produces general anæsthesia, and is an active local anæsthetic, in that it diminishes, and finally destroys, the function of the afferent nerves, by affecting their peripheral ends.

Kava-kava diminishes, and eventually abolishes, reflex action, by influencing the spinal cord, and probably also the sensory nerves. The paralysis produced by Kava-kava is of spinal origin, and is due to direct action upon the cord.

Kava-kava, while increasing the force of the heart, diminishes the number of pulsations, by stimulating the cardio-inhibitory centers and ganglia, chiefly the former.

The drug lowers arterial pressure through an action upon the vagi. It afterwards elevates it, however, especially after previous division of the pneumogastrics, by a direct action on the heart.

Kava-kava at first stimulates, afterwards depresses and finally paralyzes, the respiration. The primary stimulation is due to excitation of the pulmonary peripheries of the vagi; the latter effect, to an influence exercised on the respiratory centers of the medulla oblongata.

Kava-kava, in small doses, increases slightly, and in large quantities diminishes the bodily temperature.

The drug increases notably the salivary secretion.

Specific Symptomatology—Its specific therapeutic value depends upon its influence upon the mucous membranes of the genito-urinary apparatus. It is profound in this influence, as it is probably eliminated by the kidneys to a certain extent unchanged. Its influence in reducing the quantity of blood in the capillary circulation is probably the cause of its action in reducing the inflammation in the mucous membranes of this apparatus. The writer has used it since 1882, and his experience confirms other enthusiastic reports. It will cure gleet where all other remedies have failed. It will cure chronic **gonorrhœa** more quickly and more satisfactorily than many other better known remedies.

Therapy—The agent was first introduced for the treatment of all forms of **gonorrhœa,** but it will probably give better satisfaction, will show its prompt influence to a better advantage in the treatment of sub-acute forms or in the slow, persistent, and otherwise intractable forms, than in the acute variety. It is best given in full doses of from fifteen to thirty minims every two or three hours, in cold water. In the old, **protracted gleety cases** there will be no necessity of an injection or auxiliary treatment, but in the more acute or sub-acute cases, a mild injection or irrigation is needed, which with auxiliary agents, such as gelsemium or macrotys, to act upon the fever and nerve elements of the disease, will greatly facilitate its action.

It increases the tone and power of the sexual and urinary apparatus, and improves the general health and vigor of the patient. It is a mild but efficient diuretic, stimulating both the excretion and the secretion of the urinary constituents. It is of much value in **catarrh** of the **bladder,** in old and enfeebled cases relieving the symptoms promptly; in some cases restoring the strength and tone of the urinary organs. It relieves painful urination, overcomes strangury, and increases the power to expel the urine.

Morrill of Lincoln, Nebraska, is authority for the following statement as to the uses of this remedy: It is specially indicated where there is **atony** of the **bladder,** with a large quantity of residual urine, where the **uric acid diathesis** is pronounced. In prostatic troubles of old men, where the urine burns, and scalds, where there is hyperesthesia of the urethra and where the

testicles and scrotum are pendulous, greatly relaxed and drag down upon the cord, which is tender, where the masseteric reflex is pronouncedly diminished, and where there is soreness or tenderness in the perineum.

The agent should be given well diluted, although it is not unpleasant in any vehicle. It will, however, derange the stomach, in some few cases, although it soothes the stomach usually, and is an active stomachic tonic.

The doctor gives it as routine treatment in gonorrhœa, in combination with an alkali, usually the citrate of potash. In the treatment of urinary disorders he gives the following **symptomatology:** Uneasy sensation in the region of the bladder; an inclination to pull up or hold up the parts, and the symptoms relieved by wearing a suspensory. Pain in the urethra extending to the perineum, urine highly acid, causing smarting and burning, acute and chronic **cystitis, prostatitis,** with hypertrophy, and **epididymitis,** and other conditions depending upon atony of the genito-urinary organs.

Dr. Cleary has treated several cases of intolerable **itching of the vulva** with kava-kava one part, glycerine two parts, applying this freely. The results were very satisfactory. In a diabetic case, he obtained just as good results. I shall experiment with this for further local anesthetic effects.

I have recently had an experience in the treatment of an exaggerated case of **pruritus of the vulva and anus,** which remained persistently after repeated poisoning from rhus tox had been finally cured. The patient avers that an extemporaneous dilution made at my direction, of one part of kava-kava in from two to six parts of water, as the occasion demanded, has been an ideal application for immediate—almost instantaneous relief—when the itching was unbearable. The nervous system had become so involved in this case that nerve sedatives internally were demanded.

In the **nocturnal enuresis** of the aged and feeble, and in children from temporary muscular weakness, it is a most satisfactory remedy, curing often when other remedies fail. It acts in perfect harmony with belladonna and strychnine in such cases.

Its diuretic influence has rendered it an important remedy in many cases of **dropsy,** the entire train of symptoms being quickly and satisfactorily relieved with its use. In those cases where the heart seems feeble and irregular in its action, its power and strength has increased and a cure resulted.

It **increases** the **appetite** actively, and improves digestion and assimilation to a satisfactory extent with a large percentage of the patients taking it, and may be given for this purpose in gastric atonicity. In some cases, in which the author has prescribed it, the agent has induced an almost inordinate appetite. It stimulates the entire function of digestion, in certain cases, to a satisfactory degree, correcting torpidity and functional inactivity of the glandular organs of the entire intestinal tract, increasing the peristaltic action of the intestines, overcoming constipation, and inducing normal and satisfactory bowel movement. It is curative in intestinal catarrh and in hemorrhoids.

Dr. Sherman, of Ohio, confirms the statements I have made, in previous editions of this work, concerning the influence of kava-kava upon the **stomach** and digestive apparatus, which I first observed in 1882, and adds to that the benefit of his own experience in the treatment of **intestinal indigestion.** There is a train of symptoms present when this condition has been of long standing which is promptly met with kava-kava.

He gives the following symptoms as immediately benefited with this remedy: There is scantiness and irregularity of the flow of urine, the patient's face looks full, sometimes pale, all the tissues seem to be slightly edematous, the feet and the legs more so than other tissues. The tongue is full and pale, the bowels regular or slightly constipated, with loss of appe-

tite, and poor gastric or gastro-intestinal digestion. The patient feels languid, claims that he must force himself to do anything, and presents many of the appearances of Bright's disease, and yet the analysis of urine fails to find evidences of that disease. If this patient be put upon kava-kava, from twenty to thirty drops in water, four times a day, an improvement of all of the symptoms will be observed within the course of perhaps ten days. This improvement will continue until the patient is restored to perfect health.

The agent will relieve **cerebral hyperemia, arterial sclerosis,** and **hematogenous jaundice.** It will be found valuable in atony of the intestinal tract, especially if nervous phenomena seem to depend upon that condition.

The following is Dr. Morrill's treatment for acute **rheumatism:** Kava-kava five drams, macrotys three drams, citrate of potassium four drams, elixir of pepsin, sufficient quantity to make four ounces. Give one dram well diluted every three hours. If there is profuse sweating, he includes hyoscyamus, two drams in the prescription, instead of the citrate of potassium. He wraps the joints in cotton, and insists upon rest in bed and an extreme non-nitrogenous diet. He gives no salicylates in acute rheumatism. He claims that this course will prevent all cardiac complications.

He believes much of the severity of the condition depends upon gastro-intestinal faults, and these must have constant attention.

HYDRANGEA. HYDRANGEA ARBORESCENS.

Synonyms—Wild Hydrangea, Seven Barks.

PREPARATION—Extract of Hydrangeæ Fluidum. Fluid Extract of Hydrangea. Dose, from ten to thirty minims.

Specific Medicine Hydrangea—Dose, from five to thirty minims. Thirty minims in two ounces of water, a teaspoonful every ten or fifteen minutes, will quickly relieve acute, quick, cutting, urethral pains, especially immediately after labor.

Specific Symptomatology—Frequent urination with heat, burning, accompanied with quick, sharp, acute pains in the urethra; partial suppression of urine with general irritation and aching or pain in the back, pain from the passage of renal sand, are direct indications for this agent.

I am convinced after a lifetime of experience that it is more specifically, more universally a sedative to **pain** and distress in the kidneys and urinary bladder than any other one remedy.

Therapy—This agent is a soothing diuretic, exercising a mild, but permanent tonic influence upon the entire mucous structures of the genito-urinary apparatus. It is an important remedy in **acute nephritis.** I have for many years combined it with gelsemium, or gelsemium and macrotys, and have obtained most satisfactory results. In **lithæmia** with permanent **backache** from the kidneys, irritation from the presence of uric acid and phosphatic crystalline precipitates, the continued use of this agent is usually curative. In **urinary irritation** of an acute character, or that induced by local causes, as that following confinement, this agent is often curative in a few hours. Any excess of acidity or alkalinity, however, should be corrected by other agents.

About the year 1830 experiments were conducted to prove its influence in relieving pain caused by the presence and passage of urinary calculi, and favorable reports were made of its direct usefulness. Its influence controlled the pain in a satisfactory manner, relieved general distress, and soothed irritation. Enthusiasts claimed that it dissolved the stone in the bladder.

Infusions, in some cases, are more satisfactory than exact pharmaceutical preparations. The fluid extract in hot water is often more prompt in its action. The agent is soothing, also, to the mucous surfaces of the respiratory passages.

PICHI. FABIANA IMBRICATA.

Part Employed—The leaves.

CONSTITUENTS—A fluorescent glucoside, crystalline; a crystalline neutral resin, pavien, fraxin and an essential oil.

PREPARATIONS—Extractum Pichi, Extract of Pichi. Dose, from two to ten grains.

Extractum Pichi Fluidum. Fluid extract of Pichi. Dose, from ten to sixty minims.

Administration—This agent being a terebinthinate and markedly resinous in character, readily precipitates in water, the precipitate separating in masses or curds. The solid or powdered extract may be given in capsules. The fluid extract may be prescribed in glycerine without precipitation. It should not be combined with saline constituents. It will remain in temporary suspension in a heavy syrup, or mucilage.

Specific Symptomatology—The agent has specific properties in relieving **irritation** and **inflammation** of the **bladder** due to mechanical causes. In **gravel**, especially of the uric acid variety, it is prompt and satisfactory. In phosphatic or calcareous deposits, it is of great benefit.

This agent gives tone to the whole genito urinary tract. It is especially valuable in cases where old people are troubled with inactivity of the kidneys with a tendency to feebleness of the muscular structure of the bladder. It acts in those cases of **gravel** where the irritation is marked. It is thought to assist in the disintegration of the stone until it is reduced so that it may be passed through the urethra. The urine will assume the characteristic odor of the drug, especially if it be given in overdoses. It may be given with other common remedies of this character. Its best field is in those cases of chronic **inflammation** of the **kidneys** or **bladder**, where there is a persistent discharge of large quantities of blood, pus, mucous and calculi in the urine. It should be given in full doses, from twenty to forty-five minims of a strong fluid extract.

Therapy—It relieves **general distress** or discomfort in all the urinary organs, and in the prostate gland. In **vesical tenesmus** and in **dysuria** from any cause it is almost specific. In **lithæmia** or the uric acid diathesis, it stimulates the liver to more perfect action, greatly increases the action of the kidneys, reduces the specific gravity of the urine, and permanently reduces the excess of uric acid. This influence renders it of value in **rheumatism**, either acute or chronic.

It has been used in **gonorrhœa** and in acute and **chronic cystitis** of all forms with excellent results. It acts as a gastric tonic, like kava-kava, greatly increasing the appetite and promoting digestion. It has a direct action upon the function of the liver.

It stimulates the kidneys, too actively in those cases where there is structural degeneration, but it will quickly overcome simple recent cases of **renal hyperæmia**. It is contra-indicated in Bright's disease, as in some protracted cases the albumen has been increased by the use of this remedy.

It is also useful where there are **biliary calculi**, as well as in the renal and vesicle forms. It allays **urinary tenesmus**, in those cases of **cystitis**, which are of mechanical or traumatic origin. In acute **urethritis** it has accomplished some good results.

Fifteen minims of the fluid extract every three hours has proved serviceable in the treatment of acute **prostatitis, seminal vesiculitis,** and in the subsidiary stage of **orchitis,** and **epididymitis.** In some cases the remedy is best given with an alkali. In those cases where the urine smells foully and is alkaline in reaction, it may be given in conjunction with borax and benzoic acid, with excellent results. Some forms of painful disease of the pelvic organs have been relieved by it. It is useful in **dysmenorrhea,** and acts in harmony with viburnum.

XANTHIUM. XANTHIUM SPINOSUM.

Synonyms—Cocklebur, Clotbur.

PREPARATIONS—Extractum Xanthii Fluidum; Fluid Extract of Xanthium. Dose, from ten to twenty minims.

Specific Medicine Xanthium. Dose, from five to fifteen minims.

Physiological Action—The agent has mild diuretic, diaphoretic and sialagogue properties. Xanthium is mentioned as a remedy influencing the blood in malarial conditions, tending to overcome periodicity. As an alterative some enthusiastic writers give it high rank, even claiming that it will cure hydrophobia. It is advised in hemorrhages of a passive character, to be relied upon even in post-partum hemorrhage. In the writer's hands it has an influence which would seem to be advantageous in **hæmaturia** of a passive character, as it has a soothing influence upon the urinary apparatus.

Therapy—Dr. Homsher suggested its use in irritable bladder troubles; specifically in **chronic cystitis,** with thickening of the bladder walls, with frequent urination, painful tenesmus, constant sensation of weight in the region of the bladder, with the continued passage of minute calculi, cases in which there are doubtless sand or gravelly deposits in the folds of the bladder, perhaps imbedded in the mucous structure, a condition not uncommon in females.

ACIDUM BENZOICUM.

Synonym—Benzoic Acid.

Physiological Action—A solution taken into the stomach produces warmth and slight irritation. It is nontoxic, is decomposed in the presence of hippuric acid. It is of considerable power as an antiseptic and germacide.

This acid acts directly in neutralizing alkalinity throughout the system, upon the urea in the processes of conversion of that substance into hippuric acid, robbing it of its nitrogen. There is thus a reduction of the amount of urea where this acid is administered in large quantity. If there is a lessened quantity of uric acid it is because of the appropriation of nitrogen by the benzoic acid, and not because of any solvent properties the agent has upon the uric acid.

Therapy—Its direct action is exercised upon the urinary apparatus. It is specifically indicated in conditions where the urine is alkaline, inducing **frequency** of **urination** with more or less irritation and pain in **nocturnal enuresis.**

It is a good remedy in excessive excretion of the phosphates exhibited by phosphatic sediment—insoluble phosphates in the urine—a deposit of phosphatic gravel. Its influence is chemical and does not persist after the withdrawal of the agent. **Incontinence** of **urine** depending upon the irritation caused by the presence of this gravel is cured by it.

Incontinence in cases where the urine is excessively alkaline, from whatever cause, is quickly cured by it, as it is one of our best agents for the **neutralization** of **excessive alkalinity** of the urine. It has been used by the writer for nearly twenty-five years in the treatment of **cystitis** where there was **ammoniacal urine.** Its influence is prompt and satisfactory, rapidly promoting the processes of healing.

It is useful in **gonorrhœa** where the urine is alkaline, and in general **urethral irritation** from the presence of an excess of alkaline constituents. It is readily dissolved by the addition of sodium borate, decomposing the acid, but not interfering with, but rather enhancing the beneficial results of its action. It requires three parts of the borate of sodium to effectually dissolve two parts of the acid in thirty parts of water.

SODIUM BENZOATE.

Therapy—Klebs, of Prague, originally advised this agent in **infectious fevers** and inflammations. It produced no unpleasant after effects and antagonized the causes of disease and the disease processes. Its antiseptic powers are sufficient to destroy many disease germs, and fevers so induced slowly subside. Direct antipyretic powers cannot be attributed to it.

It was one time quite generally used in **diphtheria,** in **scarlet fever** and other **exanthematous** or **eruptive fevers,** and in **typhoid** and **malarial fevers** with much success. It is a good remedy in the treatment of **rheumatism.** It combats the processes, neutralizes the uric acid wherever found, hastens its excretion and abates the inflammatory fever. It promptly relieves irritation of the kidneys in these cases.

It is not as active as the salicylate of sodium, but is permanent in its influence and almost as efficacious, if persisted in.

It is of value in **catarrh** of the **bladder,** either acute or chronic, if the urine is strongly alkaline, or much mucus is present.

In line with this influence, I have in late years secured prompt and highly satisfactory results from a **Nascent Sodium Benzoate** which is superior in its action to the stable drug. With old men, especially where **chronic catarrh of the bladder** results in the discharge of a heavy sediment of pus and blood, where there is constant **urinary irritation** with **tenesmus,** the pain, in some cases being excruciating, and remaining after the unsatisfied effort has passed, I have found this to be so prompt in its action as to give almost complete relief in a few hours.

It is prepared by dissolving four drams of benzoic acid and six drams of sodium borate in six ounces of boiling cinnamon water. When this cools, the solution should be perfect, but if a little excess of the acid should remain undissolved, it may be filtered. Of this a tablespoonful is given every two hours during the period of distress and pain. These two agents can be compressed into tablets of correct dosage and dissolved in water as needed.

The atomization and inhalation of sodium benzoate is beneficial in **catarrh, bronchial** and **phthisical fetid discharges,** ameliorating, in each case, the progress of the disease while correcting the fetor. It was lauded in the treatment of consumption, but failed to accomplish but little. It is not now in as general use as it was twenty years ago.

LITHIUM BENZOATE.

Therapy—This agent is accredited with the ability to **reduce** the amount of **uric acid** excreted in the urine, by the actual reduction of the quantity in the blood. It is said to retard, also, the formation of **hepatic calculi,** and to prevent the recurrence of **hepatic colic.** If this influence is present it is probably due to its action upon the secretory function of the liver. When urinary irritation is present with hepatic colic, both conditions will be benefited by the use of the remedy. **Cystic irritation** from the presence of renal sand is materially benefited by the use of this benzoate. **Ammoniacal urine** will be corrected by its influence.

AMMONIUM BENZOATE.

Therapy—The benzoate of ammonium is principally used in **catarrh** of the **bladder.** It is given largely for the influence of the benzoic acid with which it is combined. It is especially indicated where there is alkaline urine. Because of the rapid elimination of the hippuric acid from the benzoic acid, and because of the fact that the ammonium salt is convertible into nitric acid within the system the elimination of these products neutralizes the alkalinity of the urine. It is useful in ammoniacal urine and in phosphaturia with precipitated earthy phosphates, also in excess of uric acid.

It stimulates the kidneys also in those conditions of the system in which there is general feebleness, resulting in deficient elimination, both of the solids and watery portion of the urine.

The agent is not injurious in its effects upon the system and is easily eliminated.

PIPERAZINE.

Formula—$C_4H_{10}N_2$.

Synonyms—Piperazidine. Diethylendiamine.

Administration—It absorbs water so rapidly and is so prone to decompose in solution that it should be prescribed in aqueous solution only and should be prepared fresh every two or three days. The crystals should be kept hermetically sealed in a cool place. Three grains every three hours, or five grains three times daily, is about the proper dose, given in a glass of water.

Specific Symptomatology—The agent is indicated where there is **persistent, excessive excretion** of uric acid and the urates with constant backache, dry skin and scanty urine, or where there is a brick dust sediment in the urine. It is a good agent for the **uric acid diathesis** in many cases.

Therapy—In the writer's experience when given in five grain doses in a large quantity of water, three times daily, to patients passing urine with a specific gravity of 1022 to 1028, which deposits a heavy brick dust precipitate as soon as cooled, with constant backache and general muscular aching, it will relieve the backache in one day, and reduce the specific gravity to 1018 or 1020 within a short time.

It acts more rapidly than other better known agents, and is direct and positive. It is soothing to the irritated passages, and prevents the formation of uric acid calculi. If given with a bland mucilaginous stimulating diuretic its general influence is greatly widened, and its solvent powers are increased correspondingly. The sickening ache across the kidneys terminates more promptly.

The agent has been quite widely used in the treatment of **chronic rheumatic arthritis,** and **gout,** and good results are ascribed to it. It has been applied in strong solution to the joints and injected into them with varying results in these conditions, usually with favorable results. It is useful in **acute rheumatism** and in **rheumatic pericarditis,** especially if there be excessive uric acid formation. Further experience should broaden its field of usefulness.

HEXAMETHYLENAMINE.

Synonyms—Urotropine; uritone; helmetol (proprietary).

This compound is the result of a chemical action between ammonium hydrate and formaldehyde. It is crystalline, colorless and odorless; dissolves in one and one-half parts of water. The influence of the agent within the system depends upon the fact that the formaldehyde is liberated and is dispersed throughout the entire system. It is found in the blood, in the spinal fluids, and in all the secretions, especially in the urine.

If its influence upon the stomach is desired, it can be given in a crystalline form, as the normal gastric acids will produce the desired chemical change. If its influence upon the intestinal tract or upon the bladder is desired, it must be given in some form in which the stomach acids will not immediately act upon it. The dose is from five to thirty grains, three times daily in a little water. From five to fifteen grains is about the ordinary dosage.

Therapy—The agent acts directly upon any infections within the system as would be inferred because of its invariable, active, antiseptic influence. In its elimination, through all the secretory glands, it thus influences the mucous membranes, and among the first of these are those of the urinary apparatus and bladder. Its first effect is thus seen in inflammation of the bladder or in pyelitis, where the urine is heavily charged with ammonium; where there is an abundance of uric acid and amorphous urates, with triple phosphates and pus. **Alkaline urine in the aged,** seems to be its most conspicuous indication.

Any irritation of the mucous membranes, either functional or of the glands themselves, is met with this agent. In typhoid fevers and in fact in all forms of septic fevers, the agent is now being used with good results because of this antiseptic action. It acts upon the mucous lining of the gall bladder, and of the bile ducts as well, and upon the mucous surfaces of the entire intestinal tract. In **typhoid fever** above referred to, if given early, it destroys and prevents the action of the typhoid bacillus. Given later to an extent it will destroy the germ within the system, and at the same time promote normal functional action of the mucous glands and restore their normal condition.

Urotropine has been found in the cerebro-spinal fluids persistently as long as the agent is given. Because of this fact a number of prominent prescribers have used the remedy in the treatment of **meningitis,** especially that of children with excellent results. It is regarded with much favor in **poleomyelitus.** It will certainly be advisable to try it in conjunction with our vegetable anti-toxins and anti-spasmodics, such as echinacea, lobelia, and gelsemium.

CHAPTER V.

Renal Correctives.

APIS. ASCLEPIAS INCARNATA. HYGROPHILIA.
ARALIA. SAMBUCUS CANADENSIS. SOLIDAGO.

APIS. APIS MELLIFICA.

Synonym—Honey bee.

Preparations—Tincture of Apis. Dose, from one-half to five drops. Specific Medicine Apis. A superior preparation, used by physicians generally; administered from ten to twenty drops in four ounces of water, a teaspoonful every two to four hours.

Specific Symptomatology—Acute swelling—edema of the cellular tissues, local or general swelling, without the formation of vesicles; urinary irritation from atony; incontinence from feebleness; retention from irritation, with dark, heavy, scanty urine.

Therapy—The agent is prescribed in **dropsy** which appears suddenly. Old standing dropsies are not so readily influenced by it. **Edema glottidis** is subject to its influence, and it quickly relieves the edema of the throat and nasal passages which accompany **diphtheria** and **scarlet fever.** It is also curative in the dropsy, which follows these two closely related diseases, from sudden suppression of urine. It influences the kidneys at the same time, causing an increase of the urine; it soothes the irritability of these organs and relieves the congestion present. When effusion from **pleuritis, peritonitis,** or other acute serous inflammation, is present, it is given with confidence.

In **retention** and **suppression** of **urine** in children, and the aged, from atonicity or general feebleness, it is a useful agent.

It is also useful in **irritable bladder** with teasing tenesmus, where the urine is scanty and high colored, when micturition is frequent and accompanied by much soreness and burning.

In the **urinary incontinence** of the aged and feeble it is prompt in its action.

In doses of two drops of the specific apis four or five times daily, many cases of passive **hæmaturia** intractable to other remedies, will yield promptly.

Apis has been used to excellent effect in **angeoneurotic edema** in a case where the patient was threatened with death from asphyxiation, the difficulty of breathing being very great. Five drops of the specific apis in four ounces of water, a teaspoonful every ten minutes for an hour, then every hour, produced immediate effects.

It is especially useful for the dropsy following peritonitis, and pleurisy, and will act directly if with the dropsy there is an entire absence of thirst.

ARALIA. ARALIA HISPIDA.

Synonym—Dwarf Elder.

CONSTITUENTS—Has not been analyzed.

PREPARATIONS—Specific Aralia. Dose, from five to twenty minims.

Specific Symptomatology—It is prescribed in **dropsies** of serous cavities, and **diffuse anasarca** from hepatic or renal inefficiency.

Therapy—A valuable, but infrequently used, remedy in **dropsy.** In **anasarca,** if given in active doses, it produces catharsis as well as diuresis, greatly augmenting the flow of urine and causing an excretion of water to a

most serviceable extent. An infusion of aralia, given with other agents suggested for dropsy, will exercise a most immediate influence in the removal of the fluid. In **suppression** of **urine** it is an unirritating stimulant of much value. In **gravel** it is of some benefit, and may be given freely in combination with remedies directly indicated for other existing conditions.

SWAMP MILKWEED. ASCLEPIAS INCARNATA.

Synonym—Flesh-colored Asclepias.

CONSTITUENTS—Asclepiadin (the emetic principle), volatile oil, two acrid resins, an alkaloid, fixed oil, albumen, pectin, starch, glucose.

PREPARATION—Specific Swamp Milkweed. Dose, from one to twenty minims.

Physiological Action—Emetic, diuretic, anthelmintic, stomachic. Swamp milkweed affects the heart and arteries like digitalis, and is a speedy and certain diuretic.

Specific Symptomatology—Asclepias Incarnata strengthens the heart and is given in small doses, instead of digitalis, as a **diuretic** in **dropsy.** It often promptly relieves the general distress from extreme infiltration of the tissues, especially the dyspnœa.

Therapy—It may be given in coughs and colds, rheumatism from cold, painful stitches in the chest with threatened inflammation of the lungs and pleura, asthma, chronic gastric catarrh, diarrhœa, dysentery, dropsy, worms, erysipelatous diseases.

It improves digestion, and is a good remedy in chronic catarrh of the stomach, and in catarrhal inflammation of the respiratory organs.

It is both emetic and cathartic and may be used with advantage in the early stages of dysentery and diarrhœa.

In rheumatic and catarrhal inflammations it should be given to produce slight nausea.

In doses of ten to twenty grains it acts as a vermifuge.

It is also beneficial as a local and internal remedy in erysipelas and erysipelatous diseases.

SAMBUCUS. SAMBUCUS CANADENSIS.

Synonym—Elder

PREPARATIONS—Specific Sambucus. Dose, from two to ten drops.

Therapy—The strong infusion is diaphoretic and stimulating. The agent has also alterative, cathartic and diuretic properties which are of value in urinary inactivity, with excretion of renal sand, accompanied with muscular aching, stiffness, or rheumatic pains.

A strong infusion is sometimes of great service in removing **dropsical effusions.** Cases are reported in which extreme general dropsy seemed to threaten immediate death, where relief was quickly and permanently obtained by the use of this remedy.

HYGROPHILIA. HYGROPHILIA SPINOSA.

The above named agent is a native of Ceylon where it is used as a remedy for all **dropsical** conditions. It is but little known in America, but may be received on the reliable authority of the native physicians of Ceylon, who use an infusion of the plant, two ounces to the pint, the entire quantity to be

given within twenty-four hours. The remedy produces **active diuresis,** but the reports are as yet so meager that we have no way of knowing in what way the agent acts upon the organs to produce its desired effects.

It is a powerful diuretic and is a stimulant and tonic to the sexual apparatus.

SOLIDAGO. SOLIDAGO ODORA.

Synonyms—Sweet Golden Rod, Fragrant Leaved Golden Rod, Sweet Scented Golden Rod, Blue Mountain Tea.

CONSTITUENTS—The plant contains a volatile oil.

PREPARATIONS—An infusion may be given in doses of one ounce. The oil is given in from one to three drops. There is a homeopathic mother tincture.

Therapy—This agent has been used as a domestic remedy for **backaches** and **diseases** of the **kidneys** for centuries in Germany. Radamacher spoke highly of its properties. Homeopathic physicians prescribe it where there is pain in the kidneys, from any cause, extending forward toward the abdomen. **Pain** in circumscribed spots over the **kidneys. Difficult** and **scanty urination,** where the urine is of dark color, and contains a heavy sediment. Where there is **nephritis,** either acute or chronic. It is useful where there is **suppression of urine in infants,** or retained urine, which causes general depression, with headache. **Urinary obstructions,** from any character, in the early stage of dropsy, depending upon kidney disease.

The oil is carminative, and may be given in flatulent colic, cramps or pains in the stomach, from **flatulency,** with or without nausea.

In **dysentery, diarrhœa** and in **cholera morbus,** an infusion or a few drops of the oil in hot water, given in conjunction with other indicated remedies, will be found of service. Hot infusions should be tried in **amenorrhœa,** especially that form resulting from a cold of recent occurrence.

CHAPTER VI.

Renal Correctives.

RHUS AROMATICA. JAMBUL. POTASSIUM NITRATE.

FRAGRANT SUMACH. RHUS AROMATICA.

Synonym—Sweet Sumach.

CONSTITUENTS—Volatile oil, several resins, fat, tannin, gum.

PREPARATIONS—Extractum Rhus Aromaticæ fluidum, fluid extract of Rhus Aromatica. Dose, from ten to thirty minims. Specific Medicine Fragrant Sumach. Dose, from five to thirty minims.

Therapy—The direct influence of this agent is exerted in certain cases of polyuria. It is said to be specific also to **nocturnal enuresis** in children, and yet our knowledge is not sufficient to define the exact cases, consequently its use is more or less empirical. Benefit is claimed for its use in full doses in all cases where there is *much urine,* without sugar.

This is the case in **interstitial nephritis** as well as in **simple diabetes insipidus.** It is not contraindicated in diabetes mellitus, but is only occasionally of service. Active astringent properties are claimed for it, and yet in this exercise it is different from ordinary astringents.

In many cases of **urinary incontinence** both in children and in the aged, it will produce satisfactory cures. It apparently acts as a tonic and sedative to the muscular structures of the urinary apparatus, as old people who suffer from a general debilitated condition and are troubled with **dribbling,** have the power to control the urine restored. It should be used freely in such cases, and its influence when specifically defined will give it an important place in the therapeutics of **enuresis.**

It has an influence not to be overlooked in **passive hemorrhages** from the urinary apparatus—**hæmaturia,** controlling most satisfactorily many cases. It is useful in passive **uterine hemorrhage** and in **pulmonary** and **bronchial** hemorrhage. It is also useful in controlling **night sweats** and the diarrhœa of phthisis. The hemorrhage often present in **chronic diarrhœa** and **dysentery** is restrained by it, when it checks the action of the bowels also, improving the tone and restoring normal function.

If satisfactory results are not obtained from small doses it may be pushed until sixty drops are given to an adult.

In **purpura hemorrhagica** it has worked nicely and will often be found useful. It has cured many cases of **leucorrhœa** and of **gonorrhœa** and other passive discharges of a catarrhal character.

JAMBUL. SYZYGIUM JAMBOLANUM.

Synonyms—Eugenia Jambolana, Java Plum, Jamboo.

PREPARATIONS—Jambul seeds in powdered form. Dose, three to ten grains, two or three times a day.

Fluid extract jambul seed, miscible with water. Dose, five to ten minims.

Physiological Action—The exact influence of this agent upon the system is not well known. It is a stomachic astringent and carminative, a remedy of value in diarrhœas. It is non-toxic and non-irritant.

In the diarrhœas of children the juice of the fresh bark and leaves is used by the native physicians, though all parts of the plant are astringent. In the preparation of astringent injections and gargles the bark is quite active. The root and seeds have the same influence.

The taste is at first bitter, afterwards distinctly pungent, and decidedly astringent. Experiments have been conducted to determine the influence of jambul upon diastatic fermentation. It is proven to have an inhibitory influence. A fixed amount of malt extract converted 22.4 grains of starch into sugar. Jambul was added, and only 6.3 grains were converted under exactly similar circumstances. This experiment was suggested by the characteristic influence of the agent when taken by diabetic patients.

According to Morse, the agent augments the vaso-motor and reflex functions of the spinal cord by augmenting the blood pressure of the renal arterioles. It diminishes the quantity and density of saccharine urine. It increases peristaltic action of the intestines, and causes deeper and more frequent inspiratory movements. Wounds and ulcers, or syphilitic sores in diabetics, cicatrize rapidly, and heal during the administration of this agent.

Therapy—Its specific therapeutic application lies in the fact that the bark and the seeds possess the property of arresting excessive formation and excretion of sugar in **diabetes,** the seeds being the most active.

Inasmuch as the pathology of the disease is obscure, and the physiological action of the agent is comparatively unknown, it is impossible to make other than an empirical use of this remedy in these cases. Given in from five to ten grains of the powdered seeds, three times daily, it gradually overcomes the thirst and weariness and diminishes the quantity of urine. After two or three weeks the strength and spirits will return, and wandering and distressing pains and cramps abate, bleeding from the nose or gums, and night sweats

will cease, and the quantity of sugar will gradually decline. The dose may be increased until forty grains are given in a day, and the probabilities are that large doses would produce no serious results.

The agent has been widely used in the treatment of this disease, and is as efficient as any other single remedy. The writer's experience proves that it acts best in those cases that have been long continued, with a comparatively small amount of sugar present, where the slow progress of the disease has not materially influenced the general health of the patient.

Among the qualified, observing physicians of India, it is believed that its use will prevent the conversion of starches into sugar to any excessive extent, and that starchy diet can be eaten with impunity during its administration.

POTASSIUM NITRATE.

Formula—KNO_3.

Administration—Five grains in solution every three hours is the usual dose. Ten grains three times daily is advised in chronic rheumatic conditions.

Physiological Action—If there be a free determination of blood to the skin, the body surface being warm and moist, it acts immediately as a diaphoretic, otherwise it acts upon the kidneys as a diuretic. Its influence varies also with the size of the dose, and with the quantity and temperature of the water in which it is dissolved.

Physicians of fifty years ago depended upon this remedy as a **sedative** to control fevers, but large doses are necessary to accomplish this result. It tends to keep the bowels relaxed, does not greatly irritate the stomach, and acts as an intestinal antiseptic. The drug is an active eliminating agent. It neutralizes excess of acidity in the blood and urine, and rapidly relieves the blood of morbific material.

Therapy—It has long been used in **rheumatism,** both of an acute and chronic character, in **myalgia, lumbago, tic douloureux, sciatica,** and other forms of neuralgia. Two or three grains every two hours will accomplish satisfactory results in acute cases.

Although antispasmodic properties are attributed to it, its influence in the above described conditions is probably due to its neutralizing and eliminative action.

It is sometimes given in **tonsillitis,** which, if given in large doses, it will abort.

If this salt be burned and the vapor inhaled, it will relieve the paroxysms of uncomplicated spasmodic **asthma.** Bibulous paper—blotting paper—should be saturated with a solution of the salt in the proportion of one dram to an ounce of hot water, and then be carefully dried, when it is ready for use. Of this from ten to twenty square inches should be burned and the fumes inhaled. It should burn with white fumes without smoke or explosive action, and not too fast. When burned in a pitcher or in a narrow mouthed jar the fumes are more conveniently inhaled.

CHAPTER VII.

Special Genitourinary Remedies.

STAPHYSAGRIA.
CORALLORHIZA.
SALIX NIGRA.
SALIX ALBA.
SAW PALMETTO.
DAMIANA.
POLYTRICHUM.
CUBEBA.
COPAIBA.
SANDALWOOD.

STAPHYSAGRIA. DELPHINUM STAPHYSAGRIA.

Synonym—Stavesacre.

CONSTITUENTS—Delphinum, Delphinoidine, Delphisine, Staphysagrine. fixed oil, volatile oil, malic acid, mucilage.

PREPARATIONS—Tinctura Staphysagriæ, Tincture of Staphysagria. Dose, from five to fifteen minims. Specific Staphysagria. Dose, from one-sixth to three minims.

Physiological Action—This has not been definitely determined. Taken internally it acts as an irritant, causing vomiting and purging. Absorbed into the circulation it causes convulsions and loss of sensation and motion; the action of the heart and respiration is lessened and death is caused by paralysis of the spinal cord and asphyxia. It first contracts and then dilates the pupil. The agent is a permanent stimulant, resembling nux vomica somewhat and acting in harmony with avena sativa, cactus and xanthoxylum. It will act in harmony with hydrastis, which agent will intensify its influence. It relieves **mental depression,** and should be given in **hysteria** and **hypochondriasis,** where there is melancholia, despondency, and a general depression, Scudder says, especially if accompanied with violent outbursts of passion.

Specific Symptomatology—This agent exercises a stimulant and tonic influence upon the central nervous system, and is especially valuable in sexual disorders accompanied with melancholia, hypochondria, and hysteria, especially if there be outbursts of passion and a tendency to moroseness.

Therapy—Specifically considered this agent is a remedy for **prostatic disease.** It is not curative in the entire range of disease of the prostate, but is of much importance in assisting other indicated remedies. **Prostatorrhea** is within the direct sphere of its influence. It should be used and persisted in in this condition. While not alone curative in **spermatorrhea,** the complete cure depends upon the action of this remedy in many cases, combined with others. In **gleet,** the agent must not be omitted.

It relieves irritation of the **prostate gland, testicles,** and **vesiculæ seminales,** overcomes **impotency,** and increases sexual power. It arrests the excessive prostatic discharge and muco-purulent discharges from the urethra and is valuable in old standing cases of **gleet,** often curing otherwise intractable cases, and in **dysuria,** especially if accompanied with feebleness in expelling urine, with the above specific indications. It may be given alternately with kava-kava.

It soothes the nervous excitement consequent upon these genito-urinary or uterine disorders and is prompt and permanent when prescribed directly.

I have used it to good advantage with avena and saw palmetto in **impotence,** especially that occurring in men who have been excessive and dissipated in their habits, appearing usually about the age of forty-five.

Blake has used this remedy in **prolapsus of the bladder walls,** where a radical operation was impossible and where the long train of symptoms were exceedingly distressing. The remedy was given internally and used externally in the form of a saturated glycerole on tampons.

The agent has been advised in **facial** and **cervical neuralgia,** and has been given in scrofulous disease of the eyes, in **amaurosis, ophthalmia,** and in those conditions of the eyes, accompanying neurasthenia, where black spots or floating particles appear before the eyes.

The agent must be persistently used, to be appreciated.

Five drops of specific staphysagria in two ounces of water, a teaspoonful every two hours it is said, corrects many cases of **night sweats** in phthisis. If the symptoms should increase after its use, the dose should be decreased.

King recommends staphysagria to be used externally for the destruction of lice. Equal parts of the fluid extract and cologne water have been used successfully in cases of pediculus pubis and pediculus capitas.

CORALLORHIZA. CORALLORHIZA ODONTORHIZA.

Synonyms—Crawley; Coral Root.

This agent stood very high in the estimation of the fathers of the botanical school as a powerful diuretic and safe eliminative agent. It was considered the most active of all sweat producing remedies and so kindly was its action and so devoid of prostrating influences that it has later been considered superior to jaborandi. It was used in the early stages of prostrating fevers, and inflammatory troubles whatever the character. It was used in night sweats and hectic fever without debility. It acts well in the early stage of acute **pneumonia** and **pleurisy,** and given at the onset of a cold it is most prompt in its action in eliminating all the symptoms.

In the first stage of consumption where there is hacking cough, loss of weight, deficient appetite, while it acts slowly it overcomes the marked prostration and improves all the functional operations of the glandular organs.

Dr. Baker depended upon this remedy for the treatment of **meningeal inflammation,** nervousness, restlessness, and general feverish symptoms, as the agent is an active sedative as well as a powerful diaphoretic. It relieves bronchial irritation with wheezing and tightness in the chest.

Now at the present time when the importance of elimination is well understood and when its valuable effects are so plainly apparent, when properly conducted, this remedy should be freely used in order to determine by scientific means the amount of elimination secured and the actual substances removed, and the influence of such removal. The depressing effect of jaborandi or pilocarpine prevents to an extent such observations which can be safely made with this agent.

SALIX NIGRA. SALIX NIGRA AMENTS.

Synonym—Black Willow.

CONSTITUENTS—Salicin, a glucoside, tannin, wax, gum.

PREPARATIONS—Specific Salix Nigra Aments. Dose, from ten to sixty minims.

The tincture of the aments, or catkins, of the black willow, have increased medicinal properties over any other part of the tree. Specific Salix Nigra Aments is a unique preparation and contains the full properties of the drug.

The agent was brought to the attention of the profession through its influence in controlling **sexual hyperæsthesia** and undue sexual excitement. It is a remedy for **satyriasis, erotomania** and **nymphomania,** more particularly from local irritation.

It relieves **spermatorrhœa** when dependent upon these or similar causes, and quiets the general nervous system. It is a remedy for **ovarian congestion,** ovarian neuralgia and hyperæsthesia, also for **ovarian irritation** in hysteria. It will exercise a direct and satisfactory influence in many cases of **hysteria,** overcoming the extreme excitability and nervousness, headache and the **globus hystericus,** and will permit quiet, restful sleep. It will serve an excellent purpose in these cases in combination with general nerve tonics and restoratives, greatly enhancing their influence.

SALIX. SALIX ALBA.

Synonym—White Willow.

CONSTITUENTS—Salicin, wax, fat, gum.

Specific Symptomatology—Sexual irritability with lascivious dreams, sexual erethrism, libidinous thoughts, extreme sexual excitability with uncontrollable desire; erotomania, nymphomania, and satyriasis, prostatitis, with cystic irritation; acute prostatic enlargement, with cystitis, ovaritis, orchitis and other sexual disorders resulting from excess and abuse.

Therapy—This to an extent is antimalarial and like the other agents of this class it improves the tone of the gastro-intestinal tract and the glandular organs. It corrects impaired conditions of all mucous membranes and is thus of value in excessive catarrhal discharges from these membranes, being freely given in **bronchorrhœa, gastric catarrh, catarrhal diarrhœa** and in **leucorrhœa,** in all cases acting more promptly if malarial conditions have caused the existing debility. It has antiseptic properties, of course, if antimalarial, and is a good remedy in protracted fevers.

It has a mild influence in controlling **passive hemorrhages,** but cannot be depended upon if they are severe.

Its antiseptic properties are apparent in its ability to correct the fetor of wounds and offensive discharges when locally applied.

Felter and Lloyd, in the American Dispensatory, make the following statement concerning the action of this remedy, which is important. Its field of action in those functional wrongs of the reproductive organs is due most largely to undue irritability of the parts and thought to be less due to mental or emotional causes. However, sexual passion from any functional cause is moderated by it, and it is especially adapted to the disorders of the sexually intemperate male or female and of the youth, subject day or night to libidinous suggestions and lascivious dreams terminating in pollutions, while for those extreme forms of **sexual perversion, satyriasis, erotomania** and **nymphomania,** it is more nearly specific than any other agent. Not only does salix nigra act as a check to sexual passion and misuse, but it proves a useful tonic and sedative to many conditions following in the wake of sexual intemperance, among which may be mentioned **spermatorrhœa,** in its varied forms, **prostatitis, cystitis** and **ovaritis.**

SAW PALMETTO. SERENOA SERRULATA.

Synonym—Sabal serrulata.

Specific Medicine Saw Palmetto. Dose, ten drops to one dram.

Physiological Action—The attention of the profession was called to this palm by Goss and others, from its superior fat producing properties in animals. It was observed as soon as the berries matured that the animals which fed upon them grew very sleek and fat. Read noticed the marked healthfulness of these animals, and concluded to try the berries as a medicine. As a

result he found them to improve the digestion, increase the flesh, strength and weight, and steadily relieve irritation of mucous structures, especially those of the nose and air passages. Subsequent observation has proven the remedy to be a tonic of much power in stimulating the nutrition of the nerve centers, upon and through which it operates.

It relieves irritability of the entire nervous system and soothes local irritation. It stimulates digestion, greatly improves the appetite, and encourages assimilation.

As stated, it influences the mucous structures of the nose, throat and bronchi in a remarkable manner, overcoming catarrh and restoring normal function.

Specific Symptomatology—The direct influence of this agent is exerted upon the entire **reproductive apparatus,** especially upon the prostate gland of the male. It is demanded in **enlarged prostate,** with throbbing, aching, dull pain, discharge of prostatic fluid, at times discharge of mucus, also of a yellowish, watery fluid, with weakened sexual power, **orchialgia, epididymitis** and **orchitis,** when associated with enlarged prostate. In women, **ovarian enlargement,** with tenderness and dull aching pains, weakened sexual activity, and small, **undeveloped mammary glands,** are much benefited by its continued use.

Therapy—It is a sedative to all irritable conditions of these organs, and is a profound nutritive tonic, operating much like phosphorus. It **increases the size** and secreting power of the **mammary glands** where they are abnormally small and inactive. It improves the tone, and overcomes irritability of the ovaries, relieving **dysmenorrhœa** when due to atonicity. It may be given with confidence in wasting of the testes in the early stages, and the author has retarded the development of varicocele and has developed the growth and nutrition of the testes materially by its use.

To this agent is ascribed considerable power in reducing the size of **hypertrophied prostate** in old men, and in quickly relieving cystic and other disorders incident to this condition. In the writer's hands it has produced no marvelous cures of this disorder, but it has been of assistance to other measures and could not be well dispensed with. It relieves irritation of the bladder to a satisfactory extent, correcting the irritable character of the urine, increases the muscular power of the patient to expel the urine and produces a sense of relief, that is in every way gratifying and satisfactory.

In the treatment of **impotence** in young men who have been excessive in their habits, or have masturbated, it can be relied upon with positiveness. It will overcome the excitability from exhaustion and increase sexual power in those newly married who, having been anxious concerning their sexual strength or ability, have become suddenly almost entirely impotent after marriage. If the patient is instructed to abstain, for from four to six weeks, and to have confidence in his ultimate recovery, this agent in doses of from twenty to thirty drops three or four times daily, combined with a direct nerve tonic, such as avena sativa in doses of fifteen drops, or the one one-hundredth of a grain of phosphorus, will establish a cure. It will relieve any undue irritation, due to excess and exhaustion, that may be present in any part of the genito-urinary apparatus.

This agent is a remedy for **sexual neurasthenia** or sexual perversion with nerve exhaustion, a condition often overlooked in diagnosis, but quite common, one which follows onanism more often than any other habit. Its use should be persisted in for weeks, in the treatment of this form of nerve exhaustion, and if combined with avena sativa, the phosphates, strychnia, or the tonic gold salts, and abstinence enforced, a cure will result more readily than with all the rest without it.

An exceedingly important use for this remedy that I have not been able to find in the books, is its use for **sterility.** In simple cases where there is no organic lesion on the part of the patient, this agent has an excellent reputation for restoring the ovarian action properly and assisting in putting the patient into an excellent condition. One conscientious reliable lady physician assures me that in five definite cases, pregnancy has followed the use of this remedy where sterility was pronounced previously, and thought to be incurable.

The late Dr. E. M. Hale in his little work on this remedy said:

"I consider saw palmetto one of the most effectual uterine remedies."

"I believe it will be found, if administered early, to be the chief remedy in **metritis,** pelvic **cellulitis** and **peritonitis, salpingitis, ovaritis, puerperal fever,** appendicitis (giving first teaspoonful doses of pure olive oil every half hour until the pain is relieved, which seldom requires more than five or six doses.) It is also valuable in perityphlitis and proctitis, especially if the prostate gland is involved."

In its influence upon the **nasal** and **bronchial mucous membranes** this agent has been given with excellent advantage in the treatment of **acute catarrh, chronic bronchial coughs** of all characters, including **whooping-cough, laryngitis** and the **cough of phthisis.** It is credited also with cures in the treatment of **aphonia.**

DAMIANA. TURNERA APHRODISIACA.

Synonym—Turnera Microphylla.

PREPARATIONS—Extractum Damiana Fluidum, Fluid Extract of Damiana. Dose, from one-half to one dram.

Specific Damiana. Dose, from two to ten minims.

CONSTITUENTS—Essential oil, chlorophyl, two resins, albuminoids, tannin.

Therapy—A mild nerve tonic claimed to be valuable in the treatment of **sexual impotence.** Some of our physicians praise it highly for its influence in **sexual neurasthenia,** and it is said to correct **frigidity** in the female.

It had long enjoyed a local reputation as a stimulant **tonic** of the **sexual apparatus** among the natives of Mexico, before it attracted the attention of the profession. Besides its peculiar action on the sexual appetite and function, it is a general tonic, somewhat cathartic, and is slightly cholagogue.

The midwives and women of loose morals of Western Mexico also attribute **emmenagogue** properties to it.

Dr. Reid uses Damiana in all conditions where a general tonic is needed, especially if there be enfeeblement of the central nervous system. He esteems it most highly, prescribing it constantly for this purpose.

It is valuable in **renal** and **cystic catarrh** and in general irritation of the urinary passages, through its influence in soothing irritation of mucous membranes.

This latter property renders it valuable in the treatment of **respiratory disorders,** especially those accompanied with profuse secretion.

In the line of the action of this remedy in its influence upon the reproductive organs, Dr. Reid mentions **dysmenorrhea, headache, at the menstrual epoch, bad complexion,** rough or discolored patches on the skin with **acne,** especially of a severe type, depending upon uterine irritation. Eruption resembling **eczema,** from insufficient menstruation.

Dr. Watkins gives as its further indications, **delayed** or **suppressed menstruation** in young girls, irregularity at the beginning of menstruation, **amenorrhœa** in very young girls. It will certainly allay sensitiveness of the sympathetic nervous system to irritations caused by disorders of the womb

and ovaries. The remedy must be given in full doses, to accomplish these results. From five to ten grains of the extract is necessary three or four times a day, and persisted in. The writer has been using it as suggested, and has been very well satisfied with it.

In one most severe case of acne, with discoloration of the skin, due to uterine irritation, the results were satisfactory, both to the patient and physician. I am satisfied that it relieves hyperesthesia of the sympathetic nervous system and prevents many of the results of reflex irritation from uterine or ovarian disorder.

POLYTRICHUM. POLYTRICHUM JUNIPERUM.

Synonym—Hair-cap moss.

CONSTITUENTS—Not analyzed.

PREPARATIONS—Specific Polytrichum. Dose, from five to sixty minims.

Specific Symptomatology—The agent is used in anasarca, ascites, urinary obstruction, suppression of urine in children, febrile and inflammatory diseases, uric and phosphatic acid gravel, acute gonorrhœa with severe burning pain on passing urine, irritation of the bladder, difficult micturition of pregnancy, and often occurring during parturition.

Therapy—The agent is a **hydragogue diuretic** and causes a very large evacuation of urine when administered in **dropsy,** while it promotes the absorption of the fluid at the same time. It tends to relieve the pain of **urinary calculi** and to prevent their formation.

Though it is not always effective, probably on account of using a spurious article, the genuine has been known to remove forty pounds of urine from a dropsical patient in twenty-four hours.

CUBEBA. PIPER CUBEBA.

Synonym—Cubebs.

CONSTITUENTS—Volatile oil, fixed oil, wax, resin, cubebin, gum, malates, cubebic acid.

PREPARATIONS—Extractum Cubebæ Fluidum, Fluid Extract of Cubeb. Dose, from five to thirty minims. Oleum Cubebæ, Oil of Cubeb. Dose, ten minims. Oleoresina Cubebæ, Oleoresin of Cubeb. Dose, from five to thirty minims. Specific Cubeb. Dose, from five to twenty minims.

Physiological Action—Stimulant, carminative, expectorant, stomachic. It stimulates the intestinal tract like black pepper, and, in excessive doses, causes nausea, vomiting, burning pain, griping and purging. The active principle being absorbed causes general stimulation and a feverish condition, and sometimes redness of the skin.

Therapy—Cubebs is in common use in the treatment of **gonorrhœa.** Its best results are obtained when the active stage has passed, being especially useful in gleet, and also useful in the discharge present after acute prostatitis, especially if purulent in character, where the parts are greatly debilitated and there is **catarrh** of the **bladder** with nocturnal incontinence of urine, or in **spermatorrhœa** with enfeeblement, it is a useful remedy.

A snuff of powdered cubebs is of much benefit in **acute coryza** if there is free secretion. It is beneficial also in some chronic cases.

A cigarette is prepared of cubebs, which is smoked to relieve **hoarseness.** It serves a good purpose in this form in sub-acute or chronic bronchitis or in any case of general relaxation with debility of the mucous structures of these parts.

COPAIBA. COPAIBA LANGSDORFFII.

Part Employed—The oleoresin.

Oleoresin of Copaiba is obtained by boring holes into the trunk of the tree near its base, from which the oleoresin is collected. It is a translucent, viscid liquid, of a pale or brownish-yellow color, having a characteristic odor and a bitter, acrid, nauseous taste. Solvents, alcohol, ether, chloroform. Dose, from five to sixty grains.

Oleum Copaiba—Oil of Copaiba. The volatile oil, which is obtained by distillation, is a limpid, pale-yellow liquid, with the odor of copaiba, and a pungent, aromatic, bitter taste. Dose, from ten to fifteen drops.

CONSTITUENTS—Volatile oil, copavic acid, bitter principle, resin.

PREPARATIONS—Massa Copaibæ, Mass of Copaiba. Dose, from ten to sixty grains.

Mistura Copaibæ Composita, Compound Copaiba Mixture. Dose, from a half to one dram.

Therapy—This agent is used in the treatment of **gonorrhœa**. It is best used after active inflammation has subsided where the mucous structures of the urinary tract are debilitated. It is useful in **gleet** or **chronic urethritis** with much relaxation and debility, and if anæma be present, it should be given in conjunction with iron. It is given in general irritation of the urinary passages from debility, and in **pyelitis** and **cystitis**, increasing the urinary discharge and relieving painful urination. In inflammation of the **respiratory tract** with excessive expectoration of thick and tenacious mucus, it may be employed to good advantage if the balsam of copaiba be given in ten drop doses three times a day. It is of assistance in curing eczema, urticaria, and other itching skin disorders. For persistent backache, Dr. Whitford combined two drams of the above with two ounces of the spirit of nitric ether, and tincture of black cherry to make three ounces. Of this he gave a dram once or twice daily.

SANDALWOOD. SANTALUM ALBUM.

Synonyms—Yellow Saunders, White Saunders.

Part Employed—The wood.

PREPARATIONS—Fluid Extract of Sandalwood, not miscible with water. Dose, one-half to two fluid drams. Sandal Oil, dose, ten minims.

Administration—The oil of sandalwood is administered in doses of from ten to fifteen or even twenty minims three times daily. It is best given in a capsule, and soft gelatine capsules are prepared filled with the oil. It is also given in emulsion, but there are objections to this method of administration.

Therapy—The oil of santal is of service in the treatment of sub-acute and chronic inflammations of mucous surfaces, especially those wherein there is excessive secretion. In **catarrhal bronchitis** it is beneficial, quickly allaying irritation and reducing the excessive discharge.

It is in more general use in the treatment of **gonorrhœa** after the subsidence of the acute or active inflammatory phenomena. It will be found of service in the treatment of protracted cases, and in gleet.

GROUP VIII.

Agents Used for Their Influence Upon the Skin.

JABORANDI.
SERPENTARIA.
CAMPHORIC ACID.
NITRATE OF SILVER.
PICRIC ACID.
CANTHARIDES.
YOHIMBE.
THAPSIA.
ZINC OXIDE.
LANOLIN.

PILOCARPUS. PILOCARPUS JABORANDI.

Synonym—Jaborandi.

CONSTITUENTS—Pilocarpine, jaborine, volatile oil, tannic acid, volatile acid, potassium chloride.

PREPARATIONS—Extractum Pilocarpi Fluidum. Fluid Extract of Pilocarpus. Dose, from five to sixty minims.

Specific Medicine Jaborandi. Dose, from one-fourth of a minim to three minims.

Administration—In the administration of this agent the characteristic results may be obtained almost equally well, either from an infusion of the leaves, or from any of the preparations named. The hypodermic administration of the alkaloid pilocarpine, is preferable in many cases, especially where the promptness of its action is desired. The liquid preparations are often unacceptable to a disordered or sensitive stomach and then minute doses of the alkaloid in pellets or granules will be found a most desirable form for administration.

The action of the fluid extract or tincture of jaborandi and impure pilocarpine is sometimes disappointing, failing entirely to produce their characteristic influence and perhaps producing results contrary to those anticipated. This is due to the presence of the alkaloid, jaborine, which acts antagonistically to pilocarpine, having in its therapeutic influence many of the characteristics of atropine, an antagonist of pilocarpine.

The **nitrate and hydrochlorate** of **pilocarpine** carefully prepared are free from jaborine and are thus reliable in their action. Solutions of pilocarpine should be made fresh when needed, as the salts decompose in aqueous solution. They are not permanent but will precipitate at once in alkaline solutions.

Physiological Action—Near the point of the administration of a hypodermic injection of the alkaloid, a few drops of sweat appear within from four to six minutes after the injection, to be immediately followed with moisture on the forehead, neck and chest, and in quick succession the entire body is bathed with a most profuse perspiration.

It is a powerful anti-diphtheritic and sialogogue, acting profoundly as a stimulant upon the secretions of the entire glandular system. No one known remedy stimulates every secretion of the body simultaneously as profoundly as does this agent.

The depression of the agent should not be allowed to progress; after the sweating has continued a few minutes profusely, a little whisky, brandy, tincture of ginger, or tincture of capsicum should be given in hot water, and occasionally repeated while the transpiration progresses. If the heart

shows the influence of the depression, a hypodermic of strychnine may be given, or a few drops of the tincture of cactus, strophanthus, digitalis, or nux vomica. If it is desirable to stop the sweating abruptly, atropine hypodermically may be resorted to.

The extreme effects of the agent need not be obtained in many cases, but owing to the susceptibility of some cases a small dose will sometimes produce extreme results. It is safe to obtain these results in extreme sthenic cases—in robust patients. The reaction will be prompt and satisfactory.

Most observers state that it is best to quench the thirst with weak coffee or milk and not with cold water. It is undesirable that the patient swallow the saliva when the agent is administered after the bite of venomous snakes or in threatened hydrophobia or if given as an antidote to poisons.

When the agent fails to act upon the skin it often expends its force upon the salivary glands, kidneys, stomach, intestines or lungs, producing extreme secretion or excretion from these organs. In some cases this agent produces nausea, vomiting, diarrhœa, contracted pupil, extreme weakness, dimness of vision, sighing respiration, palpitation and collapse; but these symptoms of alarming nervous depression rarely occur and are easily combated with atropine.

Specific Symptomatology—The direct indications for this agent are acute suppression of the secretions, especially of those of the skin in sthenic conditions usually with distress, elevation of temperature, sharp, hard pulse, dry skin, dry mucous membranes, constipation, and small quantity of urine with dark color and high specific gravity.

Kinnett gives the specific indications for its use, as dry hot skin, dry parched mouth, pulse full and very strong, patient restless and uneasy, suppression of the secretions, especially of **the kidneys,** which seem to be unable to act properly. His contra-indications are feebleness, weak pulse, weak heart action, tendency to depression.

Contra-Indications—Jaborandi should be avoided in asthenic conditions, or where there is feeble or dilated heart, and used with care in old people and young children. Except in its influence on laryngeal and bronchial disorders, and in the sthenic stage of diphtheria when it loosens the membranes.

Therapy—At the onset of **acute** febrile and **inflammatory conditions,** especially if there be rigors, hot, full head, and a bounding, hard pulse, a foot bath of hot water and a full dose of jaborandi with proper supportive treatment subsequently will often end the attack abruptly. The stage following the influence of the agent if the temperature has subsided, has all the conditions in which quinine works to its best possible advantage.

Several recent writers have written enthusiastically on the action of jaborandi or pilocarpine in establishing a **favorable crisis** early in the severe forms of acute disease. **Pernicious malarial fever, typho-malarial fever, inflammatory rheumatism,** and other of the severer forms of inflammatory disease they claim may be aborted by the use of full doses of this remedy. Where jaborandi can be administered by the mouth, it is preferable, although some claim that pilocarpine hypodermically invariably produces better results.

A number advise the use of this remedy in comatose, delirious and colliquative forms of **pernicious intermittent fever.** These writers agree upon the surprising influence of the remedy, where at the onset of this disease or of other acute specific fever there is great **excitable mania**—extreme violent delirium, which in its seriousness overtops all other conditions. The above indications of Kinnett will usually be exaggerated at these times. If an eighth of a grain of pilocarpine be administered hypodermically, the delirium disappears **at once,** quiet and restfulness obtain without the occur-

rence of the physiological action of the remedy upon the skin or salivary glands. There is a disagreement of opinion as to its value in the treatment of convulsions. Kimnett claims that where the intestinal tract is overloaded with irritating material, it produces both emesis and active free bowel movement, at the same time stimulating the action of the kidneys and skin.

In a case of **extreme malarial poisoning,** in a strong man, the bowels had not been moved for three days, nor the urine voided for eighteen hours. The temperature was 107 degrees, and the pulse 140, full and bounding. The skin was of a jaundiced appearance and the conjunctivæ was distinctly yellow. One-half grain of pilocarpine hypodermically, caused salivation in three minutes, perspiration stood on the neck and forehead in great drops, the face and skin became extremely red at first and pale as the perspiration advanced. He immediately passed a large quantity of dark-colored, highly offensive urine. He vomited, and had a movement from the bowels, large and copious. The doctor claimed that more was accomplished by this one dose of medicine in one hour in the way of elimination, than he could have accomplished otherwise, in forty-eight hours. Vomiting from pilocarpine is not at all severe. There is no violent straining. The act is more like one of regurgitation.

This agent can be used to good advantage in **alcoholism.** Administered hypodermically, it has a prompt sobering effect. It induces sleep, from which the patient awakes rational and subdued. The transformation in the physical appearance of the patient is marked. The tense red, bloated countenance, the bleared congested eyes, the general repulsive facial aspect pass away, and the skin assumes a clean and soft appearance, the features are calm, and the eyes clear. It has been used with good advantage in the treatment of **gall stones,** one-eighth of a grain three or four times a day has relieved severe cases.

In **inflammations** of the **lungs** or **pleura,** with exudation, it promotes resolution and quickly removes the exudate. In **bronchitis** with dry, irritable, or hoarse cough, with imperfect secretion, it acts admirably as an expectorant. It lessens the cough as well as influencing the temperature. In **laryngitis, tonsillitis** or **diphtheritis** it is used by many physicians as the most important factor in the treatment. It is especially indicated in **stridulous laryngitis.**

In the treatment of **epidemic influenza** it has been given in small doses with persistency. It is said to render important service in the cure by restoring secretion.

In laryngeal **diphtheria** and in **membranous croup,** given in doses of from two to five drops every two hours, in conjunction with antiseptic treatment, it increases the mucus and salivary secretions and loosens the membrane and causes its exfoliation promptly and satisfactorily. It can be relied upon if the forces of the system can be sustained and if it does not produce too great prostration. Feeble children will not do as well under this treatment as robust and vigorous ones.

In **bronchial asthma** or in dyspnœa, from acute pulmonary engorgement, it gives prompt relief.

The agent in doses of from one-half to one drop often repeated during the afternoon or evening has controlled most satisfactorily the **night sweats** of slow convalescence and of pulmonary phthisis.

Dr. Standlee gave jaborandi for stiffness of the joints, five drops with one drop of rhus in a teaspoonful of simple elixir, three times a day.

Dr. Lass gave jaborandi for pruritus as a functional affection of the skin with itching, burning, and prickly sensations, especially winter itch, so-called, or frost itch with curative results.

Jaborandi in diphtheria and in membranous croup must be used constantly to be appreciated, but it certainly is a very efficient agent. It removes the membrane sometimes in a few hours, and given with echinacea or inhalations of eucalyptus and turpentine in the early stages, no membrane will be formed.

The agent is a **heart sedative** of acknowledged ability and is reliable. It controls the heart's action, the pulse, and the temperature similarly to aconite or gelsemium, with either of which it may be well combined and its influences heightened by the combination. In febrile conditions where nervous complications are anticipated, and where spasm has occurred, it has a sedative and direct anti-spasmodic influence, operating synergistically with gelsemium or the bromides.

Webster lays great stress upon the specific sedative properties of this remedy. He also believes that in certain cases it has a place distinct from that of aconite or veratrum. He believes that it can be adjusted even to asthenic cases. It imparts a cooling sensation to the skin, relieves headache arising from the fever, calms nervous irritation, and soothes local inflammatory action. It dissipates the surface heat, and acts immediately upon the secretion of saliva and overcomes sordes very quickly, cleaning the mouth completely, restoring all secretions.

In inflammatory diseases of the chest he believes that it does all that asclepias does, and more. He combines it with echinacea in **erysipelas**. He believes that it relieves irritability of the heart and blood vessels, and induces normal equilibrium. The dosage for these purposes is invariably small—not to exceed one or two minims, and frequently repeated.

The agent has been used in **hydrocephalus,** and in other effusions into the membranes of the brain or spinal cord, but there are apt to be contra-indications and it must therefore be used discreetly, and combined with other agents as indicated, and the strength of the patient supported.

It is useful in all local or general **dropsies** with discriminating judgment in its administration.

In acute inflammatory **rheumatism** or in rheumatic fever it should not be neglected as few agents will take its place. A single sufficient dose of pilocarpine will often relieve the pain, at the onset, promptly. It will be indicated during the course of chronic rheumatism as its influence in eliminating urea, uric acid and other morbific products is of excellent service here. It may be given in full doses once or twice each week or oftener, in much the same manner as a Turkish bath would be administered. Its influence is much wider than any baths.

In **acute mastitis** with suppression of milk after confinement it quickly relieves congestion and restores the lacteal secretion. It is a prompt and efficient **galactagogue** at any time. Sufficient doses to induce active transpiration need not be given, but five to ten drops of the tincture four times daily for a few days will accomplish the result. If the milk is entirely suppressed it may sometimes be restored if this remedy is administered immediately. In such a case a full dose should first be given, followed subsequently by smaller doses at longer intervals.

It has been used to advantage also in acute orchitis, and it will serve a good purpose in some cases of acute **ovaritis** or **metritis.**

A writer in the Medical and Surgical Reporter says that having observed that **parturition** progresses most favorably when there is diaphoresis, he now produces that condition early by the use of jaborandi; he gives one-third of a teaspoonful of the green fluid extract in half a wineglass of water every half hour until perspiration occurs. The effect is a soothing one, often relieving the severity of the pains. The os rapidly dilates, the soft

parts assume a more favorable condition, and the labor is soon terminated favorably. He has seen only good results from its use. Many writers agree on the action of the remedy in **rigid os uteri,** where the pains are hard, the muscular system tense, and the skin dry.

If prostration occurs from the profusion of the perspiration the skin is thoroughly dried, the patient is given a stimulating drink and warmly covered, and there are no further unpleasant results. It does not necessarily increase the danger of post-partum hemorrhage unless the effect of the agent is severe, in which case a full dose of ergot at the completion of the second stage of labor or a hypodermic of strychnia will insure prompt uterine contraction.

These facts are especially true if during confinement the skin is hot and the os unyielding, rigid and painful, the pains hard and unsatisfactory, the pulse sharp and hard, and perhaps the temperature rising. A full dose of jaborandi will often change the entire condition, at once producing relaxation of the os, free secretion, more expulsive and less irritating pains and a general soothed and quiet condition.

Many writers confirm the value of this agent in **puerperal eclampsia.** A French authority treated ten consecutive cases with satisfactory results, with the hydrochlorate of pilocarpine. He concludes that feebleness of the pulse, as long as the convulsions reappear, is not a contra-indication to a repetition of the dose.

When permissible it should be given in a single, full, prompt dose. Its best influences are directed toward elimination of the urea, thus relieving the uræmia and reducing dropsical effusions. Its anti-spasmodic influence, while not always, perhaps, to be depended upon alone, is exercised harmoniously with the indicated anti-spasmodic, whether it be veratrum, chloral, the bromides, morphia, passiflora or gelsemium.

In **exanthematous fevers** of all kinds jaborandi in small doses is the remedy *par excellence.* In robust cases, with scarlet fever, the determination to the skin and the elimination from the skin is so prompt and efficient that post-scarlatinal nephritis need not be anticipated.

Waugh is authority for the statement that the agent is efficacious in acute **sthenic erysipelas.** It may be given in twenty drop doses, every four hours, and any prostrating influences antagonized. Local applications should not be neglected, but should be selected with care, and prompt tonics and restoratives should be administered in conjunction. In asthenic cases the agent should not be unqualifiedly discarded, but it may be adapted in small doses to the case in hand.

Pilocarpine has a selective action for the skin, and is prescribed by specialists in a number of skin diseases, notably in pruritus, eczema, prurigo, and in hyperidrosis pedum. It is given in small doses long continued.

Its continued internal use for other conditions has been known to result in an increased growth of the hair with **restoration** of the original color of **gray hair.**

Pilocarpine in the proportion of two grains to the ounce of lanoline is a common application to the scalp to restore the hair and prevent baldness. It may be combined with cantharides.

Ophthalmologists claim excellent results from its use in a number of diseases of the eye. In iritis it overcomes inflammations and removes adhesions. It causes rapid absorption of all exudates. It is of benefit in detachment of the retina and in optic neuritis. In all inflammatory conditions it is of service. It is beneficial after extraction of the lens, and is said to promote the absorption of opacities in the vitreous humor which have re-

sulted from recent infiltration. It acts upon the pupil much after the manner of eserine.

Dr. Kent O. Foltz employed the drug regularly in **iridocyclitis,** in plastic and **traumatic iritis,** in **rheumatis iritis,** in **hylatis,** in simple **glaucoma** and in some cases of **optic neuritis;** also in traumatism of the eye, where there is effusion of the blood into the aqueous or vitrious humors, in **retinal hemorrhage,** in **chorio-retinitis,** and in detachment of the retina. It has been beneficial in beginning atrophy of the optic nerve. In **interstital keratitis,** and in chronic **conjunctivitis,** also in **croupus** and **diphtheritic conjunctivitis.**

In the treatment of ear disease, it has a more limited use. In dry **catarrh** of the **middle ear,** and in **eczema** of the external auditory canal it has some beneficial influence. In effusion into the labyrinth it facilitates absorption. In **atrophic rhinitis,** and **pharyngitis,** it increases the activity of the glands, and produces general salutary results.

A few doses of from twenty to thirty drops of jaborandi are given internally in cases of severe rhus poisoning, combined with proper external applications.

In the treatment of the **bite** of **venomous snakes** and in anticipated hydrophobia, and in poisoning from canned fish and other meats—in ptomaine poisoning, the salts are administered in maximum doses.

The patient will show but little of the prostrating influences of the drug. It is eliminative in its influence, only the poison must be antidoted by the proper remedy, and in organic poisons the permanganate of potassium is an efficient remedy.

SERPENTARIA. ARISTOLOCHIA SERPENTARIA.

Synonym—Virginia Snakeroot.

CONSTITUENTS—Volatile oil, aristolochine (bitter principle), resin, gum, starch, albumen.

PREPARATIONS—Extractum Serpentariæ Fluidum, Fluid Extract of Serpentaria. Dose, from ten to thirty minims.

Specific Medicine Serpentaria. Dose, from one to sixty minims.

Therapy—The action of snakeroot in restoring secretion after a severe **cold,** in sudden, acute inflammation, and in the early stages of **acute fevers,** is most strongly marked. It is valuable, also, in the advanced stages of fevers where there is persistent suppression of secretion, and where the prostration contra-indicates active diaphoretics, etc. It exercises a tonic effect on the nervous system, while it promotes secretion. It is of much value during the progress of **typhoid fever.**

In **scarlet fever** and **measles** and in **small-pox** it is a useful remedy. It hastens a tardy eruption, and restores the eruption promptly if it has receded. It must be given in full doses up to a dram of the tincture. It acts as a mild restorative tonic at the same time.

It was popular among the older physicians as an active eliminative agent. It was used in **chronic ague** as an antiperiodic and tonic. It was claimed to supersede quinine in some cases; **cynanche maligna** has been cured by it; **scrofula** and evidences of blood dyscrasia are benefited by it. It is of use in **chronic rheumatism,** and combined with more active agents, in acute cases. It stimulates digestion in enfeebled cases, and encourages a better action from all the glandular organs.

ACIDUM CAMPHORICUM

Synonym—Camphoric Acid.

Administration—Dose, from one to twenty grains. Large doses are necessarily given in capsules unless dissolved in a large quantity of water.

Therapy—The agent acts specifically upon the skin and mucous membranes, controlling **excessive secretion.** Twenty grains of the acid taken an hour before going to bed will control some of the worst cases of **night sweats.** It is especially applicable in phthisis, but is also valuable in the profuse sweating that occurs during the recovery from prostrating fevers.

In **excessive mucous discharges** from whatever cause, it is a valuable remedy. A one per cent solution may be used in **nasal catarrh** as a douche, in **laryngitis** and in **bronchitis** and as an application in mild forms of sore throat.

ARGENTI NITRAS.

Formula—$AgNo_3$.

Synonyms—Silver nitrate, nitrate of silver, lunar caustic.

Therapy—Under the present enlightened condition of therapeutics, the use of this and similar agents internally, is unjustifiable, and is practiced only in ignorance of better remedies. It has been employed in small doses in ulceration of the stomach, and in catarrhal conditions of that organ and the intestinal canal. It is said to give relief in chronic gastric pain and to be of benefit in some forms of dyspepsia.

As a local application, for external use, the agent is manageable and of much service. It is applicable to **chronic ulceration** of whatever character, especially of mucous surfaces. Carefully applied to **ulceration** of the os or **cervix uteri,** after these parts have been well cleansed, much benefit results.

In unhealthy granulation of wounds, known as proud flesh, this caustic is curative. In the proportion of from one to five grains in an ounce of water, it is useful in **ophthalmia neonatorum** and in **gonorrhœal opthalmia.** It is also used in granulation of the eyelids and in some cases of **purulent conjunctivitis.**

It has been applied to **erysipelatous** surfaces, but the tincture of iron is a superior agent.

It is serviceable in dilute solution in the treatment of **leucorrhœa** of a specific or non-specific character, and in **gonorrhœa,** whether in the male or female.

It is also applicable to **abnormal growths,** some simple forms being aborted by it. It has been applied to felons in their early stages and to boils, before suppuration, with good results.

ACIDUM PICRICUM.

Synonyms—Picric acid, carbazotic acid, trinitraphenol.

Occurrence—This acid is obtained from the action of creosote upon nitric acid, or by dissolving pure crystallized carbolic acid in sulphuric acid and treating this product with nitric acid or with sodium nitrate.

Description—It is crystalline in character, light yellow in color, bitter, freely soluble in water, sublimes without decomposition, and explodes upon heating. Its salts of potassium and sodium are too unstable for use in medicine, being violent explosives, the ammonium salt alone being in common use.

Physiological Action—It acts as an irritating depressant. In poisonous doses, there is a reduction of temperature and blood pressure, shallow breathing, rapid, feeble heart action, great weakness, profuse diarrhœa with pain in the stomach and bowels, and collapse. In some cases convulsions occur followed by death.

It colors the serum of the blood, materially increases the white corpuscles and alters the character of the red blood cells. The action of the agent as a medicine is considered in the action of the picrate of ammonium.

Therapy—Picric acid is used in the treatment of **superficial burns** by a number of eminent authorities, but in the treatment of extensive and deep burns, there is danger of poisoning. Sterilized gauze is soaked in a five per cent solution of picric acid and laid over the entire burned surface, a light dressing is laid over this and the whole is retained by a light bandage. After three days it may be thoroughly moistened with a solution of the acid as it will become very dry, and may be removed. A second dressing may be applied as the first. It controls pain and rapidly promotes healing. When granulation is progressing, and pus no longer forms, it may be replaced by a simpler dressing.

In some cases the solution is simply brushed over the surface thoroughly, and gauze placed over it for a few days.

Stains from the use of picric acid may be removed by alcohol, a solution of boric acid, or a strong soap.

CANTHARIDES. CANTHARIS VESICATORIA.

Synonyms—Spanish Flies, Blister Beetle.

CONSTITUENTS—Cantharidin, extractives, salts and fat.

Cantharidin is a crystalline body obtained by exhausting the powder with chloroform. The crystals are colorless prisms, soluble in alcohol, chloroform, ether and in volatile oils, and to a limited extent in water. It is the irritating, blistering constituent of the powder.

PREPARATIONS—Tinctura Cantharidis, Tincture of Cantharides. Dose, from one to ten minims.

Specific Cantharis. Dose, from one to five minims in water.

With many physicians the agent is always prescribed in small doses frequently repeated—from five to fifteen drops in four ounces of water, a teaspoonful every one, two or three hours.

Ceratum Cantharidis—Cantharides cerate, made of cantharides, yellow wax, lard and turpentine.

Physiological Action—Internally the agent will produce gastro-intestinal irritation, pain, nausea, vomiting, bloody stools, suppression of urine, with irritation in passing, strangury, swelling of the external genitals, general depression, convulsions and death. It increases sexual desire, and is an active emmenagogue and abortifacient.

Applied externally the agent produces at first, local stimulation, a reddening of the skin and subsequent vesication, the vesicles filling with serum, producing prompt and marked derivation and general depression.

Therapy—In small doses this agent is in use in the treatment of **cystitis** and **bladder irritations**, accompanied with tenesmus and constant desire. It is serviceable in **enuresis** when there is **relaxation** of the **bladder walls**, and lack of control of the sphincter, especially in that common to relaxed plethoric women, when upon their feet, and when coughing.

It is of some benefit in the treatment of **dropsies**, especially of those following scarlet fever, and diabetes in its later stages.

It is occasionally beneficial in **eczema** and **acne,** when accompanied with uterine or vesical irritation, or with **amenorrhœa.** In small doses it is prescribed in **sub-acute** or chronic **gonorrhœa** or **gleet.**

As a vesicant, or blistering agent, cantharides has long been used in the treatment of **local inflammations** of all characters, usually in sthenic stages, as its derivative influence produces debility. **Diseases of the brain** and **spinal cord,** and their meninges, have been treated with extreme derivation from its action and often with good results. As a local stimulant in **hypostatic congestions** the agent has been much used, being applied in such cases short of vesication.

Strangury induced by the use of this agent may be treated by the use of a solution of potassium hydrate in frequent doses from ten to twenty drops freely diluted.

Very small doses of the tincture of cantharides—one drop diluted in eight ounces of water—will be of sufficient strength when a patient complains of **pain in passing water,** or when there are intense, burning, cutting, scalding sensations in the urethra. There may be tenesmus and urgent desire almost constant to urinate with a passing of only a drop or two at a time, which burns like fire. There may be hematuria also.

An old German treatment for **cancers** was made by the use of the tincture of cantharides in a medium sized dosage, prepared in the wine of camphor with mucilage of gum arabic. A number of cures were attributed to this.

Homeopathists give this remedy in minute doses when there is **delirium** with paroxysms of rage, **profanity,** greatly **increased sexual excitement,** or **sexual furor.**

A prominent French writer advised cantharides in very small doses in **acute nephritis** where there was at first **anuria** and **oliguria.** He gives this in medium sized doses, claiming a rapid increase in the amount of sugar, and disappearance in the edema.

Dr. Wark reports a case of fistula in a boy of sixteen which was cured with a cerate of cantharides to which he added a small quantity of the tincture filling a long fistula full of this. By this means he blistered off the pyogenic membrane of the fistula, and by simple measures healed the fistula completely.

An application is made of a mixture of one-half of a dram of tannic acid, one dram of tincture of cantharides, five drops of the oil of capsicum in two ounces of glycerine rubbed thoroughly into the scalp twice a day to prevent the falling of hair.

Dr. Thornton of Mississippi combined cantharidin and collodion and used it in his ears for chronic deafness with excellent results.

Note—Powerful vesication is seldom deemed advisable by our physicians as local stimulation by heat or mustard is usually found sufficient. The formation of large blisters or blebs is deprecated, as inducing depression and local pain and general irritation, usually out of all proportion to the benefit derived. The abstraction of the serum from the blood, which contains almost as much albumin as the blood itself, amounts to but little less than actual blood letting. Extreme blistering, even by physicians addicted to most heroic measures is largely relegated to the past.

When counter irritation, derivation, or local stimulation seems to be needed, we have recourse to local heat, dry or moist, always short of burning, mustard, capsicum, and other agents named in other chapters for their revulsive action, as croton oil, and other oils, chloroform, ether and ammonia, confined, and dry cupping.

YOHIMBE.

Part Employed—The bark of the yohimbeye tree.

CONSTITUENTS—Spiegel obtained an extract of the bark, which contained a pigment that forms, on standing in alkaline solution, two alkaloids, yohimbin and an amorphous substance. The former crystallizes in white needles with silky lustre, and is soluble to the extent of two per cent in water, and dissolves also in alcohol and chloroform.

The agent may be given in infusion, in the form of a powdered extract, or the alkaloid yohimbin. A liquid extract is also prepared. The dose is from .001 gm. to .015 gm., of the alkaloid—from the 1/60 to the 1/4 of a grain.

Physiological Action—The action of this agent seems to be exercised directly upon the sexual centers of the spinal cord, increasing tonicity and reducing excitability.

Oberwarth and Lowy made physiological experiments on animals with the alkaloid. After injections of 0.005 to 0.015 gm. in rabbits they observed a swelling of the testicles and epididymis and their descent into the inguinal canal. In dogs and cats the swelling affects rather the penis and may go so far as to cause painful erections.

The **hydrochlorate of yohimbin** is a local anesthetic, of considerable value. Used in a two per cent solution it benumbs the mucous membranes in two minutes. In five minutes they are markedly anesthetic, and in ten minutes the maximum degree of anesthesia is obtained. The anesthesia lasts from one-half to three-quarters of an hour and sensation is completely restored in an hour and a half. It does not act upon the skin when applied. It must be injected.

Therapy—The current therapeutic journals of Austria and Germany have contained articles on the action of this remedy for the relief of impaired sexual function. Spiegel has made some important observations on its action. It has long been used in the form of a decoction by the natives, to increase sexual appetite. Impotence of functional origin seems to be directly influenced by it. Silberstein of Vienna says that in so-called **hypochondriacal impotence,** due to morbid stimulation of the inhibitory paths, as well as that produced by diminished excitability of the sexual centers, the agent is successful. Patients so afflicted become violent, and may be driven to desperation. In cases where there is a sudden failure of power, producing despondency, foreboding and general mental depression, in young married men, it is satisfactory. The knowledge of weakness has an inhibitory effect upon the exercise of the normal functional action of the organs in every field of their operation.

Impotence from onanism, or persistent **nocturnal emissions,** with loss of appetite, was cured by this remedy in a short time. Several other cases of a similar character were experimented on satisfactorily. In cases where the same weakness was present with **chronic alcoholism,** resulting in chronic **disease** of the **stomach** and enlargement of the liver, the agent had a satisfactory influence. Another case was cured, who, from **sexual neurasthenia,** had persistent headaches.

It has been useful in operations upon the eye, nose and throat. A one per cent solution injected is non-toxic. A writer in the Standard says that if a two per cent solution be dropped into the conjunctival cul-de-sac, from five to six times in fifteen minutes, it will produce both corneal and conjunctival anesthesia. The corneal anesthesia is more pronounced and lasts much longer than the conjunctival. The eye becomes immediately suffused and continues red for more than an hour after the last instillation. There is

moderate but marked dilatation of the pupil, which will last from fifteen to twenty minutes. It will be found valuable in cataract extractions and iridectomy. It has also been found useful in the removal of the nasal turbinals, and granulations, and of polypi, from the post-nasal surfaces or from the ear.

Its great advantage is in its non-toxic properties, and that it does not cause the tissues to contract. The hyperemia it induces, however, is a disadvantage in some cases. It does not keep well and there is some danger of hemorrhage after an operation.

We should confirm or disapprove the observations that have been made of this remedy. If confirmed, the agent will be a valuable addition to our resources.

THAPSIA. THAPSIA GARGANICA.

Part Employed—The root.

Physiological Action—The agent is a prompt vesicant and an exceedingly active counter-irritant. In certain cases it is singularly valuable, but the plaster must be an active one and its full influence should be obtained in from four to six hours. If it acts mildly and slowly much less good will result.

There is no pain, but in most cases an intolerable itching and if the surface is not scratched or irritated there is no spreading. It is sometimes necessary to cover the surface to prevent irritation, which may be allayed in a short time by the application of a starch paste, or by the use of the glycerole of starch.

Therapy—In stubborn, **bronchial disorders** Thapsia has produced immediate and permanent benefit. It is valuable in **chronic lung troubles,** especially where there is effusion or probability of suppuration. If the plaster is of French manufacture, six hours is a sufficient time in which to obtain its full effects, but if of American manufacture, it will require a longer time, but may be equally satisfactory. It can be relied upon wherever a strong, revulsive influence is required, and can be used in chronic inflammation of any organ, or, in fact, wherever cantharides is indicated this remedy will induce better results, without the drain upon the system induced by the latter named agent.

The application of a thapsia plaster will often cure persistent cases of **sciatica,** even when other measures have signally failed. In **neuralgia** of any kind it is of service and will be found beneficial in some cases of muscular rheumatism.

Because of the exceedingly irritating character of this agent, but little use has been made of it internally, and yet some excellent authorities claim much benefit from its action. Dudgeon speaks of this agent as a remedy for certain urinary conditions. He says it is a powerful anti-hemorrhagic and has a marked influence in correcting the uric acid diathesis. Rademacher prescribed thirty drops of the tincture five times daily in a case of **dropsy** with **hæmaturia,** both conditions disappearing promptly with the discharge of a large quantity of renal sand with the urine which was greatly increased in amount. A pupil of Rademacher gave the same dose to a woman suffering from **strangury.** She could not retain the urine, which was turbid, containing a red sediment and there was constant pain in the urethra, a cure resulting within one week.

Jousset has found the remedy useful in many forms of hemorrhage. Herr used it with success in the **painful urination** of **old people,** both with and without spasmodic retention. It apparently acts more satisfactorily where there is an excess of uric acid and in these cases it deserves further trial.

UNGUENTUM ZINCI OXIDI.

Synonym—Ointment of Zinc Oxide.

Therapy—It is useful in **cutaneous eruptions** of all character, as it is non-irritating and promotes rapid healing. In **ulcerations,** in **burns,** and in **excoriation,** or in bruised conditions of the skin it is valuable. An ounce of this ointment combined with two drams of bismuth sub-nitrate is a most valuable dressing for **sore nipples.** It is excellent, also, applied to fissures, oozing surfaces, **eczema,** and ulcerations of the anus and rectum, and to **piles,** especially if of recent origin.

LANOLIN.

Synonyms—Adeps Lanæ Hydrosus. Hydrous wool fat.

Therapy—As an ointment base, this substance is absorbed by the skin more rapidly than any other known base, faciliating also the absorption of the medicinal constituents of the ointment of which it forms a part. This author has proven this to his complete satisfaction in hundreds of cases, notwithstanding the statements of foreign experimenters, that it has no superior influence. It is soothing to the skin and healing to a remarkable extent and perceptibly promotes the growth of hair. An ointment, of which this is the base, applied to a given surface for thirty days will show a marked increase in the growth of the hair as compared with that on the surrounding surface.

GROUP IX.

Agents Acting upon the Female Reproductive Organs.

BLACK HAW.
VIBURNUM OPULUS.
SENECIO AUREUS.
HELONIAS.
MITCHELLA.
ALETRIS FARINOSA.
CAULOPHYLLUM.
FRAXINUS.
POLYGONUM.
LEONURUS CARDICA.
GOSSYPIUM.
TIGER LILY.
CYPRIPEDIUM.
ARALIA.

BLACK HAW. VIBURNUM PRUNIFOLIUM.

Part Employed—Bark of the root.

CONSTITUENTS—A brown resin, viburnin, valerianic, tannic, oxalic, citric and malic acids, sugar, earthy carbonates and phosphates.

Viburnin, a greenish-yellow, bitter principal, resinous, soluble in alcohol, sparingly soluble in water.

PREPARATIONS—Extractum Viburni Prunifolii Fluidum, Fluid Extract of Viburnum Prunifolium. Dose from half a dram to one dram.

Specific Medicine Viburnum. Dose, from five to sixty minims.

Physiological Action—Its influence is exercised upon the womb, regulating its function and soothing irritation. The agent has not had thorough study to determine its exact physiological action. It however exercises its influence through the nervous centers, soothing nerve irritation and possessing marked antispasmodic properties. It influences the motor side of the cord, producing progressive muscular weakness, loss of reflex action and ultimate paralysis. It apparently directly influences the action of the heart, as it lowers arterial pressure to a marked degree.

Its sedative influence upon the nervous system is conveyed to the uterus and appendages and there becomes apparent. It overcomes all forms of nervous irritation, and irregular functional action in these organs. It is the direct remedy for nervous conditions of the pregnant state.

Therapy—It is the remedy for dysmenorrhœa, especially that characterized by cramp-like pains of spasmodic character. It promotes normal uterine contractions and antagonizes those of an irregular character. It is valuable in menorrhagia and metrorrhagia, either of an acute or a passive character. In all of these cases its use should be begun a few days in advance of the anticipated disorder and continued through and beyond the menstrual period.

Viburnum prunifolium is especially a uterine sedative in **threatened miscarriage.** It is particularly indicated in **habitual abortion,** preventing an anticipated occurrence and permanently overcoming the habit. I have had practical experience extending over thirty years, and have perfect confidence in the agent based on repeated success. In one of my cases it caused the womb to suspend explusive action and to retain a dead fœtus for months; given in large doses after the fourth month no return of the expulsive effort occurred until the seventh, when the agent was discontinued, after which a four-months mummified fœtus was expelled without detriment to the health of the patient. She had decreased in size since the fourth month and there was no fetal movement. The agent, when there is no habit of abortion, will probably accomplish the desired result if begun after hemorrhage has continued some hours, if the membranes are not detached or the sac ruptured.

Doses of one dram of the fluid extract every hour are necessary until the pain subsides or the flow ceases. The patient must be kept in a recumbent position and perfectly quiet. It is safer to begin either preceding, or with the flow in these cases.

In habitual cases it is necessary to give the agent in occasional doses for one, two or more weeks preceding the time of the miscarriage, which usually occurs each time at the same month of the fœtal life. As the time approaches the patient is kept quiet and free from excitement, and the agent is given three or four times daily. The interval is shortened to one or two hours with the first suspicious indications at the usual time. If no symptoms appear the agent is continued beyond the period, and then perhaps in daily doses only for a week or two longer. The physician should advise the patient to remain constantly on the watch for indications suggesting the necessity of an increase in the doses. The agent will stop **induced miscarriage,** as well as other forms, if no injury has been done to the membranes.

In small doses, it is an excellent **partus preparator,** materially improving the conditions when irregular and distressing symptoms are present and greatly facilitating a speedy and uncomplicated normal labor. It controls **after pains** and prevents **post-partum hemorrhage.** It insures normal **involution** and assists in retaining a normal position of the womb subsequently, where malposition had previously existed.

In its influence in overcoming reflex nervous disturbances, it is often most efficient in controlling the **morning sickness** of pregnancy and the entire train of distressing symptoms present at this time. It changes the mental condition of the patient from that of depression and despondency, to one of cheerfulness and hopefulness.

There is probably no proprietary remedy advertised for female complaints, and for promiscuous use in cases of this character, that does not contain viburnum prunifolium as the basic remedy. Its field of usefulness is a wide one as far as the genito-urinary apparatus is concerned.

It is the remedy for **sympathetic disturbances** of the heart, stomach and nervous system, common to sensitive ladies with irritable nervous systems, preceding or during the menstrual epoch, depending on vasomotor derangement. It must be given in advance and continued through the period.

In a number of cases, when given for menstrual irregularities, or for the distress induced by **uterine displacement,** in previously **sterile females,** pregnancy has promptly occurred, proving the influence of the agent in restoring normal functional ovarian activity.

It must not be overlooked in the treatment of **irregular sudden, menstrual flow,** occurring during eruptive and low continued or violent inflammatory fevers, especially in young ladies. This occurrence is not uncommon in smallpox, scarlet fever, diphtheria, measles, pneumonitis, pleuritis, phthisis and typhoid fever. It is sometimes of serious import, and masked sepsis undoubtedly occurs in the cases, with severe peritonitis or metritis, to which the patient may succumb. With antiseptic douches and disinfectant measures, viburnum internally is the surest remedy known, in this condition. It is given in conjunction with other indicated remedies, and its use must be begun promptly upon the appearance of the flow.

Virburnum is well classed among **the tonics,** as there is usually a general improvement in all the body functions while it is taken which is usually permanent. It has a very satisfactory effect upon derangements of the stomach and intestinal tract, especially in females when the whole system is out of tone. It restores the nerve influence, improves the circulation, supplies nutrition to the womb and ovaries. It is valuable in dysmenorrhea which is due to debility.

It is mildly efficacious in irregular muscular movements, in **chorea,** especially if occurring from early menstrual derangement, and in some cases of **paralysis agitans.**

It is advised in **hysteria, hystero-epilepsy,** and **petit mal,** but its influence is mild. It will act in harmony with macrotys and passiflora and the bromides in these cases. It is an agent of great usefulness, and its field broadens with every practitioner, as his knowledge of its influence increases with practical experience in its use.

VIBURNUM. VIBURNUM OPULUS.

Synonyms—Cramp Bark, High Cranberry, High-bush Cranberry.

PREPARATIONS—Fluid Extract High Cranberry. Dose, from ten to thirty minims.

Specific Symptomatolgy—The specific influence of the agent is exercised in relieving **irregular spasmodic** pains of the **womb** and **ovaries.** It is antispasmodic in its action upon the entire pelvic viscera, influencing **spasmodic contractions** of the **muscular structure** of the **bladder,** and **spasmodic stricture** to a limited extent.

One of its specific indications is **pain** from the pelvic organs which begin in the back, extending through to the loins and down the thighs. This is corrected with twenty drops every hour or two. If this is accompanied with severe or profuse menstruation with a sensation of dragging weight in the back, the pains extending clear around the body, a drop or two of macrotys or ten drops of helonias with every dose will relieve the pain.

Therapy—Given prior to labor it is a **partus preparator** of much value, but its action is limited largely to its antispasmodic influence upon **erratic pains.** It is given with much benefit in severe after-pains, in **hysterical conditions,** with convulsive phenomena, and in **spasmodic dysmenorrhœa.** It is of advantage in that it prevents miscarriage, but to an extent greatly inferior to viburnum prunifolium, which agent, in fact, fully covers the field of operation of this agent, except in its anti-spasmodic influence.

SENECIO. SENECIO AUREUS.

Synonym—Life Root.

CONSTITUENTS—A bitter, acid principle, tannin, mucilage.

PREPARATIONS—Extractum Senecionis Fluidum, Fluid Extract of Senecio. Dose, from half a dram to one dram. Specific Medicine Senecio. Dose, from one to forty minims.

Physiological Action—Its specific influence is exercised upon the reproductive organs of the female, whether there be **amenorrhœa, dysmenorrhœa, menorrhagia** or **metrorrhagia**—a disordered condition of the uterine functions—it is regulated by this agent; a general out-of-tone condition of the uterus or appendages, a relaxed condition of the supports to the womb, resulting in mild forms of displacement. It may be given between or during the menstrual periods. In a general hyperæmic, irritable and atonic condition of the pelvic organs, it works to the best advantage. The results are not immediate, but they are marked when they do occur.

It is of value in engorged, **atonic conditions** of the **male sexual organs** also; it increases functional activity, and is of value in **impotency,** although but mildly so. It is a reliable diuretic. It adds tone to, and increases the function of the urinary apparatus, and overcomes urinary irritation; in strangury it has a direct influence.

Therapy—The agent is specifically a **tonic** to the nervous and muscular structure of the **reproductive organs** in the **female.** It regulates the **periodical discharges,** overcoming irregularity in the quantity of the monthly flow. It will render valuable assistance in the permanent cure of **leucorrhœa.** It removes the sensation of weight and engorgement experienced by many ladies in pelvic disorders, especially accompanying uterine displacements, giving great relief.

It will be found of value in **gonorrhœa, gleet** and **prostatorrhœa,** and also in the sexual irritability and impotence of the male.

Senecio has an influence on the mucous surfaces, relieving congestion and correcting catarrhal disorders. It **assists digestion,** stimulates the secretion of gastric fluids and overcomes the conditions which cause the food to lie heavily in the stomach. In the accumulation of frothy saliva it is useful and in a constipation accompanying uterine disorders it is especially valuable.

The agent has exercised an active influence in a number of cases of **capillary hemorrhage.** It has been given in **hæmaturia** in spoonful doses of the fluid extract, three or four times a day, with positive results. In **albuminuria,** with occasional attacks of hæmaturia, especially if occurring during pregnancy, the agent will act promptly. In hemorrhage of the lungs, or from the stomach of a passive character, it will work well. In **menorrhagia** or **metrorrhagia** it is directly indicated.

Co-operatives—In acts in harmony with viburnum, helonias, aralia, mitchella repens, and other agents of this character.

CHAMÆLIRIUM — HELONIAS

Synonyms—Chamælirium Luteum Blazing Star, Unicorn Root.

CONSTITUENTS—Chamælirin, fatty acid.

PREPARATIONS—Extractum Heloniatis Fluidum, Fluid Extract of Helonias. Dose, from five to thirty minims. Specific Medicine Helonias. Dose, from one to twenty minims. Helonin. Dose, from two to five grains.

Physiological Action—Helonias in large doses is a cardiac poison. In medicinal doses it is emetic, tonic, diuretic, vermifuge. Cattle are killed by feeding on it and the decoction will kill insects.

Specific Symptomatology—The most direct indication for the use of this agent is a dragging sensation in the extreme lower abdomen, and inclination to pull up, to hold up, or support the abdominal pelvic contents. In women suffering from pelvic engorgement and uterine prolapsus, with disordered menstruation, one drop of the tincture or fluid extract every two or three hours will relieve that sensation permanently.

Therapy—Homeopathists believe helonias to be particularly suitable for female disorders, where there is feeble constitution, where the nervous system is weakened and the patient is easily fatigued. It is restorative, promotes nutrition, promotes secretion of healthy fluids. It is peculiarly tonic.

Where **disorders** of the **stomach** are present with uterine or kidney disease, it should exercise a direct action. It cures **amenorrhea** and **menorrhagia** which depend on uterine atony. Where malpositions occur from weakness—loss of tone—where there is dragging sensation constantly present in the lower abdomen, or at the menstrual epoch, it is directly indicated. For the case of the worn mother who watches over the care of her charge, as well as for the young girl budding into womanhood, carefully and properly selected, this remedy will certainly give satisfactory results.

It is a pure and active restorative; is nutritious and promotes secretion; it promotes normal activity of the glandular organs. When glandular action

is prevented, from the influence of uterine or renal disease, it is especially serviceable. The underlying indication is uterine atony.

It will cure **amenorrhea, menorrhagia,** some cases of **leucorrhea,** and the **dragging down sensations** in the lower abdomen, which results from simple displacements. It will also relieve erratic pains of stomach and gastric disorders which depend upon or accompany this condition.

Wherever there is a tendency to **uterine displacements,** it should be used. If these disorders are present with **threatened abortion,** the remedy should be combined with viburnum, and both be given in full doses to prevent that condition. It, however, works more perfectly in combination with aletris farinosa and macrotys in **atonic** conditions, while caulophyllum and vibernum act best where **irritable** conditions are present. The remedy will **also control hemorrhages of a passive character.**

In addition, it is a general tonic improving the character of all the organs in their functional operations, and especially improving the tone of the **digestive apparatus.** It is a liver remedy of rare value, in many cases accomplishing most satisfactory results when there is deficient or perverted action.

A number of our physicians have spoken most highly of its action in **albuminuria.** It will be found valuable in those cases where the cause is some fault of the liver, as deficient action of that organ, and not due to heart or circulatory faults.

A number of excellent observers have confirmed this statement. Dr. S. B. Munn of Connecticut used it for many years with very satisfactory results. From another observation its influence would be improved in certain cases by the addition of phytolacca and where there is marked toxemia by echinacea.

If the sensation of dragging and weight occurs in the male from cystic disorder, the relief is fully as satisfactory. The general action of the agent in these cases is that of a **tonic** to the **genito-urinary** apparatus. It quickly overcomes the phosphatic diathesis, and in urinary irritability is serviceable, especially if from atonic causes. It is useful in impotence, and its properties as an aphrodisiac have been often noted.

MITCHELLA. MITCHELLA REPENS.

Synonyms—Partridgeberry, Squaw Vine.

CONSTITUENTS—Saponin-like, resin, wax, dextrine, mucilage.

PREPARATIONS—Specific Mitchella. Dose, from five to sixty minims. Syrupus Mitchellæ Compositus, Compound Syrup of Mitchella. Dose, from one to two drams.

Therapy—The sphere of action of mitchella is upon the reproductive organs, particularly upon those of the female. It is not enlarged upon by our writers, but is known positively to a few practitioners. It is **par excellence** the **partus preparator.** The importance of removing every possible influence that increases in any way the severity of **labor,** does not impress itself upon physicians, unless an exceedingly severe labor is anticipated, when the excess pain is alleviated at the time by chloroform and morphine. Not only can all complicating influences be removed, but the nervous system can be so influenced that parturition to the mother can be shorn of dread and terrors, and can be looked forward to without anxiety or fear. We are so apt to think of the pain and horror of labor as a natural inheritance for each mother—something that she must expect, and should not try to shun, that we do not take the care we could in many cases, to shield her from it.

If a good preparation of mitchella be administered once or twice daily for the sixth and seventh months of pregnancy, three times daily for the eighth month, and in larger doses as confinement approaches, the influence upon the entire system will be most marked. I have observed this influence in so many cases that doubt is impossible. Erratic pains and unsatisfied longings are removed, the nervous system assumes a tranquil condition, reflex symptoms abate, the urinary function is performed normally, the bowels become regular, imperfect digestion is improved, and the appetite bcomes natural. Labor approaches, devoid of the irritating, aggravating complications, the preparatory stage is simple, the dilatation is completed quickly, the expulsive contractions are strong, unirritating, and effectual, and are much less painful than without the remedy; involution is rapid and perfect, there are no subsequent complicating conditions to contend with, the patient's strength is not abated, and the function of lactation is in its best condition. This has been proven in very many cases. After making the above statements, evidences accumulated rapidly confirming their truth.

Auxiliary measures such as judicious dieting, a thorough oiling of the enlarged abdomen, and an occasional hot sitz bath for the last few weeks will materially assist the remedy. Less of it need be taken.

The bark of the fresh root in hot infusion given occasionally during the progress of labor when no previous care of the patient has been afforded the physician, will work wonders in some tedious aggravating cases.

In **uterine disorders** at other times this agent is a most effectual remedy. It overcomes painful menstruation, regulates the function, relieves congestion in the pelvic organs and soothes general irritation of the nervous system from uterine or ovarian causes.

Dr. Hemminger of Pennsylvania uses mitchella to **prevent abortion.** He gives it in twenty drop doses three times a day. In two years he had six cases that had aborted from one to three times each, always with dead children. With the use of this medicine, each of the six gave birth to a healthy child. The medicine was given throughout the entire period of gestation.

Co-Operatives—It works harmoniously with cimicifuga, pulsatilla, aletris, helonias, senecio aureus, and viburnum. Combinations of these agents compose the usual proprietary compounds, advertised as "female regulators."

ALETRIS. ALETRIS FARINOSA.

Synonym—Star Grass, False Unicorn Root, Starwort.

CONSTITUENTS—Not analyzed.

PREPARATIONS—Extractum Aletridis Fluidum, Fluid Extract of Aletris. Dose, from ten to fifteen minims.

Specific Medicine Aletris. Dose, from one to sixty minims.

Action—Emetic, narcotic, cathartic, tonic.

Aletridin. Dose, from one-half to one grain.

Specific Symptomatology—The conspicuous influence of this agent is upon the womb. It is indicated when the patient complains of **extreme weakness** in the **uterine structures,** when there is general feebleness induced from overwork or from oversexual indulgence, or from too **frequent childbearing.** In hyperactivity of the womb and ovaries from lack of tone, deficient menstruation, or sterility from this cause, pale insufficient flow at protracted intervals; anæmia and chlorosis, with insufficient menses in young girls, the agent is of great service.

Therapy—In the above named condition when iron or other tonics are used for their general influence, this remedy should be given for its specific

effect. Its direct influence upon the pelvic organs is sometimes magical under such circumstances. Aletris, in large doses, is narcotic, emetic and cathartic. It is a fine tonic and is efficient in flatulent colic and dyspepsia, increasing the tone of the stomach; used also with benefit in general and local debility. It is a host in hysteria.

One of our correspondents says he has frequently given aletris in cases of threatening abortion, for three, four, five and six months, the woman going her full term without any untoward effect, rendering the labor easy and safe. In **chlorosis, amenorrhea, dysmenorrhea,** and all engorged conditions of the uterus, as well as prolapsus of that organ, it is a charming remedy. It can be given alone, or combined or alternated with caulophyllum, or with macrotys, senecio or helonias as indicated.

"I have often combined aletris and viburnum opulus, or viburnum prunifolium. The viburnum will allay pain; both are sedative to the uterine and ovarian nerve centers. I do not know of any better remedy for such troubles than aletris and viburnum as anti-abortive. The dose is the same of viburnum opulus and viburnum prunifolium. It is a valuable remedy for uterine colic and other abdominal pains. Hence in ovarian irritation, or dysmenorrhea, viburnum will promptly relieve the pain.

"Flatulent colic is quickly relieved with equal parts of the fluid extracts of aletris, and dioscorea; ten drops given every hour; if the first dose does not relieve, which it often does, repeat. In leucorrhea, aletris, four times a day, or every four hours, will act promptly, if continued, where there is a debilitated condition, defective nutrition and anemia. If there is pain in the hips and back, constipation and piles, asculus hippocastanum can alternate with the aletris."

It acts promptly upon **prolapsus** or retro or ante-version with relaxed and enfeebled tissues. In emaciated and enfeebled women the influence of this remedy is markedly conspicuous. It improves the function of the ovaries, overcoming **sterility** and correcting habitual **abortion** promptly. In the extreme nausea of pregnancy with vomiting, dizziness, or fainting spells, this agent has a direct influence and may be relied upon.

It is not sufficiently well known, but is a constituent of many of the proprietary "mother's cordials" or "female restoratives" on the market. It acts exceedingly well with helonias, senecio aureus, viburnum, and caulophyllum or cimicifuga.

While given for its influence upon the reproductive organs, it tones the stomach, increases the appetite, improves the digestion and the appropriation of food, and thus directly promotes the elaboration of good blood.

CAULOPHYLLUM. CAULOPHYLLUM THALICTROIDES.

Synonym—Blue Cohosh.

CONSTITUENTS—Caulophyllin, leontin, two resins, gum, tannin.

PREPARATIONS—Caulophyllin. Dose, from one-fourth to one grain. Extractum Caulophyllum Fluidum, Fluid Extract of Caulophyllum. Dose, five to ten minims.

Specific Medicine Caulophyllum. Dose, from one to ten minims.

It is often necessary to continue this remedy, in whatever form given, over a considerable period of time in order to obtain its best results.

Specific Symptomatology—Felter and Lloyd give the following indications: Uterine pain, with fullness, weight and pain in the legs; fullness of tissues, as if congested; debility of the nervous system, with impaired mus-

cular power; spasmodic muscular pains, articular pain, rheumatic pains of asthenic plethora, epigastric and umbilical colicky pains, dull frontal headache, great thirst; as an oxytocic; to relieve false pains and uterine irritability; sexual debility, with excitablity; spasmodic uterine contractions, dysmenorrhœa, irregular menstruation, cramp-like pains in the stomach and bowels after eating, pain in the toes and fingers not due to tissue changes.

Therapy—In **chronic uterine** disorders, in broken down constitutions with various reflex symptoms, the remedy is a specific. In the **amenorrhœa** of young women, at the commencement of the menstrual period, it may be given with confidence. In **painful menstruation** it has an established reputation.

Dr. Hewitt of Chicago learned when a boy the use of caulophyllum in **scarlet fever.** When he became a physician, he put that knowledge to test very many times and always with success. He has positive confidence in this remedy, having seen such uniformly good results.

From the end of the sixth month to the close of pregnancy is a period when many distressing symptoms are manifested, which may, in a measure, be relieved by caulophyllum.

The growth of the fœtus has been compared to an apple, which, when fully ripened, falls from the tree. The effect of caulophyllum is to **prolong gestation** till the fœtus is fully developed, labor being a physiological process at full term, and not pathological, therefore less protracted, less painful, and less liable to accidents.

Many writers confirm the opinion that caulophyllum or caulophillin are excellent remedies in **labor,** contributing to the relaxation of a **rigid os,** increasing the strength of the pains. It will also assist materially in controlling an **abortion.** Using it in conjunction with viburnum, this influence will be enhanced.

This remedy as a **partus preparator** is equal in some cases to macrotys, and comparable with viburnum and helonias. It prevents **premature delivery** by a superior tonicity, which it induces in all the reproductive organs. It has caused many cases to overrun their time a few days, and yet easy labors and excellent recoveries have followed. It is a satisfactory remedy where there is a habit of having severe after pains, or where there are false labor pains, not productive of good, or where subsequent to the labor there are hourglass or other undue spasmodic uterine contractions.

It is a beneficial remedy in **hysteria,** and where there is constant **ovarian irritation,** or pain in the mammary glands, accompanied with general irritation; also in chronic disease of the uterus and ovaries or of the cervix. Also where there is cramp-like pains during **menstruation** or pain and soreness of the uterus, attributed to rheumatism. It is of much benefit in **subinvolution.**

Caulophyllum, although chiefly known as a remedy for the diseases peculiar to women, has been employed with advantage as a sedative and to control congestion, in **bronchitis, pneumonitis** and **whooping-cough.**

In **deficient labor pains,** caulophyllum is generally a reliable remedy.

A sufficient dose of the remedy may be given every ten minutes, till the pains become regular and efficient.

FRAXINUS. FRAXINUS AMERICANA.

Synonyms—Black Ash, Elder Leaved Ash, or White Ash.

PREPARATIONS—Specific fraxinus, ten to sixty drops. The Homeopathic mother tincture, same dosage.

Specific Symptomatology—Uterine disease, depending upon sub-involution. Dragging pains in the lower abdomen—great weight; a sensation of hardness extending into the vagina; irregular lochial or menstrual discharge; general plethora; constant headaches, with soreness and pain in the top head.

Accompanying these symptoms there is a sore spot on the top of the head which is hot, and where if continued the hair becomes stiff and brittle.

This is often accompanied with persistent headache difficult to control. The headache is not influenced by eating or sleeping. It resembles an anemic headache as it is more or less constant, unless relieved by the recumbent position or by a position in which the hips are raised and the head lowered.

Therapy—In uterine diseases, where there is no permanent organic change, Dr. Shafer gave this remedy first place. He used it for several years, and his observations should carry weight. It is indicated in **uterine tumors,** of somewhat speedy growth, and in **hypertrophy** of the **uterus.** Where the tumors are of long-standing its influence is less satisfactory. It influences cell proliferation in hypertrophy, assisting in the reduction of size of an enlarged organ and in the restoration of a correct position, normal function and normal size.

One patient had a sensation of much weight in the lower abdomen with a sensation of hardness extending down into the vagina, pressure in the rectum, hard and **enlarged cervix,** greatly enlarged womb, constant sensations of desire to pass urine with no relief when passed. The organ was reduced to normal size in four months' time, by the persistent use of twenty minim doses of this remedy four times daily. No other agent was used.

Another case of hypertrophy, resulting from a miscarriage, was as satisfactorily cured. Cases of **subinvolution,** following a poor getting up, after labor, were satisfactorily cured with this remedy alone. The agent must be given immediately following confinement in those cases where convalescence threatens to be protracted.

One young lady, severely injured by falling from a carriage, had severe uterine inflammation, which left chronic enlargement, as its result. She had been told that hysterectomy only would cure. The organ was enlarged to six times its usual size, though she was only eighteen years old. She was completely cured with this remedy alone.

Prior to the use of this remedy, for uterine disorders, it was recommended as one that influences the chylopoietic viscera. In large doses it will induce active purgation. It has found a place in the treatment of diseases of the liver or spleen, in that form known as ague cake, resulting in obesity, dropsical affections and constipation.

POLYGONUM. POLYGONUM PUNCTATUM.

Synonym—Smart-weed.

CONSTITUENTS—Not analyzed.

PREPARATIONS—Specific Polygonum. Dose, from one to sixty minims.

Therapy—In **suppression** of the **menses** from cold, thirty drops in hot water may be drunk every two hours. It is a prompt remedy. It may be begun two weeks before the menses should next appear, if one period has passed, and given every four hours in cold water, until a day or two before the expected time, when it can again be given in hot water. It acts well, also, when there is general plethora.

More recently, I have used it in conjunction with one or two of the other uterine remedies, carefully selected, in all forms of menstrual suppression,

except in feeble and anemic patients, and have found it efficient and readily controllable.

It acts promptly upon the skin and kidneys and seems to be to a certain extent antispasmodic, as in **hystero-epilepsy,** or epilepsy depending upon suppression of the menses, it relieves the paroxysms and reduces the number of the attacks.

Goss recommended it when there was **urinary suppression** from cold and in retention with lack of power in the bladder.

In certain forms of **flatulent colic,** when the pains are sharp and lancinating, intermittent, and of a severe griping character, it is curative.

LEONURUS. LEONURUS CARDIACA.

Synonym—Motherwort.

CONSTITUENTS—Bitter principle, volatile oil.

PREPARATIONS—Extractum Leonuri Fluidum, Fluid Extract of Leonurus. Dose, from a half to two drams.

Specific Symptomatology—This agent is positive in **suppressed lochia** from any cause, **amenorrhœa from cold; dysmenorrhœa,** with morbid nervous excitability, and **hysteria.**

Prof. John King regarded motherwort as superior to all other remedies in suppression of the lochia, giving it internally and applying a fomentation of the herb over the lower abdominal region. The author has used it with excellent results.

Therapy—It is prescribed in the above conditions, also in delirium tremens, typhoid state in fevers, chronic diseases with wakefulness, restlessness, disturbed sleep, spinal irritation, neuralgia of the stomach and head, feeble digestion, general debility, chorea, convulsions, nervousness from irregular menstruation, palpitation of the heart, associated with uterine disease, amenorrhœa, with chlorosis, cachexia and an irritable, excitable, enfeebled state of the nervous system, spasms and harrassing bearing down pains, and morbid sensibility from uterine disease, pain in the pelvic and lumbar regions in females.

Dr. Dawes of England uses leonurus for its action upon the heart. It is a simple heart tonic, promoting normal action, probably very mild in its influence. It would work well combined with cactus or crataegus or both, especially in the presence of nux vomica or collinsonia.

Motherwort is tonic and laxative, a diaphoretic somewhat like asclepias, an emmenagogue like cimicifuga and a nervine like scutellaria.

GOSSYPIUM. GOSSYPIUM HERBACEUM.

Synonym—Cotton.

CONSTITUENTS—An acrid resin, glucose, starch, fixed oil, tannin.

PREPARATIONS—Extractum Gossypii Radicis Fluidum. Fluid Extract of Cotton-root Bark. Dose, from one-half to one dram. Specific Medicine Gossypium. Dose, from five to twenty minims. Purified cotton (Surgeon's cotton), collodion.

Therapy—Gossypium is used as an **emmenagogue** and **parturient.**

It has a wide reputation among the slave women of the South as an abortifacient. It was used by them in the form of a strong infusion of the green root and is of value in suppression of the menses from whatever cause. It produces firm, regular and strong uterine contractions, much resembling

ustilago maydis and cimicifuga in its action. It may be used in **uterine inertia** to increase the natural expulsive power of the womb and prevent the dangers of post-partum hemorrhage. It is a **hæmostatic** of some power being used principally to control the hemorrhage of **uterine fibroids** and **incipient cancer.** It is a valuable agent for metrorrhagia and menorrhagia, but is not in general use, as the uterine tonics and stimulants in common use accomplish these results in their wider beneficial influence.

TIGER LILY. LILIUM TIGRINUM.

PREPARATIONS—Specific Medicine Tiger Lily. Dose, from one to ten minims.

Physiological Action—In 1863 Dr. Jeffries Wyman reported a case in which vomiting, purging, drowsiness, etc., were believed to have been produced in a little girl by the pollen of the tiger lily.

Tiger Lily seems to act upon the sympathetic nerves of the pelvis, increasing their strength and tone. It operates through the spinal cord, decreasing sexual irritability and materially improving the pelvic circulation. This influence is exercised best when the uterus and ovaries are greatly engorged and if there be **displacement** or **subinvolution.** Those conditions which occur from getting up too soon after confinement are improved by it, and those where the parts are slow in recovering tone, from any cause, or where there is danger of **permanent prolapse** from engorgement, are benefited by it.

Specific Symptomatology—Neuralgic pain in the uterus, ovaries, and mammæ, acid leucorrhœa excoriating to the labia, causing an eruption about the vulva and inflammation of the vagina; nausea from uterine disease or pregnancy; headache from uterine disease; nervous sick-headache; chronic inflammation of the uterus, with displacement; tedious recovery after child-birth; amenorrhœa, with burning pain in the ovaries; distress about the heart, with prolapse of the uterus; pain under the left breast; dysmenorrhœa; neuralgic pain in the uterus and ovaries extending down the inside of the thighs; a sense of weight and downward pressure in the lower abdomen; uterine displacements in general from debility.

Therapy—These symptoms of **uterine disease,** cured or relieved by tiger lily, show the action of the remedy within a limited sphere; but it is probable that it has a much wider range of action, as we find that the common white meadow lily was employed by the early settlers in this country as a general and local tonic in **prolapsus uteri;** and as a tonic in debilitated states of the female organs of generation, and in dropsy, while the root of the white pond lily was used as a local application to ulcers and inflammations.

Prof. John King says:

"I recollect a lady who, several years since, was pronounced by several physicians to have **uterine cancer,** and which resisted all their treatment; she was permanently cured by a squaw, who gave her to drink freely of the decoction of a root, as well as to inject it in the vagina, which proved to be that of the white pond lily—**Nuphar Alba.**"

Guided by the influence of these agents on the symptoms of disease, and by the diseases cured or relieved by them, we conclude that their action is similar.

Dr. Baldwin, of Michigan, uses the fluid extract of **Nuphar Lutea** in the local treatment of chronic uterine disease of whatever character or however severe, with the most gratifying results. His experience has extended over several years. The preparation is applied in full strength with cotton or on a tampon.

CYPRIPEDIUM. CYPRIPEDIUM PUBESCENS.

Synonym—Yellow Ladies' Slipper.

CONSTITUENTS—Volatile oil, volatile acid, two resins, starch, fixed oil, sugar.

PREPARATIONS—Extractum Cypripedii Fluidum, Fluid Extract of Cypripedium. Dose, from ten to thirty minims.

Oleo-resin of Cypripedium. Dose, from one to three grains.

Specific Cypripedium. Dose, from five to sixty minims.

Administration—It must be given in rather large doses. A preparation of the fresh root should be employed, as it loses its properties by drying.

The best results have been reported when doses of fifteen grains of the powdered root have been given, but from one to four grains every three or four hours is usually sufficient to relieve the nervous symptoms of typhoid fever.

Specific Symptomatology—The conditions in which this agent has been used may be summed us as follows: Nervousness, restlessness with constant change of position, irascibility, abnormal excitability, sleeplessness, nervous irritation from atony, neuralgia, delirium, nervousness of infants, hypochondriasis, morbid sensitiveness of the eyes, nervousness from long illness, abnormal irritability, nervousness from over-exertion of the mind, hysteria, delirium tremens, nervous headache, nervousness from gastro-intestinal irritation, irritation of the brain in young children with threatened convulsions.

Therapy—Cypripedium exercises a special influence upon **nervous conditions** induced by or depending upon disorders of the **female genito-urinary organs. Hysteria, melancholia,** restlessness with morbid excitability, sleeplessness, and pain from **general hyperæsthesia** induced by uterine or ovarian disorder will be benefited by this remedy. It will also relieve mental depression from spermatorrhœa and venereal excesses, acting somewhat like pulsatilla.

With children it allays **cerebral hyperæmia** from teething, irritation of the brain in scrofulous children, with nervousness and sleeplessness, and irritation in cases in which the mental faculties are prematurely developed.

It may be used in morbid vigilance, and jactitation in **typhoid fever, typhomania** and great sinking of the vital powers in adynamic fevers, also where there is morbid depression from chronic dyspepsia.

Cypripedium stimulates the nervous system in a moderate degree, and is suitable for cases where nervousness is the chief feature. It will relieve pain where restlessness and nervousness are associated with headache or neuralgia. Under its influence these patients become cheerful, and the nervous agitation disappears.

The action of cypripedium is feeble, and relieves only functional derangement.

In scrofulous children its action is only temporary, and the syrup of calcium phosphate, with Fowler's solution, and cod-liver oil may be added to the treatment to overcome the constitutional tendency to development of tubercular disease.

ARALIA. ARALIA RACEMOSA.

Synonym—American Spikenard.

CONSTITUENTS—Volatile oil, resin, sugar, pectin, starch.

PREPARATIONS—Specific Medicine Spikenard. Dose, from five to forty minims.

Specific Symptomatology—Suppression of **the menses** from cold. **Suppression** of the **lochia** with pain in the uterine region. **Chlorosis, dysmenor-**

rhœa. Acrid leucorrhœa with an offensive odor. Bearing down pain from prolapsus uteri. Indolent, irritable, fetid ulcers.

Therapy—The agent is also prescribed with advantage in **asthmatic breathing**, humid asthma, hay-fever, bronchitis, and laryngitis in the early stage, coughs and colds, earache and deafness.

Chronic pulmonary complaints, phthisis, scrofulous enlargement of glands, chronic catarrh, pain in the stomach in gouty subjects, rheumatism, syphilis. Cachectic conditions are benefited by this remedy, also irritation of the bladder and kidneys, with scanty urine.

Aralia racemosa is stimulant and diaphoretic with a special affinity for the respiratory organs. It may be given to produce perspiration in the early stages of coughs and colds and to asthmatic patients whose complaint is aggravated by catarrh from taking cold.

In chronic complaints of the **uric acid** or gouty diathesis, and in syphilis, it increases waste, removes morbific products from the system, and gives tone to all the organs.

As a local application in chronic ulcers and chronic skin diseases it is both stimulant and antiseptic.

In foul smelling and acrid leucorrhœa, used as an injection, it acts as a disinfectant and may be employed to advantage.

A preparation made from the fresh root should always be employed, to get the best results.

GROUP X.

Agents Acting Upon Micro-Organisms and Parasites.

CHAPTER I.

IODOFORM.	RESORCINOL.	FORMALDEHYDE.
ARISTOL.	GUAIACOL.	SULPHUR.
BORIC ACID.	GUAIACOL CARBONATE.	SULPHUROUS ACID.
CREOSOTE.	POTASSIUM PERMANGANATE.	ARSENITE OF COPPER.
PHENOL.	PEROXIDE OF HYDROGEN.	SALICYLATE OF BISMUTH.
	THYMOL.	

IODOFORM.

Formula—CHI_3.

Synonyms—Triiodomethane, diiodomethyl-iodide, formyl iodide.

Physiological Action—In its application to open sores and wounds Iodoform is not likely to produce constitutional effects, and yet poisoning has occurred. The symptoms of such an occurrence are usually a feeling of great lassitude, nausea, vomiting and the perception of odors not present (olfactory hallucination). There are headache, insomnia, rapid pulse, and cerebral excitement. In one case where the writer had freely applied an Iodoform ointment on a large burned surface for several days, there were trembling, cold sweat and a noisy, excitable, mirthful mania for several hours. There is apt to be urinary suppression, or hæmaturia. These symptoms may be followed by coma and death. There is a marked difference in the susceptibility of different patients to its toxic influence. The aged are especially susceptible and children are less liable to be unpleasantly affected.

The influence of this agent upon disease germs is not great but it is actively antiseptic. In this it is unique. It is asserted that it does not prevent the growth and development of pathogenic germs in culture media; that it is not always sterile, but it is sometimes capable of conveying disease. Its beneficial influence is explained in the face of these facts by the assertion that it is decomposed in the presence of germ development, and the product of this decomposition, acting upon the ptomaines, one of the products of germ growth, renders them inert, innocuous. In this manner it is asserted to control or inhibit suppuration. In some cases it is necessary to render iodoform sterile by washing it with a sterilizing solution.

Therapy—Iodoform, then, is not the remedy for poisoned or septic wounds. It is the poison here introduced that we have to contend with usually and not the ptomaine induced by the processes of the growth of a germ of disease.

It is of service in discharging wounds, open offensive ulcers and putrid sores. There was, a few years ago, no agent of more general use as a surgical dressing than this. It has more recently been superseded by agents devoid of its objectionable odor. It is not considered especially efficacious in promoting granulation, in fact it has been declared to retard this process, but it prevents most effectually the influence of disease germs upon the open surfaces.

It is useful in nearly all surgical operations. Its great objectionable feature is its offensive and penetrating odor.

It is serviceable made into a vaginal suppository which contains five grains, for introduction immediately after labor and following antiseptic douches. In isolated cases the patient, in the absence of an attendant, can be persuaded to introduce a suppository into the vagina morning and night, especially if there be a denuded mucous surface or a slight laceration, or if there has been an operation for laceration.

Suppositories of iodoform may be introduced into the rectum in the treatment of **fissures, ulcers,** or **hemorrhoids,** to an excellent advantage.

The use of iodoform in **tubercular conditions** has followed naturally upon the development of the knowledge of its antagonistic influence toward tubercular bacilli. In Europe it was injected into the lung structure through the chest walls in the form of a one per cent solution in sweet almond oil, but few in this country adopted so extreme a measure.

Its use with us is confined to tubercular caries of the joints, **tubercular deposits** of the **skin,** and **pus sacs** from the presence of tubercular deposits. The pus is evacuated under strict antiseptic precautions, and the cavity thoroughly irrigated with a mild carbolic acid or boric acid solution. A sterile emulsion is prepared of ten parts of iodoform to ninety parts of olive oil. From one to five drams of the emulsion, according to the size of the cavity, are injected and retained. This is repeated every two to five days. In cases where healing fails to occur after a reasonable time it often becomes necessary to reopen the cavity, thoroughly cleanse it, remove all diseased material and perhaps pack it with iodoform gauze for a short time or continue the injections as seems indicated.

It is claimed that the local cutaneous manifestations of leprosy disappear quite readily when injections are made of a twenty per cent solution of iodoform in olive oil. In tubercular infiltrations and other deposits where pus has not formed, a small quantity of the emulsion is injected. It prevents the development of bacilli, assists in the removal of the retrograde waste and promotes the essential healing processes. The use of the emulsion in cold abscesses, especially those having numerous fistulous openings, will yield satisfactory results.

It is also advisable in the treatment of **gonorrhœa** or **gleet** incorporated in a soluble bougie and introduced into the urethra. A very small quantity of the iodoform is sufficient in each bougie. Five grains is altogether too much and may prove irritating; from one-half to one grain is sufficient.

The objectionable odor of iodoform is difficult to mask. The balsam of Peru, freshly ground coffee, aromatic oils, especially the oils of citronella or thyme or eucalyptol may be used. Iodoform has been given internally as an active alterative, and as a stomach tonic and intestinal antiseptic. It is given in pill form usually combined with other stomachic tonics.

ARISTOL.

Synonyms—Thymoliodide, **Annidalin.**

Therapy—In its therapeutic properties the agent is the analogue of iodoform, performing its good offices without odor and without danger. It may be used in exactly the same conditions as iodoform. With lanolin it makes an excellent ointment. It is suggested that it increases the discharge of serum from wounds and is best used in dry sores and skin disorders and in wounds where there is not much moisture. It has been used dusted into the eye in interstitial keratitis with good results.

A SUMMARY AND COMPARISON OF REMEDIES ACTING ON THE REPRODUCTIVE ORGANS OF WOMEN.

ACTION	VIBURNUM PRUNIFOLIUM	HELONIAS DIOICA	SENECIO AUREUS	MACROTYS	ALETRIS FARINOSA
GENERAL INFLUENCE	Acts mildly as a nerve sedative, and antispasmodic. Produces muscular relaxation, and reduction of reflex irritation. Corrects nervous irritation during pregnancy. Has a tonic and soothing influence on the entire uterine structures. Regulates sympathetic disturbances, from uterine irritation. Overcomes sterility.	Has a pronounced tonic influence, in general relaxation and feebleness of uterine structures. Specific in prolapsis, with a dragging or pulling down sensation in lower abdomen. When there is pelvic engorgement with prolapsis.	Indicated in atonic disorders of the uterine function, with much loss of tone and general relaxation; in misplacement from this cause; in passive congestion with feebleness and flaccidity; increases ovarian activity, and overcomes sterility. Acts somewhat upon and through the central nervous system.	Exercises a wide influence on the nerve centers, and their blood supply. Is a mild motor depressant and nerve sedative. Positively relieves muscular soreness or aching, induced or idiopathic, from whatever cause. Relieves erratic nervous conditions; acts directly upon the reproductive functions.	Indicated in extreme weakness of the reproductive organs, induced by overwork, by oversexual indulgence or by frequent child-bearing; corrects uterine displacements from these causes; materially improves digestion and assimilation. Acts in harmony with other tonics.
ON THE MENSTRUAL FUNCTION	Indicated in dysmenorrhea, with cramplike or spasmodic pains. Corrects nervous irritation and sympathetic disturbances; a tonic and corrective in persistent irregularity, either in time or quantity.	Is auxiliary only in menstrual disorders, tends to regulate the menses when irregular from engorgement or misplacement, or when influenced by frequent child-bearing. Corrects reflex irritation from menstrual disorders.	Relieves nervous irritation mildly, restores tonicity; promotes normal regular flow, in atonic cases, and prevents excesses; must be given during intermission and during the period also, and continued past two or three epochs.	In menstrual disorders, accompanied with aching or muscular soreness, and cool skin. Relieves amenorrhea with these symptoms; will control congestive dysmenorrhea. Its influence here is enhanced by aconite or belladonna. Is beneficial in menorrhagia and metrorrhagia; is given in menstrual irregularities of young girls.	Acts directly in irregular and especially infrequent menstruation, where with the protracted intervals there is pale, colorless, insufficient flow; acts in feeble, pale women with general relaxation accompanied with languor and weariness.
TO PREVENT MISCARRIAGE OR ABORTION	The best of remedies for this purpose, reliable in emergencies if given in full doses, frequently repeated. Reliable in habitual abortion; will prevent induced abortion if membranes are not ruptured. Should be given in advance in habitual cases, and continued past the time.	Not to be relied upon in emergencies; of assistance to prevent abnormal conditions, which induce habitual abortion.	Is not depended upon alone, facilitates the action of viburnum, and helonias.	Is not depended upon. Acts more like ergot; is given only in small doses, for its specific indications.	Not reliable for immediate results, when abortion is threatened; corrects the tendency to habitual abortion; improves the ovarian function and overcomes sterility.
AS A PARTUS-PREPARATOR	Abates nerve irritation, restlessness, and hysterical symptoms and erratic pains; contributes to a normal condition; prevents morning sickness; induces cheerfulness and hopefulness and prevents accidents.	Is not used alone, but in combination with mitchella and cimicifuga produces a reliable compound. Does away with erratic pain, and liability to accidents or malpositions.	Not active except to a limited extent; used in conjunction with the other remedies. Indicated by extreme loss of tone.	The most frequently used remedy for this purpose, less reliable than mitchella; removes erratic pains, and irregular conditions; overcomes hysteria, soothes general muscular irritation; and conduces to a normal, easy, short labor.	Important for women who seem to be too feeble to bring forth children; improves all reproductive functions; has no specific influence like mitchella and cimicifuga in promoting easy labors; overcomes nausea, vomiting, vertigo, and fainting spells.
IN LABOR	Promotes normal conditions, with regular normal contractions, soothes undue muscular irritation. Prevents hemorrhage.	Is not used in labor for any direct influence. The benefits obtained are secured by its previous use.	Is not depended upon during labor.	A most reliable oxytocic; produces normal, regular intermittent pain; does away with erratic and irregular pains, especially if of rheumatic or neuralgic origin. Prevents postpartum hemorrhage; relieves nervous irritation.	Has no direct influence during labor.
AFTER LABOR	Restores normal tone, and normal capillary circulation, prevents subinvolution, prolapsis, and malposition.	Preserves tone in the structures, preventing subinvolution, prolapsus, and malpositions.	Restores suppressed lochia, promotes normal uterine contraction, antagonizes a tendency to relaxation; promotes normal after pains, and tends to prevent excessive flow.	Relieves severe aching and muscular soreness, controls postpartum hemorrhage, promotes normal involution; militates against the recurrence of uterine misplacement; cures persistent leucorrhea, especially if accompanied with relaxation and hypertrophy.	Acts in conjunction with iron tonics, in overcoming general weakness and especially anemia, as it improves the blood; is of benefit in general inactive conditions of the digestion and assimilation.
ON OTHER CONDITIONS	Is valuable in erratic conditions of the menstrual functions, and at the menopause. Valuable during protracted or eruptive fevers, where there is irregular menstruation, with impending uterine inflammation and sepsis.	Benefits urinary disorder; relieves the phosphatic and uric acid diatheses. Is of benefit in albuminuria if accompanied with hepatic complications; corrects liver and stomach disorders during pregnancy.	The most pronounced influence is general, from prolonged administration, either during irregular menstruation, during pregnancy, or in the menopause. Used persistently, its influence is plainly apparent, and positively beneficial.	This agent must not be classed as only a uterine remedy. It is of much value in fevers with its specific symptomatology and in inflammation of the kidneys and bladder and in malarial fevers. Aching and muscular soreness are its plain indications; of first importance with gelsemium in anuria, especially if causing eclampsia.	Strengthens the uterine structures and supports; prevents subinvolution, and promotes the elaboration of good blood.

ACIDUM BORICUM.

Synonyms—Boric Acid, Acidum Boracicum, Boracic Acid.

Physiological Action—In excessive doses it depresses the spinal centers and has produced depression of the heart, with slow, feeble pulse, reaction of temperature and disturbed respiration, nausea, vomiting, hiccough, great mental depression, impaired mental action, dullness and ultimately coma. There are cutaneous irritation and eruption with ecchymosis and œdema. It is eliminated through all the emunctories.

As an antiseptic application, the agent is not poisonous, enough will hardly be applied to produce serious results.

Its germ destroying properties are not considered great, and yet its influence is of such a character that it has come into general use as a dressing powder for **wounds,** and its cleanly, odorless, non-toxic and non-irritating character gives it great popularity as a dry dressing after **surgical operations** of whatever character.

Therapy—As a mouth wash in cases of **ulceration,** in **aphthous** or **gangrenous stomatitis,** it is useful and acceptable to the patient. It has been successfully used in **diphtheria,** both as a gargle, and for its constitutional influences.

To a saturated solution of boric acid, a few grains of thymol or eucalyptol can be added and a most serviceable antiseptic for general external or internal use may be improvised. Its odor and taste can both be made very pleasant as a mouth or throat wash, or as a spray in the nasal cavity. It may be so combined as to answer an excellent purpose as an intestinal antiseptic where such an agent is needed. Boric acid is freely applied to **erysipelas** with excellent results, it is applicable in the form of a wet dressing on gauze and is quickly soothing and healing.

In saturated solution it forms a serviceable wet dressing for infected **wounds** whilst evaporation is prevented by the application of oiled silk or rubber protective. It may be left on for twenty-four or forty-eight hours if necessary and the virulence of the infection with the inflammation quickly abates. Applied to **boils** or **carbuncles,** the same wet dressing is more effective than poultices.

It is excellent in its application to open **abscesses** that have been thoroughly cleansed from pus and put into an aseptic condition, the dry acid here freely powdered on the granulating surfaces quickly promotes the healing.

Bromidrosis of the feet or of the axilla or other local forms, is successfully treated with this solution. **Bromidrosis universalis** will yield to its use promptly, but thoroughly alterative treatment is needed in these cases.

In **cystitis,** its solution is used freely as an irrigating fluid, especially if the urine is ammoniacal, and it is acknowledged to be of much value and perfectly safe. It has a soothing and healing influence upon mucous surfaces which is most kindly. In cases of this nature it is also given internally in doses of from six to ten grains every three hours. It is applied freely to **ulcers** of the **womb** after thorough cleansing, and it quickly promotes healing.

A solution of boric acid to which a small quantity of morphine is added, sometimes is very prompt in its action on various forms of **pruritus** wherever existing.

It forms an excellent wash in the common forms of inflammation of the eyes and may be used freely and safely, as it is non-irritating. It is especially valuable in **ophthalmia neonatorum.** It is used in **conjunctivitis** and in **granular lids.** A solution of five grains to the ounce is of sufficient strength for the eyes.

Rister's ointment, very useful for rough and **abraded skin,** sunburn, tan and freckles, for chapped hands and **minor burns,** is made by combining a dram each of boric acid and white wax with two drams each of lanolin and oil of sweet almonds.

CREOSOTUM.

Synonym—Creosote.

Physiological Action—In its physiological action it closely resembles carbolic acid. It is powerfully antiseptic, and is eliminated through the lungs and bronchial mucous membrane as well as through the kidneys. This fact renders it of service as a stimulant to bronchial secretion and a sedative to bronchial irritation. It thoroughly disinfects the lung structure and destroys germs there, and allays irritability of the gastric mucous membrane as well.

Therapy—The agent has come into general use in the treatment of **phthisis.** A purified form is used, and administered in a variety of ways. It is taken in doses varying from one to three drops combined with wine, glycerine, syrup of acacia, and other syrups of various characters, and in pill form. It diminishes cough, expectoration, fever, night sweats and diarrhœa, has a soothing action on the stomach, checks fermentation, allays irritation and controls vomiting. It promotes the absorption of food and encourages nutrition. It is truly a valuable adjunct to the treatment and has stopped the progress of the disease in its incipiency.

In purulent **pneumonitis** with formed cavities, it is a superior agent. The combination of beef peptinoids and creosote is a palatable and nutritious combination in this stage of the disease. Its antiseptic and stimulating influences are apparent from the first. In chronic **bronchitis** and **bronchorrhœa** it has a specific influence in correcting offensive expectoration.

Valentine gave creosote in a number of cases of **diabetes mellitus.** He began with the daily dose of four drops and increased it to ten. The sugar disappeared and did not return with a starch or saccharine diet. It has also been used in **Bright's disease** and in some cases its influence was believed to be beneficial. It is contra-indicated in large doses as the kidneys will become irritated by it.

RESORCINOL.

Synonym—Resorcinol U. S. P. Metadioxybenzol.

Physiological Action—Resorcinol is closely allied to carbolic acid and is used in many of the conditions in which the latter is indicated. In full doses it produces extreme perspiration, salivation, vertigo, fullness in the head and deafness, unconsciousness and convulsions. It has an antipyretic influence, quite marked, but too depressing.

Therapy—It is specifically an intestinal **antiseptic.** For this purpose it us used in **catarrhal gastritis** with **gastric ulcers,** with much satisfaction. The dose is from one to four grains in capsules, or pill form before eating. Its use has been persisted in through the course of **typhoid fever** and in **typhoid** conditions accompanying **pneumonia** and other inflammatory fevers, also in fetid **bronchorrhœa,** and during the stage of pus formation in inflammatory fevers, and in **cholera infantum.** It has been used to good advantage in **whooping-cough,** and should be of much service in **diphtheria.**

Externally it is used as other stimulating antiseptics in ulcers and abscesses, to irrigate pus cavities, in **otorrhœa, gonorrhœa, leucorrhœa, gan-**

grene, boils, carbuncles, chilblains and **frost bites.** In **skin diseases,** it is used in erysipelas, eczema, psoriasis, herpes, **chancres,** and in **myoma and epithelioma.**

PHENOL. ACIDUM CARBOLICUM.

Synonyms—Carbolic acid, B. P., phenol, U. S. P., phenic acid, phenylic acid, phenylic alcohol.

Physiological Action—Phenol is deadly in its action on the lower forms of vegetable and animal life, destroying disease germs and opposing putrefaction and fermentation. It prevents saccharine fermentation but does not interfere with the conversion of starch into sugar.

Taken into the mouth or applied to the skin, it produces burning and irritation, followed by numbness, having marked local anæsthetic properties. If its application be prolonged, it destroys tissue and may produce sloughing. This, or gangrene may be the result if it be painted around a finger or toe, or if a small area be included in its application. It occludes the capillary circulation by its constringent influence, and local death results.

It is readily absorbed, even through the skin, and poisoning is common through absorption from a broken surface or open wound. Taken internally, it induces diminution, or suppression of urine, with pallor, nausea, vomiting, nervous trembling, contracted pupils, abnormal nerve sensations and suspended reflexes. There are often great nervous shock, coldness of the skin, feeble, shallow breathing, collapse and sudden death from paralysis of the respiration. The evidences of its having been taken by mouth are the white patches of the mucous membrane of the lips—tongue and mouth covered with white skin from its rapidly destructive influence.

Phenol is astringent and stimulant in its local applications. It stimulates and promotes granulation in indolent ulcers, coagulates albumen and to an extent controls passive local hemorrhages.

Antidotes—When poisoning has occurred from its ingestion, the most speedy and accessible chemical antidote for immediate administration is dilute vinegar, or acetic acid. The vinegar should be diluted so that it will not induce strangulation, and a large quantity should be drunk freely at once.

Alkalies are in common use, such as solution of common soap or sulphate of magnesium or calcium. If the syrup of lime or lime water is at hand, either is indicated. The whites of eggs are a domestic remedy. The stomach should be washed out after the administration of the neutralizing agents, and if the patient survives, the magnesium or calcium sulphate should be continued several days to neutralize and antagonize the acid in the system. Cream drunk freely is of great benefit.

A negro who had taken a strong solution of phenol instead of whiskey was given a dram of the tincture of iodine in one dose, diluted with water. The results were highly satisfactory. Some children drank a phenol solution and to them was given the iodine solution, with water with the same results. The iodine with phenol produces an insoluble iodophenate.

Therapy—The agent is a great favorite in private practice in all surgical operations and for the complete disinfection of instruments. In hospital practice the bichloride of mercury has been until recently commonly used in preference, although more dangerous and absolutely inapplicable to instruments.

The application of a weak solution of carbolic acid is authorized in all forms of **wounds** or **sores** or **open surfaces,** and as a parasiticide to tinea in its various forms. It is also used in many varieties of **skin disease** and in

small-pox to prevent the itching and pitting. In anticipation of the latter disease it is used internally as a prophylactic.

Its application in full strength is indicated in **carbuncle,** a single application sometimes destroying the malignancy. In cases of this disease and in **malignant** pustule it not only destroys the germ of the disease, and thus the malignancy, but it relieves the pain by its anæsthetic influence. It has been employed to retard the growth, to destroy the odor, and to relieve the pain of **cancers.**

In **fermentative dyspepsia** with bad breath and a bad taste in the mouth, carbolic acid internally in doses of from one-sixth to one-half of a grain, in syrup or emulsion or in pill form, serves a good purpose. It is useful in **dilated stomach** and is excellent in some cases of **obstinate vomiting.** As a general intestinal antiseptic it is rather too poisonous and too difficult of administration for common use, and it can be readily displaced by other non-toxic and not unpleasant remedies, having been used in all diseases where profound antisepsis was necessary. It has been volatilized and inhaled in **diphtheria, croup, bronchitis or pneumonitis** with purulent discharge, and in **whooping-cough.**

A drop applied on cotton will allay the pain of an **aching tooth.**

This agent is of material benefit in the injection of piles. These tumors have been treated by this measure for two or more decades. When carefully adjusted, the treatment is usually satisfactory. The agent was recommended by Bacelli of Italy some years ago as an injection to destroy the tetanic bacillus. The dosage he advised was large and few accepted his suggestions. More recently, in the United States, especially among our own physicians, the agent has been frequently used in conjunction with glycerine and an active antispasmodic in tetanus, with curative results. One reliable authority cured twelve successive cases by a sixty minim injection of equal parts of phenol, gelsemium, and glycerine. Others report favorably.

A paste made of linseed oil seven parts, phenol one part, and sufficient whiting (calcium carbonate), has been used by our physicians for many years. Advised by Dr. Whitford, and by Dr. Bennet of Halifax in the treatment of carbuncles, abscesses, sloughing wounds, and seriously infected open sores, many have reported this superior to better known applications.

Ten drops of phenol and one dram of epsom salts in four ounces of water makes an excellent application over local inflammations where there is pain and redness.

GUAIACOL.

Synonym—Methyl Pyrocatechin.

Therapy—It is preferable in the treatment of phthisis to creasote, acting in the same manner, but more promptly and satisfactorily. It is given in wines or glycerine or in pearls or capsules. Its vapor is added to hot water and inhaled in chronic bronchial and lung troubles.

It is useful also in **tubercular** conditions of the **skin** and **joints** and in **lupus.** Antipyretic properties are attributed to carbolic acid and creasote, but this agent possesses them to a marked degree. If applied to the skin in fevers, it slowly reduces the temperature. This has taken place suddenly but usually without great depression or prostration. The great disadvantage is that after a reduction so induced, the patient is apt to have a chill and the temperature then rises as high or higher than before. Stolzenberg says there is great sweating and profound prostration after its use. It is unreliable and in fact, dangerous, when used for this purpose.

It has also been given in **gastric** ulcer and in **typhus** and **typhoid fever** and in **cholera** with good results. It does not undergo decomposition in the intestinal canal nor in the blood, as its odor can be detected in that fluid and in all the fluids and tissues of the body after it has been taken for some time.

For its external influences it can be applied where carbolic acid is indicated, but for many reasons the latter drug is often preferable. It will replace carbolic acid to advantage where there are inflamed serous or mucous surfaces or glandular structures with foul ulcers or gangrene. In **purulent otorrhœa, malignant** sore throat or **gonorrhœal** discharges, **leucorrhœa** or **chronic metritis,** it is useful.

GUAIACOL CARBONATE.

Synonym—Carbonate of Guaiacol.

Therapy—This agent has been brought into prominence by the theory that in certain complex combinations it may be made the active agent in the abnormal of **typhoid fever.** There has been a great discussion of its action in recent periodical medical literature; but we find that the best results are no better, if as good as those obtained from our own usual methods, and have the enormous disadvantage of inducing greatly increased irritation by combination with intestinal irritants. Used alone or in non-irritating combinations, the agent will prove to be a valuable intestinal antiseptic; but like all agents that depend upon decomposition in the intestinal canal to release its active constituents, it must be more or less unreliable.

It is used in **fermentative diarrhœas** and other intestinal conditions depending upon decomposition, but we much prefer to depend upon our safe vegetable intestinal antiseptics and depurants to produce the desired results.

This agent is now being extensively experimented with intravenously in the treatment of **pulmonary tuberculosis.** So far, very encouraging results are reported. It is proving beneficial in these in conjunction with salicylic acid in large doses of concentrated solutions in **chronic rheumatism;** in **tubercular adenitis** and other local tubercular conditions, and in some forms of **goiter.** In a tabulated statement of observations made of a writer in The New York Medical Journal in 1914, this combination made by far the best showing in pulmonary tuberculosis.

THYMOL.

Synonyms—Acidum thymicum, thymic acid.

Therapy—This substance is a pleasant, stimulating antiseptic, and, when too freely used, is an irritant of much power, but rather expensive for general surgical use. Flies are drawn to it by its odor, which is also an objection. It is also a local anæsthetic to both the mucous membranes and the skin, and is quite permanent in its effects.

It is used in all the conditions named for carbolic acid and the other phenols. It is especially desirable in that it adds to the pleasantness of the odor and taste of antiseptic douches, washes and gargles.

It is applicable to **putrid** and **gangrenous sores** and as a stimulating antiseptic gargle in **diphtheria.**

It is the active constituent of a popular remedy for chronic **nasal catarrh,** which was advised ten years ago by an English physician, and afterwards much praised in this country. In combination with menthol, it is constantly used by rhinologists and laryngologists in the form of spray.

The internal use of thymol will destroy the filaria sanguinis hominis, the cause of **chyluria,** and is thus curative in that disease. This is especially true if it be given in conjunction or in alternation with gallic acid.

Sandwith (Lancet) claims that thymol is a most perfect destroyer of the **ankylostomum duodenale** and many accompanying parasites in the intestines. Sometimes it takes many doses of the drug to destroy the last remaining nematode. In extreme cases two doses of 30 grains each are given on an empty stomach, and in two hours a purge is given. Subsequent smaller doses may be given on two or three occasions. The treatment is usually effectual.

POTASSIUM PERMANGANATE.

Formula—$KMnO_4$.

Therapy—This agent is a powerful antiseptic, this property being exercised by virtue of its innate ability to readily release its oxygen. A solution of this salt in the strength of from ten to twenty grains to the pint of pure water is of excellent service in cleansing pus forming surfaces. It is valuable as an irrigating fluid in cleansing **pulmonary abscess** and in washing out the pleural sac after the evacuation of pus. Its influence is similar in all such cases to that of the peroxide of hydrogen, but it is more efficacious, although not usually as manageable.

In extreme cases of **cystitis,** this solution may be used as an irrigating fluid, but it is advisable to immediately follow the use of the solution with a douche of sterilized water.

The solution is applicable to unhealthy granulating surfaces, to **cold abscesses** and to slowly healing **open wounds,** especially if purulent in character. In all such cases and in any condition where there is foul odor, its deodorizing properties serve an excellent purpose. In malignant **diphtheria** and putrid ulceration of the throat or mouth, it is useful, also where the gums are spongy, and decaying teeth produce a disagreeable odor. It forms an excellent wash in **chronic catarrh** with an unpleasant odor, and in **otitis media.**

It is applicable to **felons,** slowly healing **boils** and **carbuncles,** and **open cancerous surfaces** may be freely irrigated with a warm solution of the permanganate three or four times daily. It destroys the odor of cancer and delays the rapidity of its development. The solution is useful in the treatment of **cancer** of the **os uteri.** It is of much value in simple ulcerations of the cervix and in offensive forms of leucorrhœa. The application of the solution on cotton or other dressings is useless, as it is decomposed before it reaches the diseased surface.

Applied immediately to **poisoned wounds,** by its oxydizing power, it at once destroys the venom. If it be applied into the open wound and the solution be injected hypodermically into the tissues immediately around the wound, poisonous results may be averted. Its antidoting power in these cases is chemical, not physiological, consequently it is valueless if free absorption has taken place.

Administered in full doses after the taking of any organic poison—the alkaloids and organic acids, and phosphorus into the stomach—these are rendered innocuous.

In doses of one grain in pill form carefully prepared, it has been given with success in the treatment of **amenorrhœa** of an atonic character, usually administered after meals. It is undoubtedly successful in many stubborn cases, but it is questionable if it is as useful as the manganese dioxide, which is not so readily decomposed. If it were not for the facility with which it

parts with its oxygen in the fluids of the stomach, it would be of much service as an intestinal antiseptic, and valuable as an oxygen carrier to the blood.

AQUA HXDROGENI DIOXIDI.

Synonyms—Solution of Hydrogen Dioxide, Solution of Hydrogen Peroxide—Oxygenated Water, Peroxide of Hydrogen.

Physiological Action—This agent is a powerful oxidizant, especially when brought in contact with organic substances. It destroys disease germs rapidly, and when brought in contact with ulcerating surfaces, it causes albuminous coagulation, and forms a white coating, evolving gas rapidly.

Because of its oxidizing properties, it is an active deodorant, destroying all products of **decomposition or fermentation.** Brought into contact with pus, the oxygen gas is liberated rapidly, the character of the substance is destroyed, and the diseased area is converted into a normal granulating surface. Its influence is similar to that of the permanganate of potassium. The objection to its use within closed cavities is the free formation of gas, and distension from this formation. There can be no objection, provided there be a sufficient opening to allow the free escape of gas, and subsequent irrigation.

Therapy—The agent is desirable under proper circumstances in washing out **pus cavities** anywhere in the **lungs,** but the application of this substance must be followed by irrigation with sterilized water. In the treatment of diseases of the nose and throat, where the excessive **catarrhal discharge** is present, a wash of this substance is of much value. In the ulcerative forms, a spray, applied in the nostrils and throat morning and evening, of one part of hydrozone to eight or ten parts of warm water, will be found serviceable. In the treatment of **hay fever** much benefit is experienced from the application of solutions of hydrozone of one-half the strength of the above, or the peroxide of hydrogen, one part in ten of water, will be beneficial.

In the treatment of **croup** and **diphtheria** we have few remedies of greater service than this. In diphtheria, where the membrane has formed rapidly upon the tonsils, or upon the throat, where the direct application of the peroxide is possible, the entire membrane may be removed at one sitting. The course adopted by the writer before our present improved methods were known was to fasten the patient's mouth open with a properly adjusted gag, then covering his own face with a towel, saturated with a mild carbolic acid solution, the eyes only exposed, he seated himself in front of the patient and applied the sixteen volume peroxide with a camel's hair brush, removing the exudate as rapidly as it is loosened, allowing the patient occasionally to wash the mouth and throat with warm sterilized water, or a mild carbolic acid solution. It was not always possible to persist in the single application sufficiently long to produce this entire result. Under these circumstances it was advisable to give the patient persistently a diluted solution internally, and to use the same preparation as a gargle every one or two hours, according to the severity of the case. In infants, local applications are often impracticable.

In **laryngeal diphtheria** or **membranous croup,** it is almost impossible to apply the solution to the membrane with sufficient persistency to entirely destroy it. One of our physicians, however, in despair, after having performed the operation of tracheotomy upon his own child, passed a long-handled camel's hair brush through the incision, and persisted in the application of this remedy to the membrane, within the trachea above the incision until the membrane was entirely removed, and the patient's life was saved.

Inhalations of the spray of hydrozone have been used in the treatment of **bronchitis, laryngitis, pharyngitis, whooping-cough, consumption,** and other lung and throat disorders with varying success.

Formerly the agent was more generally used in the treatment of wounds, pus forming surfaces, and upon sores. Failures may be due to too great dependence upon this agent alone. It is desirable to cleanse the surface thoroughly with this agent, especially if there be a tendency to the formation of pus, and to then use some other application, either dry, moist, or in the form of an ointment, as seems best indicated. It is occasionally an irritant, inducing a condition that must be subsequently overcome. This may be due to the presence of an excess of the free acid, which it usually contains for purposes of preservation.

Internally from the one-fourth to the one-half of a teaspoonful of the hydrogen peroxide, diluted with one-half glass of water, may be given before meals, when there is an old standing **catarrhal gastritis,** with ulceration. It certainly promotes free secretion of acid, stimulates the digestion, allays pain and causes the healing of ulcerated conditions.

It is argued that the agent suffers decomposition before it reaches the intestinal canal. It certainly prevents fermentation, destroys disease germs within the intestinal canal, overcomes bad breath, and prevents the formation or accumulation of intestinal gases. Upon giving a few drops of the solution in the drinking water, to a patient suffering from **typhoid fever,** its influence is quickly observed, and if an occasional flushing of the lower bowel with hot water which contains ten per cent of this substance be practiced, a more speedy cure will certainly result. It is the writer's practice to give this preparation freely in all diseases of children where there is a tendency to **fetid diarrhœa, bad breath,** or **tympanites.**

It has recently been observed that the agent has an immediately destructive influence upon the bacillus of **tetanus.** In the treatment of that disease the infected wound has been thoroughly washed with hydrogen peroxide with marked benefit.

Externally the agent is used in the treatment of eczema, psoriasis, lupus, sycosis, erysipelas and in the poisoning from rhus toxicodendron, and the bites of insects. It is also used for the removal of acne, freckles, moth patches, dandruff, and for the cure of chapped hands.

FORMALDEHYDE.

Formula—(CHO) H.

Synonyms—Methylaldehyde, Formicaldehyde, Oxymethylene.

Description—A forty per cent solution of Formaldehyde forms the substance commercially known as **formalin** or **formal**—Formaldehyde as used in medicine. It is a light-green, mobile, exceedingly volatile liquid, pungent, aromatic, with a slightly acid reaction from the presence of acetic and formic acids.

Physiological Action—This substance, whether produced in the atmosphere directly, or given off as a vapor from its solutions in concentrated form, is an irritant to the entire respiratory tract, and to the eyes. It is a most active antiseptic or disinfectant and deodorant. Internally its influence has not been widely observed as yet, beyond that it is a profound gastro-intestinal antiseptic, preventing fermentation, especially that of butyric and lactic acids. Lamps have been devised for the combustion of methylic alcohol in an incomplete manner, setting free formaldehyde in the air for the disinfection of rooms, instruments, or whatever is essential for surgical, hygienic

or sanitary purposes. Extravagant claims are made that it destroys the bacteria of tuberculosis, typhoid, diphtheria, etc., and other germs, even in dilute forms of the agent. Further experiments prove that the penetrating power of the vapor is not great, and that it is not actively destructive to animal life, even in the lowest forms, although the vapor in a room will drive out flies, mosquitoes, moths and gnats.

Therapy—The agent is used largely at present for disinfecting purposes. The solution in vessels in the sick chamber prevents the spread of infection, if sprinkled over the bedding and furniture in the room. In all infectious and contagious disorders it will be found of service. It may be applied to instruments freely, and surfaces to be operated upon are bathed with it.

In the treatment of **diphtheria, membranous croup,** the **sore throat** of **scarlet fever,** and the **bronchial cough** of **measles,** it has been used. The vapor of formaldehyde inhaled will be found of much service in **whooping cough,** the number of paroxysms of which, are lessened by it, and their severity greatly modified. It has been used with satisfactory results in the developing stages of **phthisis pulmonalis,** and in **tubercular disease** of the **joints** and the **skin,** especially those of an open or ulcerative character.

Open **wounds** and **infected sores** are washed with it, and it is used for **vaginal** and **uterine** irrigation, and for the irrigation and disinfection of **abscess cavities.** If dressings wet with the solution be kept in contact with **carcinomatous** and other **malignant growths,** with open, foul-smelling surfaces, the odor is destroyed, pain is allayed, and the development is retarded. In the treatment of **gonorrhœa,** especially that of the female, it is most satisfactory in its action. A five per cent solution thoroughly applied into the folds of the vagina with a cotton swab will destroy the infection and promote rapid healing.

SULPHUR.

Symbol—S.

Physiological Action—Sulphur is an antiseptic, an active parasiticide, and internally it is laxative. It was supposed at one time to possess an alterative influence and was administered as a blood purifier. It acts by chemical change and such action is apt to be unreliable in the system. In full quantities it is slowly decomposed, and the odor of the sulphide will appear upon the breath. It is absorbed, as it appears in all of the excretions, and jewelry worn during its administration will become tarnished, its volatility conducing to this fact. Used for a protracted period it will impair the condition of the blood, causing anæmia and inducing muscular weakness. Its protracted use also induces eruptions and eczematous conditions of the skin.

It is a mild laxative, softening the fæces and rendering them easy of expulsion.

Therapy—Sulphur was at one time used in the treatment of **diphtheria** for the destruction of the virulence of the **bacilli.** A combination of sulphur one dram, sulphurous acid two drams, syrup and glycerine, of each one ounce, can be given, a teaspoonful every two hours. The consistency of this compound retains it in contact with the throat, and this contact destroys the germs, the exudate being readily thrown off. This combination, alternated every hour with from five to ten drops of the tincture of the chloride of iron, was among the first successful methods adopted for the cure of **diphtheria.**

Sulphur is in common use among **homeopathic** physicians and is considered a most reliable agent in a wide range of conditions. It is specific with

them in scrofulous or specific indurations of the lymphatic glands, or catarrhal conditions of the mucous linings, from similar causes, with ulcerations or thick, fetid mucous discharges.

Sulphur is used as a domestic remedy in some localities, as a gargle for all forms of **sore throat** and **sore mouth,** especially in **tonsillitis** and in **pharyngitis.** It is of no benefit to inflamed structures without exudate. It has been used in stomach disorders and is of service in the **dyspepsia** of scrofulous patients, with bad breath, bad taste in the mouth, and a sensation of fullness in the stomach after eating. As a **laxative** it is useful in cases where there is deficient intestinal secretion, the fæces being persistently hard and impacted, or **scybala** being present. It is of much service in rectal ulcers, and in anal fissures, and in **hemorrhoids.** Tablets of cream of tartar and sulphur have long been in common use for the cure of habitual constipation, and for inactivity of the liver, with deficiency of the biliary secretions.

Sulphur for many years has been the sovereign remedy for **itch.** Sulphur and lard externally, and sulphur and molasses internally are among the memories of the remote past, in the mind of many an old physician. The agent has lost none of its virtues in the treatment of **scabies.** It surely destroys the **acarus scabiei,** if the patient has a thorough bath with vigorous rubbing before the application of the sulphur ointment. The rubbing removes the dead cuticle over the burrows in which the female hides to deposit her eggs, and immediate contact with sulphur destroys the parasite. The male does not burrow.

In many forms of **skin disease** sulphur is curative. Alternated with potassium nitrate in the following manner, it is the surest treatment for intractable cases of **acne,** in young women with disordered menses, and irritable nervous system, that the writer has ever used. A teaspoonful of precipitated sulphur and as much powdered nitrate of potassium are each stirred into a quart of water, in separate vessels. Twice daily the face is washed in sulphur or tar soap to thoroughly cleanse it; it is then washed with clean hot water and rubbed with a soft cloth and dried. The sulphur lotion is thoroughly applied in the morning, and the nitrate of potassium lotion in the evening after the preliminary cleansing, or vice versa. The lotions are not wiped off but allowed to evaporate. This method has completely cured cases for the writer where the extreme disfiguration had almost deranged the mind of the patient, after resisting all treatments for years. Sulphur ointments, however, are not satisfactory in acne. The fat of the ointment base clogs the ducts of the glands and aggravates the condition. Sulphur is curative to **eczema** if the condition is caused by the presence of a parasite, otherwise it is an irritant and must be avoided. It is used also in **comedo,** in **ecthyma,** in **sycosis,** in **psoriasis** and in **impetigo.**

In **sciatica** and in some other chronic, painful, local, neuralgic, rheumatic or **gouty conditions,** sulphur has been used to envelop the painful part. Local perspiration results, there is absorption of the agent and permanent relief often occurs in a short time.

In some cases of urinary disorder sulphur is used where there is decomposition of the urine from chronic catarrh of the bladder with incontinence and frequent urination.

It is advised in conditions of general blood impairment with paralysis, but must be given in conjunction with nerve stimulants and tonics.

ACIDUM SULPHUROSUM.

Formula—H_2SO_3.

Synonym—Sulphurous Acid.

Physiological Action—This agent is an antiseptic and germicide of much power. It arrests fermentation by destroying the ferments. It is also a deoxidizing and decolorizing agent.

Specific Symptomatology—The indications for sulphurous acid in low fevers are feebleness and prostration, a red, sleek, or narrow, dry and pointed tongue, showing extreme lack of tone in the stomach.

Therapy—The agent has been used with much success in the treatment of sporadic disease. Given internally, it destroys the germ of **diphtheria** and is destructive to **tubercular bacilli.** It may be prescribed quite freely in the treatment of early cases of uncomplicated **diphtheria,** where as much as fifteen drops of the dilute acid may be given in syrup.

The author considers this a most important remedy in the treatment of any acute **disease** of the **throat** or pharynx, accompanied with an exudate, whether it be specific or non-specific. The dilute acid may be given in some form of simple syrup, or as named above in the therapy of sulphur. It is especially advantageous if the mucous membranes are dark colored or dry and dusky, with high temperature, or if the tongue is coated a brown coat, dry and pointed, with red edges, or if the tongue is of a smooth, red color, or has a violet tinge. But in any case, the exudate will be removed by the use of this remedy, certainly as quickly as with any other known agent.

A very palatable combination that may be administered to children when no application can be made to the throat consists of three drams of dilute sulphurous acid, one dram of the flowers of sulphur, in two ounces of the syrup of tolu, or the mucilage of acacia. If a diphtheritic exudate is extensive and there is obstructed breathing, with difficulty in swallowing, half of a teaspoonful may be given every half hour or a teaspoonful, even, at each dose, and no water allowed afterward, as the local influence of the agent is desirable.

The most sanguine prescriber is apt to be surprised at the promptness with which this simple formula will often cause all of the exudate to disappear, and will materially assist in destroying the toxines. Combined for their specific indications with aconite and phytolacca, we need no better treatment than this for early cases of uncomplicated **diphtheria,** where there are only small patches of exudate before paralysis or heart failure occur. The author has observed results occurring as quickly from this as from antitoxin.

It will serve an excellent purpose in **pneumonia,** where there is expectoration of purulent matter and in **bronchitis,** where there is an excessive fetid discharge.

In **dyspepsia** with fermentation where there is vomiting of a material resembling yeast; in intestinal dyspepsia with the development of much gas and fetid fecal discharges, this acid serves an excellent purpose, especially in those cases where there is a deficiency of acids in the system as evidenced by dark-colored mucous membranes and deficiency of secretions.

Sulphurous acid externally applied will cure **parasitic skin disease** even more promptly than sulphur. It will destroy the **acarus scabiei** and is useful in **psora, trichosis,** parasitic diseases of the scalp, and **porrigo.**

It has been applied with excellent effect to ill-conditioned ulcers and to **gangrene.**

The application of this acid is made with good effect to **sore nipples.** Kept constantly applied for a short time it destroys the cause of the ulceration, and simple ointments or other applications will then complete the cure.

Diluted with glycerine it has been applied to **erysipelas,** quickly relieving the burning and preventing the further spread of the disease.

Sulphurous acid applied to **bruises, chapped hands** and **chilblains** is speedily curative. Half of a dram of this acid in an ounce of equal parts of glycerine and rose water, is a pleasant and speedy cure for chapped conditions of the hands, face or lips.

SULPHUROUS ACID GAS. SULPHUR DIOXIDE.

For disinfecting purposes in contagious and infectious diseases the burning of sulphur is in general use for fumigation. The product of the burning of this substance is the dioxide of sulphur, which is a dense, colorless gas twice as heavy as air, with a pungent, suffocating odor. Its influence upon lower animal life and disease germs is exceedingly destructive.

In the process of the fumigation of infected apartments, all furniture, pictures and articles of a character or color which will be injured by the acid vapor must be removed. The apartment should then be densely charged with the vapor, which is allowed to remain for from eight to twenty-four hours. The room is then opened and thoroughly ventilated.

A German authority a few years ago advised this method of purifying the atmosphere of a room in which a patient suffering from **whooping cough** slept. The influence of the vapor on the atmosphere was accredited with the cure of many cases of this subborn malady, sometimes in a single night. The nightclothes of the patient with the bedclothes, were subject to the fumigation, and the air of the room thoroughly renovated before the patient retired. The writer has much confidence in this method of treatment for whooping cough.

Ringer advises immersing the body in a bath of this gas for half an hour, the head being free, where there is an extensive parasitic disease. If the clothes are so treated the disease is permanently cured by the complete destruction of the germ.

We have succeeded in a short time by the application of the dilute sulphurous or sulphuric acid, applying the latter acid sufficiently strong to produce an intense smarting, washing it off when it is no longer bearable. A single application will destroy the acarus scabiei.

CUPRIC ARSENITE.

Synonym—Arsenite of copper.

Specific Symptomatology—Its specific indications are diarrhœa, with frequent voluminous watery discharges. With this there is often violent vomiting of a large quantity of watery substance, and sharp, cutting colicky pains. The stools are tinged with green and are usually of a stinking, nasty odor. In several years' use of the remedy, we have never failed once with above indications. The author makes no attempt to explain the action of the remedy.

Therapy—It is thus indicated in **diarrhœa** of **childhood,** especially in **cholera infantum;** it is certainly a sovereign remedy when watery, greenish-colored, **fetid diarrhœa** is present.

Hale says in cholera infantum with spasmodic pains, with screams and cramps in the fingers and toes, it is a most reliable intestinal antiseptic, and the change in the odor of the discharges is quickly perceptible. An impression is often made upon the entire character of the disease in a few hours.

This reaction on the part of the general system from the prostrating influence of the disease seems unusually prompt after using this remedy.

The agent is also recommended in **chorea** and in the **irregular** and intermittent **heart** accompanying such a condition. Anomalous disorders of the heart are specified as indicated by a heart that beats at one time irregular and very feeble, and at another time irregular, but very violent with no altered heart sounds. We have organic remedies, however, for these conditions whose action is more thoroughly understood.

It is a most excellent remedy in **typhoid fever** with the characteristic diarrhœa. Its active intestinal antiseptic influence is marked and other influences obtain that are very desirable. Alternated with the indicated fever remedy in the early stages of the disease, the condition is often greatly abridged.

Arsenite of Copper is often overlooked as a **diuretic.** It is indicated when deficient secretion of urine or **suppression** are due to cold, or when the activity of the skin is lessened by an extensive burn; where an extra amount of work is thrown upon the kidneys, increasing local hyperemia. A doctor reports a case where complete suppression of the urine occurred from a cold shower bath after violent exercise. He wrapped the patient in hot blankets, inducing perspiration with hot water bottles, gave him a laxative. Five one-one-hundredth grain tablets of arsenite of copper were given and repeated in two hours. He then gave one tablet every hour. The promptness with which this agent started the secretion of urine surprised him greatly, as the entire normal quantity was almost restored within twenty-four hours, with a complete abatement of the early symptoms of uremia.

Dr. Wallace advises this remedy for inactivity of the kidneys—**deficient renal action.** He has used it many years.

BISMUTH SALICYLATE.

Synonym—Salicylate of bismuth.

Occurrence—This salt is formed by the action of the nitrate of bismuth in solution in glycerine, upon the sodium salicylate.

Description—It occurs as a soft, white powder, soluble in acids, but insoluble in water, alcohol, glycerine and ether.

Therapy—French and German physicians recommend this agent as a **local antiseptic** for external use, and as a most valuable **intestinal antiseptic.** It would seem to be indicated internally in much the same conditions as the subgallate. Wagner claims that it stimulates the action of the heart. If these facts are true, it should be valuable in the sthenic stage of **typhoid fever** and other conditions of this character. It will probably be found of service in the treatment of **tibial ulcers** in the forming stage, after having thoroughly cleansed them with an antiseptic wash.

CHAPTER II.

Agents Acting upon Intestinal Parasites—Anthelmintics.

SPIGELIA.	CHENOPODIUM.	KOUSSO.
SANTONICA.	CONVOLVULUS.	POMEGRANATE.
ASPIDIUM.	MALLOTUS.	

SANTONICA. ARTEMISIA PAUCIFLORA.

Synonym—Levant Wormseed.

CONSTITUENTS—Santonin, volatile oil, gum, resin.

PREPARATIONS—**Santonin** is a crystalline neutral principle, derived from Santonica. It occurs in the form of shining, colorless, or slightly yellowish, flattened, prismatic crystals, odorless, and at first tasteless, but subsequently bitterish. Nearly soluble in cold water, soluble in 250 parts of boiling water, and in forty parts of alcohol. Slightly soluble in chloroform and ether.

Trochesci Santonine, Troches of Santonine. Dose, from one to six troches. Santonin. Dose, from one-fourth to two grains.

Physiological Action—Five grains of santonine given to a child caused pain in the stomach, convulsions, insensibility and death. Various phenomena are produced by even smaller doses, as everything appearing yellow or red throughout the field of vision; urine stained deep yellow; a punctiform rash or an eruption like that in measles; amaurosis, flushed face, hot head, twitching of the eyeballs, dilatation of the pupils, foaming at the mouth, clenching of the teeth, jerking of the arms, stertorous breathing. Two grains caused the death of a feeble child.

Generally, recovery takes place after these symptoms, but occasionally death follows.

Specific Symptomatology—The following indications, seldom all present at the same time, point to the presence of lumbricoid worms in the alimentary canal. They may also be present in part, induced by various other causes of intestinal irritation. There may be intense itching of the nose in children, the child rubbing or boring the nostrils, with bloated abdomen, restless sleep, crying out in affright, grinding of the teeth at night, groaning in sleep, complete loss of appetite, tongue deep red without coating, deficient saliva, nausea, vomiting, fetid breath, depraved, erratic appetite with longings, great thirst, aversion to food, abdomen enlarged and hard, diarrhœa with whitish, slimy stools, or bowels constipated followed by looseness, colicky pains in the bowels, vomiting and purging after meals, worms discharged with the stools, cramps in the bowels at night, itching at the arms, limbs wasted, face pale, skin sallow and unhealthy looking, constant urging to urinate, wetting the bed, urine whitish and cloudy, scalding, dry, hacking, constant cough, tickling in the larynx and trachea, convulsive movements of the hands and arms, sensitiveness to the touch over the whole body, twitching of the muscles, lividity of the face, arrested breath, severe choking sensations, convulsive contraction of the fingers, general convulsions with violent agitation of the limbs, chorea, haziness of sight, loss of consciousness, restlessness, not satisfied with anything, will not sleep, fever occurring daily, usually in the afternoon.

Therapy—The generally accepted influence of santonine is in the line of its anthelmintic properties. It is an excellent remedy for the long worm —ascarsis lumbricoides. It is given in doses of from one-half to one grain, twice or three times daily. In the above symptomatology, however, I have named a long list of symptoms, which are due to intestinal or gastro-intes-

tinal irritation. In a few cases they may be due to other reflex influences. Many of these symptoms should be treated with santonin, without regard to the presence of worms. In fact, if we properly study this remedy, we must put aside entirely the idea of its anthelmintic properties, and consider it as a nerve sedative, as an antispasmodic and as a positive and reliable agent with which to relieve **nerve irritations,** especially those of a **reflex** character.

I have made some very conclusive observations in the past fifteen years that convince me that this remedy is the best remedy we have with which to relieve reflex irritation, when the cause of the irritation cannot be at once determined. This is an entirely new field for santonin. I was once treating a child who suffered from all the symptoms of nerve irritation which are present with worms. I gave santonin to remove the worms. Santonin relieved the nervous irritation in a most satisfactory manner, but subsequent observation proved that there were no worms present, but that the irritation was due to faulty digestion and decomposition of food. I was at once impressed that the agent had relieved the irritation by its influence upon the nervous system, independent of any action it might have had upon the worms.

From this observation, I began at once to administer it in all cases where there was **reflex irritation.** I was consulted concerning a child seven months old, who had a **persistent hacking cough** from its birth, which resisted all treatment. I allayed the cough in twenty-four hours with half grain doses of santonin, and the cure was permanent.

I was consulted concerning an irritable heart in an old lady, who was so enfeebled from the violent and irregular action of the organ that she had not been able to do anything whatever for over two years. The heart disorder did not seem to be sufficient to cause the extreme weakness, and I treated it with santonin, as a case of reflex irritation. The results were indeed most surprising. The patient was around the house and assisting with the work within less than a week.

A physician reported a case to me that was suffering from persistent protracted fever, with nervous phenomena, that showed it to be of reflex origin, as all other causes were excluded in the examination. After all known methods had failed, three doses of santonine, one grain each, reduced the temperature almost to normal, and that agent alone caused the permanent abatement of the fever.

I advise with full assurance of satisfactory results, that this remedy be used freely in the treatment of reflex irritations. I do not think it will be found necessary to give it in large doses. From one-half a grain to a grain and a half in an extreme case, will, I think, be sufficient.

I would suggest that it be carefully used in the reflex irritations of pregnancy, especially when there is scanty urine, or when there is deficiency of renal action, with much local irritation. Also in the beginning stages of the **albuminuria** of **pregnancy.** I am confident that it will do much towards preventing **puerperal convulsions** if given early. I think there are some cases of the **vomiting** of **pregnancy** that will be quickly allayed by it. I advise that it be given in **hysterical** conditions, and in those difficulties where there is **irritation** of the **ovaries** and irritation at the menstrual epoch, especially if accompanied with some pain.

Lydston advised the use of this remedy in large doses in the treatment of **epilepsy.** Its antispasmodic properties would suggest that it be used in cases where the spasms are due to reflex irritation; whether it possesses sufficient antispasmodic properties to control spasm, as gelsemium, chloral and other agents of that character do, remains to be proven.

Santonine at times is a positive remedy with which to **increase** the secretion of **urine** in children. It gently stimulates the functional action of the organs, promotes normal secretion and relieves irritation. It is without doubt, our best remedy with which to restore the secretion in post **scarlatinal** or **post diphtheritic nephritis.** In these cases it may be alternated with positive doses of belladonna. In conjunction with a persistent application of heat, it will be found useful in **post puerperal** nephritis, of an acute character, and probably in other cases, where sudden suppression has resulted from profound sepsis.

Where we find colic with loose, slimy stools, it points to intestinal disorders, while convulsive movements are reflex symptoms, consequent upon the intestinal disease. These are benefited by this agent.

Santonine influences these conditions by stimulating the great sympathetic and giving tone to the functions of digestion and nutrition.

It has been employed with advantage in **nervous failure of sight,** nervous vomiting and nervous diarrhœa; but it is doubtful whether it has ever improved the sight in amaurosis or cataract, as has been claimed.

Santonine causes yellow vision and yellow urine. Where worms are demonstrated to exist in the bowels, it is a common practice to give santonine with a cathartic of podophyllin, or follow it with castor oil. The agent is **toxic,** as stated, and should not be given in material doses for the special purpose of destroying worms, when the child is constipated or suffering from fever.

SPIGELIA. SPIGELIA MARILANDICA.

Synonym—Maryland Pink.

CONSTITUENTS—Spigeline (bitter principle), fixed oil, volatile oil, resin, wax, tannin, salts.

PREPARATIONS—Extractum Spigeliæ Fluidum. Fluid Extract of Spigelia. Dose, from one-half to two drams.

Therapy—Spigelia is specific in the removal of **intestinal worms.** It need not be given in large doses, and if used with proper care, is most effectual. An excellent formula is the following, which contains united action of the two agents: Fluid extract of spigelia, two drams; santonine pulverized, fifteen grains; simple elixir, a sufficient quantity to make two ounces. A teaspoonful is given on rising and retiring.

If this agent is followed, on the third day, by an efficient non-irritating laxative, it seldom fails to remove **lumbricoids.** The worms are not always entire when removed, but the evidences of their presence are gone, a slimy or heavy mucous discharge occurring from the action of the physic.

Spigelia is said to have a mild influence upon the heart. Webster says it is beneficial in **endocarditis,** especially in the rheumatic form, and that it will protect the heart from rheumatic attacks. It is stated that it is beneficial in **angina,** in all **neuralgic heart affections,** and in **functional palpitations.** The **Spigelia Anthelmintica** is thought to be more active in its influence upon the heart than the Spigelia Marilandica; otherwise there is but little difference in the two species.

CHENOPODIUM. CHENOPODIUM AMBROSIOIDES.

Synonym—American Wormseed.

The oil of the herb and of the seed is the only preparation of chenopodium used. It is a thin, colorless, or slightly yellow liquid having a penetrating camphoraceous odor and a pungent and somewhat bitter taste.

This is strictly an American product, large quantities of the oil being produced in this country though the foreign demand should establish foreign sources of supply.

Therapy—This agent has long been used as a remedy for **worms** but because of an early objection made to its use on the grounds of certain subtle dangerous properties, it has not come into general use. In sufficient doses of from ten to twenty minims of this oil, it was recommended to expel the round worm. Our own authorities seldom recommended above five minims which was not always sufficient though safer.

A recent report* puts this agent in its exact place as an anthelmintic. In the Orient, especially in Singapore and in Sumatra, the oil of chenopodium is extensively employed against **hookworm** and other intestinal parasites. More than 100,000 cases of hookworm of both the Old and New World types have been treated with practically no untoward effects, and with greater success than with any remedy heretofore employed.

In Sumatra, it is used also with equal confidence, in the treatment of **roundworm, tapeworm,** and **whipworm.** Weiss of Kisaran treated 5,000 cases of hookworm with highly satsfactory results. There was one case of nephritis which he thought might have followed it, but the case was quickly controlled. Schuffner and Baermann in Sumatra have treated over 40,000 cases without after effects, and with results superior to those obtained from thymol. They conclude that the efficiency of this remedy over thymol is as 91 to 83.

Administration—The method of the above observers is to give the patient a liquid diet for an evening meal, no breakfast on the following morning. From ten to sixteen minims of the oil is placed on sugar divided into three parts, one part being taken every hour. Two hours after the last dose, a full dose of castor oil and a full dose of chloroform is given.

Others give ten minims as a single dose in a capsule, giving it every morning for three days, and on the third day, following it with a tablespoonful of castor oil. In the case of certain well known anthelmintics, oil must be avoided, but better results are obtained with this remedy in getting rid of the worm, after the paralyzing influence of chenopodium. Perhaps more care should be taken in our country to avoid such complications as nephritis and paralysis, but foreign prescribers account the remedy as harmless in the above described doses.

Toxicity—In addition to the conditions named above which may be induced are persistent inclination to sleep, great drowsiness, and depression. The agent, if these symptoms appear, should be withheld, and the patient stimulated with strong coffee or other available stimulant, and wakefulness induced, as after opium.

There is little doubt that this will now immediately become the most dependable of our remedies for hookworn, as well as being reliable for other intestinal parasites.

ASPIDIUM. ASPIDIUM FELIX-MAS.

Synonym—Male Fern.

CONSTITUENTS—Felicic, felixolic, felosmylic, tomaspidic and pteritannic acids, volatile oil, wax, chlorophyll, gallic acid, albumen, pectin, starch, gum, sugar, salts.

PREPARATIONS—Oleoresina Aspidii, Oleoresin of Aspidium. Dose, from six to eight grains.

Therapy—A most active gastro-intestinal irritant, it is given to remove **tapeworm.** The oleoresin is given in doses of half a dram in capsules. One-

*Journal of American Medical Association, August 7, 1915, Page 526.

half to one dram of the fluid extract may be given, or half an ounce of the leaves are steeped in half a pint of water and this is taken before breakfast. Oils should not be given after this agent, as they facilitate the absorption of its toxic principle which exercises a profound influence upon the nervous system. Saline laxatives or vegetable laxatives may be administered. The usual preparation of the patient is essential and it is necessary to follow the removal of the worm with mild tonics and restoratives. Unlike those often used, this agent does not produce unpleasant results, being in every way a safe remedy if taken in proper doses.

It does not impair the appetite or reduce the strength.

CONVOLVULUS. CONVOLVULUS SCAMMONIA.

Synonym—Scammony.

CONSTITUENTS—Resin (scammonin, identical with jalapin), gum, fibre, starch.

PREPARATIONS—Resina Scammoniæ, Resin of Scammony. Dose, from three to eight grains.

Therapy—Scammony is a **vermifuge** and is useful in combination with other vermifuges to increase their action. It also acts as a cathartic for their removal, as its cathartic influence is of considerable importance. It is hydragogue and irritating in large doses and more or less depressing. It has a certain eliminative influence, and like podophyllum, has been given in conjunction with alteratives. It is greatly superseded in this line of action, by many other of our agents better known.

MALLOTUS. MALLOTUS PHILIPPINENSIS.

Synonyms—Kamala, Kameela.

CONSTITUENTS—Resin 80 per cent, citric, oxalic and tannin acids, rottlerin, malotoxin, paraoxybenzoic acid.

PREPARATIONS—Specific Kamala. Dose, from thirty to sixty minims.

Therapy—Kamala is an efficient remedy for **tapeworm,** ranking next to male fern. No preparation for its administration is necessary. To counteract griping it should be taken in cinnamon water or combined with hyoscyamus. If the first does does not act, it should be repeated in four hours or followed with a dose of castor oil.

Kamala may be employed as an external application in herpetic ringworm, scabies and other skin diseases.

BRAYERA. BRAYERA ANTHELMINTICA.

Synonym—Kousso.

CONSTITUENTS—Brayerin (a bitter, acrid resin), volatile oil, tannin.

PREPARATIONS—Extractum Kousso Fluidum, Fluid Extracts of Kousso. Dose, from one to six drams.

Therapy—Kousso is given for the removal of the **tapeworm.** An infusion of half an ounce in a pint of water should be made and drunk on rising in the morning. The patient should take but little food during the day, and if the bowels do not move freely, a physic should be taken at night. An ex-

tractive is obtained from the plant, known as Koosin, which is given in doses of twenty grains. The fluid extract in two dram doses is also given. The agent is said to possess abortive properties. All intestinal irritants should be given with care in pregnancy.

GRANATUM. PUNICA GRANATUM.

Synonym—Pomegranate.

CONSTITUENTS—**Pelletierine,** a colorless liquid, soluble in twenty parts of cold water, freely soluble in alcohol. Acted upon by sulphuric, hydrochloric, or hydrobromic acids, a crystalline salt is formed in each case. With tannic acid, the **tannate** of **pelletierine** is formed, a yellowish powder, odorless, pungent, astringent.

Dose of the alkaloid, from one-tenth to one-half grain. Dose of the salts of the alkaloid, from one to five grains. Extractum Granatum Fluidum. Fluid Extract of Granatum. Dose, from fifteen to thirty minims.

Physiological Action—Pomegranate has an astringent influence quite marked, at the same time in full doses it produces evacuation of the bowel, and in some cases irritation and emesis may be induced. A decoction of the fresh bark of the root will produce the best results, when the anthelmintic influence of the agent is desired.

Therapy—It is a specific for the destruction of the **tapeworm.** Two ounces of the fresh bark is macerated in two pints of water for twenty-four hours, when it is then boiled down to one pint. After fasting one day, the patient may take a wine-glass of this every hour, until the pint is taken. It may induce vomiting and purging, but if the bowels do not move freely, a physic should be given near the end of the treatment, or sometimes a glycerine enema will be sufficient. If not at first successful, the treatment should be repeated within a few days. When the fresh bark cannot be obtained, the alkaloid or its salts may be resorted to. This agent has been used in **diarrhœa** and in **colliquative night sweats.** In **bronchorrhœa** and as a gargle in various forms of **sort throat,** it has produced good results. It has been used both internally and as a douche in **leucorrhœa.**

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